Geologic Interpretations of Wells and Important Rock Outcrops in the
Moscow-Pullman Basin and Vicinity, Idaho and Washington

By John H. Bush and Pamela Dunlap

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Geologic Interpretations of Wells and Important Rock Outcrops in the Moscow-Pullman Basin and Vicinity, Idaho and Washington

By John H. Bush\textsuperscript{1} and Pamela Dunlap\textsuperscript{2}

Introduction

Surficial and subsurface data were collected and interpreted for the purpose of preparing geologic cross sections and subsurface maps of basalt flows and associated sedimentary and basement rocks in the Moscow-Pullman basin and vicinity. Drillers’ reports for 503 water and monitoring wells were selected from state online databases and from published and unpublished reports and databases. In addition, 22 sites where rocks are exposed at the surface were included to illustrate and provide elevations of important geologic features, such as contacts and presence of basement rock. A combination of field work and property parcel research was used to verify locations of wells. Twenty-one outcrops and 157 wells were observed during site visits; one outcrop and 131 wells were located by previous workers. Locations for the remaining 215 well sites are approximate but fall within the confines of the property parcel. Geologic interpretations were made for nearly all sites. An oversize map show the distribution of sites described in this report.

Spatial digital data for these sites are available in various formats for use in a geographic information system (GIS) and Google Earth Pro. These data include latitude, longitude, and elevation of the site, year well was drilled, depth of well, static water level and yield of well, original owners’ names, site address, and county tax parcel number. Downhole data provide depth to and corresponding elevations of various geologic units encountered at depth. Together, these data can be used in modeling the subsurface in three dimensions.

Methodology

Well locations were determined using a variety of sources including (1) personal knowledge, (2) site visits, (3) Google Earth satellite imagery, (4) published and unpublished geologic maps, (5) the Palouse Basin Aquifer Committee monitoring well database (Steve Robischon, unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile), (6) consultants’ and well drillers’ reports, (7) university student theses, and (8) plat maps. Well site location information from the well drillers’ reports was cross-checked against property records in the respective county online property databases in order to better locate the wells. All sites (table 1) were plotted in Google Earth Pro using satellite imagery (dated June 30, 2015), and values for latitude and longitude were determined for those sites without previously

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recorded coordinates. Elevations of sites were derived from 1:24,000-scale US Topo topographic maps published online by the U.S. Geological Survey in 2013 and 2014.

**Geologic Interpretations**

Geologic interpretations of rock and sediment type for each well were made from drillers’ descriptions, rock chemistry where available, and in a few instances examination of chips. Professional descriptions of chip cuttings for many of the municipal wells were also reviewed. Basalt samples from many of the deep wells (>500 ft) were analyzed for major and minor elements by several previous workers; these data were reviewed and used to determine the stratigraphic sequence for each of these wells. The stratigraphic nomenclature used in the interpretations (fig. 1) follows that discussed by Reidel and others (2013).

Rock chemistry is not available for most of the domestic wells. For those wells determination of the stratigraphic sequence was done by a combination of several methods, including (1) comparison of the elevation of contacts to those in wells with chemical data, (2) comparison to nearest outcrop, and (3) comparison of thickness trends. Available geologic maps were routinely used for all wells. Fourteen cross-sections were drawn to assist with the comparisons. The Vantage Member was intersected in 262 wells (as well as having been determined to overlie the Grande Ronde Basalt in 143 of these wells) and could be used as a stratigraphic marker bed. A structure contour map of the uppermost Grande Ronde Basalt surface was then constructed (Bush and Dunlap, 2018) and used to assist in the determination of stratigraphic sequences.

There are some fundamental problems that made some interpretations difficult. These include the following aspects:

1. Rock and sediment terminology from driller to driller and professional to professional is not consistent.
2. Poorly sorted, weathered sediment is very difficult to determine from weathered granite in the Moscow-Pullman basin.
3. Terminology for naming basalt flows and groups of flows has been a long evolution of decades of work and comparison of old data to new information is sometimes confusing.
4. Beneath Pullman structural features create some problems, and beneath Moscow some of the basalt flows invade sediments and some correlations are not possible without rock chemistry.

The geologic interpretations provided are those of John Bush who summarized the available data to the best of his abilities.
**COLUMBIA RIVER BASALT GROUP**

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Figure 1. Stratigraphic nomenclature of the Columbia River Basalt Group and Latah Formation in the Moscow-Pullman area, Idaho and Washington. (F), formal unit; (I), informal unit; N, normal polarity; R, reverse polarity.
Table 1. List of wells and outcrops. ID, unique identifier for site; Elevation, surface elevation, rounded to nearest foot; Depth, well depth, in feet.

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<td>ID</td>
<td>Site Name</td>
<td>Latitude</td>
<td>Longitude</td>
<td>Elevation (ft)</td>
<td>Depth (ft)</td>
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<tr>
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<tr>
<td>520</td>
<td>Patricia Yount</td>
<td>46.990402</td>
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<td>46.864009</td>
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</table>
Wells

Interpretation and location information and copies of drillers' reports are provided for 503 water and monitoring wells. Unless otherwise referenced, the well drillers' reports were downloaded from online databases maintained by the Washington Department of Ecology (DOE)\(^1\) and the Idaho Department of Water Resources (IDWR)\(^2\), and property parcel information was obtained from online databases maintained by Latah\(^3\) and Whitman\(^4\) Counties.

The well reports that follow are provided alphabetically by owner's last name or by name of business (see Table 1 for an alphabetized listing of all sites). Well names generally reflect the original owner's name and is followed by a number if multiple wells were drilled for the same owner. The value for Well Log ID corresponds to the Well Tag Number or Well Log ID used by the online databases of well drillers' reports for Idaho and Washington, respectively. In the Description section, rock intervals are highlighted in color based upon the geologic formation to which they belong.

Use of Bookmarks and (or) the Find tool in this PDF file will make it easier to find a particular well or group of well reports.

\(^{1}\) https://fortress.wa.gov/ecy/wellconstruction/map/wclswebMap/textsearch.aspx (accessed 19 October 2018)
\(^{2}\) https://www.idwr.idaho.gov/Apps/appsWell/WCInfoSearchExternal/ (accessed 19 October 2018)
\(^{3}\) http://gis.latah.id.us/publicmap/index.html (accessed 19 October 2018)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 27, 2016; November 9, 2017

Well Log ID: 150047  Elev (ft): 2220 ±10  Depth (ft): 235  Quads: Colfax North

Latitude: 46.906087  Longitude: -117.265544  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
501 Clear Creek Road, Colfax, Wash.; on southwest side of road.

Location Method:
Located near only house in section 4 that was built in 1987; Whitman County Assessor; Google Earth imagery; topographic map. Well was approximately located using driller’s description (397 ft north and 30 ft west of SE corner of government lot 16). Bush and others (2005 [2006]) incorrectly located their Colfax North quadrangle Well 1 at 4852 WA 272 (in Whitman County Tax Parcel 200004416042900). Site visit (November 13, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>23</td>
<td>34</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>34</td>
<td>37</td>
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<tr>
<td>Basalt</td>
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<td>70</td>
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<tr>
<td>Grande Ronde Basalt</td>
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<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
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<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray and brown rock</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>Basalt, alternating hard and soft</td>
<td>100</td>
<td>220</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>220</td>
<td>235</td>
</tr>
</tbody>
</table>
Comments:

1Geologic field work along Clear Creek Road shows that the Roza is the first unit encountered in this well.

Whitman County Tax Parcel 200004416041904, 501 CLEAR CREEK RD, COLFA, NE1/4 PT LT 16 & PT LT 13 IN SEC 3, owners are now LENSSEN, DANIEL/MISHELLE, 8.0 acres; 1 story residence, built 1987; grantors were HENDRICKSON, WILLIAM/JULIE, on 05/01/09.

References Cited:

WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name BRIAN ARSE
Address COFRAK, IA

(2) LOCATION OF WELL: County WHITMAN
Searing and distance from section or subdivision corner: 39°F N. 30° W. OF SE CORNER OF T. 16 N., R. 16.

(3) PROPOSED USE: Domestic [X] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one): New well [X] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 8 inches.
Depth of completed well 33 5 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 ft. Diam. from + 2 ft. to 123 ft.
Threaded [ ] Diam. from ft. to ft.
Welded [X] Diam. from ft. to ft.
Perforations: Yes [X] No [ ]
Type of perforator used
Size of perforations

Screws: Yes [ ] No [X]
Manufacturer's Name
Type
Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [X]
Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ]
Material used in seal
To what depth 34 ft.
Did any strata contain unusable water? Yes [ ] No [X]
Type of water
Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type

(8) WATER LEVELS: Land-surface elevation above mean sea level...
Static level...
Artesian pressure...
Artesian water is controlled by...

(9) WELL TESTS: Drawdown is amount water level is lowered below static level...
Was a pump test made? Yes [X] No [ ]
Yield: gal./min. with ft. drawdown after hrs.

(10) WELL LOG:
Formation: Describe by color, character, size of material, and structure, and show thickness of strata and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
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</thead>
<tbody>
<tr>
<td>TOP SOIL</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>TAN CLAY</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>BROWN CLAY</td>
<td>16</td>
<td>33</td>
</tr>
<tr>
<td>BROWN&amp;ROCK</td>
<td>33</td>
<td>47</td>
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<tr>
<td>BLUE BASALT</td>
<td>47</td>
<td>63</td>
</tr>
<tr>
<td>BROWN&amp;ROCK</td>
<td>63</td>
<td>70</td>
</tr>
<tr>
<td>CLAY &amp; DIABE</td>
<td>70</td>
<td>100</td>
</tr>
<tr>
<td>BLUE BASALT</td>
<td>100</td>
<td>105</td>
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<tr>
<td>SOFT BLUE BASALT</td>
<td>105</td>
<td>120</td>
</tr>
<tr>
<td>BLUE BASALT &amp; DIABE</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>SOFT BLUE BASALT</td>
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<td>155</td>
<td>170</td>
</tr>
<tr>
<td>LITTLE IR CLAY BASALT</td>
<td>170</td>
<td>220</td>
</tr>
</tbody>
</table>

SEP 11 1967
DEPT. OF G. O. S.:
SOUTHERN REGIONAL OFFICE

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: JERRY DALLING
Address: 1036-15th St. CLARKSON, WA

[Signature]
(Well Driller)
License No. 0009 Date 6/30 1967

(ECC 060-3-20)
(RULE ADDITIONAL SHEETS IF NEEDED)
AIRPORT BUSINESS PARK WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 17, 2016

Well Log ID: 685988  Elev (ft): 2590 ±5  Depth (ft): 202  7.5’  Quad: Viola

Latitude: 46.754418  Longitude: -117.083527  decimal degrees (WGS84)

¼, NW ¼, SE ¼, Sec. 25, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
6 O’Donnell Road, Pullman, Wash., on west side of road; business park is at northwest corner of intersection of O’Donnell Road and Pullman Airport Road.

Location Method:
Well is in drainage, west of the northwest corner of the back parking lot; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 14, 2016).

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<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td>0</td>
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<td>Clay</td>
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<tr>
<td>Wanapum Basalt</td>
<td>57</td>
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<tr>
<td>Priest Rapids Member</td>
<td></td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
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<tr>
<td>Basalt</td>
<td>57</td>
</tr>
<tr>
<td>Basalt, brown, soft</td>
<td>182</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>198</td>
</tr>
<tr>
<td>Clay, green</td>
<td></td>
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</table>
Comments:
Driller reports a high-volume well (80 gpm) from the upper aquifer in an area where it is not that common.

Whitman County Tax Parcel 200004515255793, E1/2 PT W1/2 LT 3 PULLMAN AIRPORT BUSINESS PARK SHORTPLAT, owner is PULLMAN AIRPORT BUS PARK.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission** ("x" in circle)
- [ ] Construction
- [ ] Decommission

**ORIGINAL INSTALLATION**

**Notice of Intent Number**

- [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] DeWate
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

**TYPE OF WORK:** Owner's number of well (if more than one)
- [ ] New well
- [ ] Reconditioned
- [ ] Method: [ ] Deg
- [ ] Bored
- [ ] Driven
- [ ] Deepened
- [ ] Cased
- [ ] Rotary
- [ ] Jetted

**DIMENSIONS:**
- Diameter of well: [ ] 10 inches, drilled: [ ] 120 ft. [ ] 200 - 6 ft. Depth of completed well:

**CONSTRUCTION DETAILS**

- Casing: [ ] Welded [ ] Skid saw
- Installed: [ ] Liner installed: [ ] 1/4" Diameter: [ ] 120 ft. to [ ] 200 ft.
- Perforations: [ ] Yes
- [ ] No
- [ ] Type of perforator used [ ] Skid saw

**SIZE OF parts:**
- [ ] Size of parts: [ ] in. in. and no. of parts [ ] from [ ] 1/4" to [ ] 2" ft. [ ] 200 ft.
- [ ] Screen: [ ] Yes
- [ ] No
- [ ] K-Flex Location

**Manufacturer's Name:**

**PUMP:**
- [ ] Manufacturer's Name
- [ ] H.P.

**WATER LEVELS:**
- Land-surface elevation above mean sea level [ ] ft.
- Static level [ ] ft. below top of well date [ ] 0 ft.
- Artesian pressure [ ] lbs. per square inch [ ] Date
- Artesian water is controlled by [ ] (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- [ ] Was a pump test made? [ ] Yes
- [ ] No
- [ ] If yes, by whom?
- [ ] Yield: [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.
- [ ] Yield: [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.
- [ ] Yield: [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.
- [ ] Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- [ ] Date of test
- [ ] Boiler test: [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.
- [ ] Airtest: [ ] 80 gal/min. with [ ] ft. drawdown after [ ] hrs.
- [ ] Artesian flow [ ] g.p.m.
- [ ] Date
- [ ] Temperature of water [ ] Was a chemical analysis made? [ ] Yes
- [ ] No

**CURRENT**

**Notice of Intent No.:** W159970

**Unique Ecology Well ID Tag No.:** BBH 192

**Water Right Permit No.:**

**Property Owner Name:** Airport Business Park, LLC

**Well Street Address:** 10 O'Donnell Rd.

**City:** Pullman

**County:** Whitman

**Property Location:** [ ] 1/4, 1/2, 1/4 Sec. 25, Twp. 10 N, R. 25 E

**Lat/Long:**
- [ ] Long [ ] Lat
- [ ] Min [ ] Sec

**Tax Parcel No. (Required):** 2-000-45-15-35-5793

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

**Formation:**
- [ ] Clay
- [ ] Medium brown silt
- [ ] Hard black silt
- [ ] Soft brown silt (water)
- [ ] Green clay

**RECEIVED**

**SEP 27 2010**

**DEPARTMENT OF ECOLGY**

**EASTERN REGIONAL OFFICE**

**Start Date:** 9/2/2010

**Completed Date:** 9/3/2010

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- [ ] Driller
- [ ] Engineer
- [ ] Trainee

**Driller/Engineer/Trainee Name:** Brett Uhlenkott

**Driller/Engineer/Trainee Signature:**

**Driller or trainee License No.:** 26097

**Contractor’s Name:** Brett Uhlenkott

**Contractor’s Registration No.:** 09-0012982

**City, State, Zip:** Cottonwood, ID 83522

**Date:** 9-10-10

**ELC 001-10** (Rev. 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
ALBION TOWN WELL 1
[DRILLED IN 1954]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 4, 2016

Well Log ID: 173609  Elev (ft): 2250 ±10  Depth (ft): 78  Quad: Albion

Latitude: 46.791803  Longitude: -117.249410  decimal degrees (WGS84)

⅛, ⅛, NE ⅛, Sec. 15, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
North D Street, Albion, Wash., one lot southwest of West 2nd Street.

Location Method:
Anderson Map Company (1910); Whitman County Assessor; Google Earth imagery; topographic map; Lot 2, Block 12, 1st Syndicate Addition to Albion (per driller’s report).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
</tr>
<tr>
<td>Modern sediments</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
</tr>
<tr>
<td>Silt</td>
<td>12</td>
</tr>
<tr>
<td>Gravel</td>
<td>24</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>25</td>
</tr>
<tr>
<td>Cambrian—Precambrian(?)</td>
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<td>*Quartzite, weathered</td>
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<tr>
<td>Quartzite, hard</td>
<td>72</td>
</tr>
<tr>
<td>Quartzite, fractured</td>
<td>74</td>
</tr>
</tbody>
</table>
Comments:

*Quartzite often is misidentified by drillers and geologists as granite.

Above, plat map from Anderson Map Company (1910) showing First Syndicate Addition (in yellow).

References Cited:

STATE OF WASHINGTON  
DEPARTMENT OF CONSERVATION  
AND DEVELOPMENT  

WELL LOG  
No. Appl. #3316  
Per. #3171  

Date Feb. 11, 1954  

Record by W. L. Maloney  
Source Driller's Record  

Location: State of WASHINGTON  
County Whitman  

Lot 2, Blk. 12, 1st Syndicate Add.  
to Albion  
Drilling Co.  

Address  
Method of Drilling Drilled  
Owner Town of Albion  
Address Albion, Wash.  

Land surface, datum ft. above  

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Brown shale</td>
<td></td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Silt</td>
<td></td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Gravel with some water</td>
<td></td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Brown shale</td>
<td></td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Decomposed granite</td>
<td></td>
<td>12</td>
<td>42</td>
</tr>
<tr>
<td>Brown shale</td>
<td></td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>Decomposed granite</td>
<td></td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>Decomposed granite with varying ams. of silt-approx. 40gpm.</td>
<td>23</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Coarse decomposed granite, water - 70 gpm.</td>
<td></td>
<td>2</td>
<td>72</td>
</tr>
<tr>
<td>Extra hard granite</td>
<td></td>
<td>2</td>
<td>74</td>
</tr>
<tr>
<td>Decomposed granite with crevice at 78' Water 90gpm.</td>
<td></td>
<td>4</td>
<td>78</td>
</tr>
</tbody>
</table>

Turn up (over)  

Sheet of sheets  

25
**WELL LOG—Continued**

<table>
<thead>
<tr>
<th>Collaration</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth forward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump Test:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dim: 72&quot; x 8&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWL: 16'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD: 28'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yield: 70 g.p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing: 8&quot; dia. steel from 0 to 72'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ALBION TOWN WELL 3

[DRILLED IN 1978]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 20, 2016

Well Log ID: 637908
Elev (ft): 2350 ±10
Depth (ft): 380
Quad: Colfax South

Latitude: 46.785272
Longitude: -117.251299
decimal degrees (WGS84)

وقapy WH, NW ¼, SE ¼, Sec. 15, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
Well is located at south end of Cemetery Road (off Albion Road); it has a red cap and is southeast of white patch inside chain link fence.

Location Method:
Site visit (April 13, 2016); Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>Fill dirt</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>unnamed interbed</td>
</tr>
<tr>
<td></td>
<td>Clay, white-brown</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Roza Member</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td></td>
<td>Broken basalt and clay</td>
</tr>
</tbody>
</table>
Clay, green  183 – 212

Grande Ronde Basalt
   N2 magnetostratigraphic unit
      Sentinel Bluffs Member
         Basalt of Spokane Falls
            Basalt, hard  212 – 247
            Basalt, soft  247 – 265

Latah Formation
   Sediments of Moscow
      Clay, green  265 – 287
      unknown  287 – 320

Prebasalt rock
   Quartzite  320 – 380

Comments:

1 All prebasalt rocks on Smoot Hill are quartzite, not granite.

Well CS-01 of Moxley (2012, p. 73) who listed an approximate location and elevation.

References Cited:

ALBION TOWN WELL NO. 3 - WELL LOG

DRILLED AUGUST, 1978, BY

UHLENKOTT WELL DRILLING, FENN, IDAHO


<table>
<thead>
<tr>
<th>Depth(ft.)</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>Fill Dirt</td>
</tr>
<tr>
<td>2-29</td>
<td>Medium Soft Basalt</td>
</tr>
<tr>
<td>29-35</td>
<td>Soft Decomposed Rock w/Brown Seams</td>
</tr>
<tr>
<td>35-68</td>
<td>Soft Broken Basalt, Brown Seams</td>
</tr>
<tr>
<td>68-93</td>
<td>Hard Black Basalt</td>
</tr>
<tr>
<td>93-97</td>
<td>Medium Hard Brown Basalt</td>
</tr>
<tr>
<td>97-110</td>
<td>Hard Black Basalt</td>
</tr>
<tr>
<td>110-114</td>
<td>Medium Soft Black Basalt w/Brown Seams</td>
</tr>
<tr>
<td>114-117</td>
<td>Medium Hard Black Basalt w/Green Seams</td>
</tr>
<tr>
<td>117-119</td>
<td>Medium Hard Black Basalt w/Brown Seams</td>
</tr>
<tr>
<td>119-125</td>
<td>Hard Grey Basalt</td>
</tr>
<tr>
<td>125-128</td>
<td>Medium Soft Grey Basalt</td>
</tr>
<tr>
<td>128-136</td>
<td>Very Soft Whitish Brown Clay</td>
</tr>
<tr>
<td>136-140</td>
<td>Medium Hard Basalt</td>
</tr>
<tr>
<td>140-147</td>
<td>Soft Decomposed Rock</td>
</tr>
<tr>
<td>147-154</td>
<td>Medium Hard Black Basalt</td>
</tr>
<tr>
<td>154-161</td>
<td>Soft Colored Rock</td>
</tr>
<tr>
<td>161-165</td>
<td>Medium Soft Black Basalt</td>
</tr>
<tr>
<td>165-172</td>
<td>Soft Basalt w/Tannish Seams (some water)</td>
</tr>
<tr>
<td>172-183</td>
<td>Soft Rotten Rock w/some clay</td>
</tr>
<tr>
<td>183-212</td>
<td>Soft Green Clay</td>
</tr>
<tr>
<td>212-216</td>
<td>Medium Hard Basalt w/Green Seams(water)</td>
</tr>
<tr>
<td>216-247</td>
<td>Hard Basalt w/Green Seams</td>
</tr>
<tr>
<td>247-252</td>
<td>Medium Soft Black Basalt w/Green Seams</td>
</tr>
<tr>
<td>252-265</td>
<td>Medium Soft Black Basalt w/Green Seams</td>
</tr>
<tr>
<td>265-287</td>
<td>Soft Green Rock w/some clay</td>
</tr>
<tr>
<td>287-320</td>
<td>Unknown</td>
</tr>
<tr>
<td>320-380</td>
<td>Soft to Medium Hard Granite</td>
</tr>
</tbody>
</table>

CONFINING LAYER

Rotary Drilled

L00800-03 Albion Water Dist.
**ERIC A. ALSTERLUND WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 15, 2018

| Well Log ID: NA | Elev (ft): 3030 ±10 | Depth (ft): 155 | 7.5’ Quad: Palouse |

Latitude: 46.881842°  
Longitude: -117.034145°  
decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 24, T. 41 N, R. 6 W

**Well Address and (or) Other Location Information:**  
1020 Alsterlund Lane, Viola, Idaho; on west side of road

**Location Method:**  
Location is for house built prior to July 10, 1996 imagery; Latah County Assessor; Google Earth imagery; topographic map; ¼ and ¼-¼ sections do not match driller’s report (there are no homes in the NE¼ of Section 24).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>1</td>
</tr>
<tr>
<td>Cambrian–Precambrian</td>
<td></td>
</tr>
<tr>
<td>Argillite-quartzite</td>
<td>64</td>
</tr>
</tbody>
</table>

¹ Driller reported granite; interpreted as argillite-quartzite based on nearby outcrops
Comments:

Latah County Tax Parcel RP41N06W244794; ALSTERLUND, ERIC H; 1020 ALSTERLUND LN; 5.00 AC SENW & NESW; TAX #5516; 24 41 6; MH.

Eric A. Alsterlund resides at 1020 Alsterlund Lane, Viola, Idaho (Phonesbook.com, 2018).

References Cited:

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER
   Name: Eric A. Stedlund
   Address: 1408 W. Cove Rd., Nampa, ID
   Drilling Permit No.: 87-93-N-110-000
   Water Right Permit No.: 87-93-016-10

2. NATURE OF WORK
   □ New well  ☑ Deepened  ☐ Replacement
   □ Well diameter increase  □ Modification
   □ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE
   ☑ Domestic  ☐ Irrigation  ☐ Monitor
   ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
   □ Other (specify type)

4. METHOD DRILLED
   □ Rotary  ☑ Air  ☐ Auger  ☐ Reverse rotary
   ☐ Cable  ☐ Mud  ☐ Other (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION
   Casing schedule: ☑ Steel  ☐ Concrete  ☐ Other
   Thickness __________ inches Diameter __________ feet
   From __________ to __________ inches __________ feet
   Thickness __________ inches Diameter __________ feet
   From __________ to __________ inches __________ feet
   Was casing drive shoe used?  Yes ☑ No ☐
   Was a picker or seal used?  Yes ☑ No ☐
   Perforated?  Yes ☐ No ☑
   How perforated?  ☑ Factory  ☐ Knife  ☐ Torch  ☐ Gun
   Size of perforation? __________ inches by __________ inches
   Number of perforations __________ feet __________ feet
   __________ feet __________ feet
   Well screen installed?  Yes ☑ No ☐
   Manufacturer ☑ Type
   Top Packer or Headpipe __________
   Bottom of Tailpipe __________
   Diameter __________ Slot size __________ Set from __________ to __________ feet
   Diameter __________ Slot size __________ Set from __________ to __________ feet
   Gravel packed?  Yes ☑ No ☐ Size of gravel __________
   Placed from __________ to __________ feet
   Surface footage depth __________ Material used in seal:  ☑ Cement grout  ☑ Bentonite  ☑ Puddling clay
   Sealing procedure used:  ☑ Slurry pit  ☑ Temp. surface casing  ☑ Overbore to seal depth
   Method of joining casing:  ☑ Threaded  ☐ Welded  ☐ Solvent Weld
   Cemented between strata __________
   Describe access port __________

6. LOCATION OF WELL
   Sketch map location must agree with written location.
   Subdivision Name __________
   Lot No. __________ Block No. __________
   County __________
   Address of Well Site __________
   (give at least name of road)

7. WATER LEVEL
   Static water level __________ feet below land surface.
   Flowing?  Yes ☑ No ☐
   Artesian closed-in pressure __________ p.s.i.
   Controlled by:  ☑ Valve  ☐ Cap  ☐ Plug
   Temperature __________ °F
   Quality __________
   Describe artesian or temperature zones below __________

8. WELL TEST DATA
   Discharge G.P.M.: __________
   Pumping Level: __________
   Hours Pumped: __________

9. LITHOLOGIC LOG
   Bore Diam. From To Material Water
   12 " 48 " Granitics
   14.7 " 148.7 " Pegmatite
   148.7 " 153.6 " Pegmatite

10. Work started __________ finished __________

11. DRILLER'S CERTIFICATION
   If we certify that all minimum well construction standards were complied with at the time the rig was removed.
   Howard & Wright Drilling
   Address: 2246 Burrell
   Lewiston, Idaho 83501
   Signed by: __________ Date: __________
   (Operator) __________
   (if different than the Drilling Supervisor) __________
AMBER WAVES ESTATES WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 8, 2018


Latitude: 46.758030°  Longitude: -117.138570°  decimal degrees (WGS84)

SE ¼, SE ¼, NE ¼, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1902 or 1912 Kitzmiller Road, Pullman, Wash.; on north side of road

Location Method:
Location is for well, east of well house between homes at 1902 and 1912 Kitzmiller Road; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 27, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| Overburden

Soil
Clay, brown

5 – 48

Wanapum Basalt
Priest Rapids Member
Basalt of Lolo
Basalt
48 – 155

Latah Formation
Vantage Member
Clay, gray
155 – 182

Grande Ronde Basalt
N2 magnetostratigraphic unit
Sentinel Bluffs Member
Basalt
182 – 265

R2 magnetostratigraphic unit(?)
Basalt, soft, black and red
Basalt
Basalt, soft
Basalt
265 – 330
330 – 395
395 – 415
415 – 420
Comments:

Whitman County Tax Parcel 200004515281492, 1902 KITZMILLER RD, PULLMAN 99163, LOT 2 AMBER WAVES ESTATES, LLC KITZMILLER CLUSTER D SHORT PLAT; owners now are STEWART, KELLY D/KELLY A; PO BOX 99, ALBION WA

Whitman County Tax Parcel 200004515281493, 1912 KITZMILLER RD, PULLMAN 99163, LOT 3 AMBER WAVES ESTATES, LLC KITZMILLER CLUSTER D SHORT PLAT; owners now are WATT, KEVIN/TARA MATTHEWS; 906 BOWEN AVE, SAN JORGE CA

Above, well is to left (east) of brown well house

References Cited:
WATER WELL REPORT
Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)
Decommission

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner’s number of well (if more than one)
☒ New well ☐ Reconditioned Method: ☐ Dog ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 10" inches, drilled 58' ft.
Depth of completed well 420' ft.

CONSTRUCTION DETAILS
Casing ☐ Welded ☐ Diam. from 7 3/4" ft. to 8 5/8" ft.
Installed: ☐ Liner inserted 14 1/2" Diam. from 30' ft. to 430' ft.
☐ Threaded ☐ Diam. From 7 3/4" ft. to 8 5/8" ft.

Perforations: ☐ Yes ☐ No
Type of perforator used ☐ Saw cut
SIZE of perfor 2 1/2 in. by 4 in. in. and no. of perfor 251 from 302 to 420.

Screens: ☐ Yes ☐ No ☐ K-Pac Location
Manufacturer’s Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 58' ft.
Material used in seal BENTONITE HOE Plug
Did any strata contain unusable water? ☐ Yes ☐ No
Type of water? Depth of strata
Method of sealing strata off

PUMP: Manufacturer’s Name
Type H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 260' ft. below top of well Date 9-20-16
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal./min. with ft. drawdown after hrs.

Airstest 25 gal./min. with stem set at 420' ft. for 1 hrs.
Artesian flow g.p.m. Date

Temperature of water °F Was a chemical analysis made? ☐ Yes ☐ No

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO
Dirt 0 5
Brown clay 5 48
Mud black shale 48 95
Gray clay 95 155
Mud black shale 155 182
Soft black + red shale 182 265
Hard black shale 265 330
Soft black shale 330 395
Hard black shale 395 415
Soft black shale 415 420

*water @ 40°

RECEIVED
OCT 27 2016
Department of Ecology
Eastern Regional Office

Start Date 9-19-16 Completed Date 9-20-16

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (Print) Brett Ulmer
Driller or trainee License No: 360-132-2649
Drilling Company: Brett Ulmer Drilling
Address: 604 Box 232
City, State, Zip: CATCHUCK, ID. 83522
Contractor’s Registration No: 3-30420TUD4EBK
Date: 10-6-16

Note: To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6441.
Well Log ID: **D0028921**

### Location Information:
Latitude: **46.811852°**
Longitude: **-116.999508°**

### Well Address and (or) Other Location Information:
1025 Timber Lane, Moscow, Idaho; on west side of lane

### Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; driller reported incorrect Township

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>From 0 – 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latah Formation</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediments of Bovill</td>
<td>From 5 – 161</td>
</tr>
<tr>
<td>Sand and clay</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Idaho Batholith</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granite</td>
<td>From 161 – 180</td>
</tr>
</tbody>
</table>

---

1. Could be just weathered granite
2. Brown color, soft 147–161, could be weathered granite
Comments:

Latah County Tax Parcel RP017500000120, owner now is BILADEAU, THOMAS JAY; 1025 TIMBER LN, NEARING'S 3RD ADD, LOT 12, 17 40 5.

[Note that roads in white on right image are incorrectly labeled and located, based on county information on image at left.]

References Cited:
### 1. WELL TAG NO. D 0028921
DRILLING PERMIT NO. J02/L7 '94
Other IDWR No.

### 2. OWNER:
Name: PAUL ANDERS
Address: 1025 TIMBER LANE
City: MOSCOW
State: ID Zip: 83843

### 3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

### 4. USE:
- [ ] Domestic
- [ ] Municipal
- [ ] Monitor
- [ ] Irrigation
- [ ] Thermal
- [ ] Injection
- [ ] Other

### 5. TYPE OF WORK:
- [ ] New Well
- [ ] Modify
- [ ] Abandonment
- [ ] Other

### 6. DRILL METHOD:
- [ ] Air Rotary
- [ ] Cable
- [ ] Mud Rotary
- [ ] Other

### 7. SEALING PROCEDURES:

<table>
<thead>
<tr>
<th>Material</th>
<th>From</th>
<th>To</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>0</td>
<td>22</td>
<td>DRY</td>
</tr>
</tbody>
</table>

- [ ] Was drive shoe used? [X] Y [N] Show Depth(s) 22

### 8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>+1</td>
<td>22</td>
<td>1/4</td>
<td>STEEL</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>180</td>
<td>200PVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe: 
Length of Tailpipe:

### 9. PERFORATIONS/SCREENS:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>180</td>
<td>1/8</td>
<td>90</td>
<td>6</td>
<td>PVC</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### 10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

- [ ] 38 ft. below ground
- [ ] Artesian pressure: lb.
- [ ] Depth flow encountered ft. Describe access port or control devices:
- [ ] WELL CAP

### 11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td>175</td>
<td>1 HR</td>
</tr>
</tbody>
</table>

- [ ] Water Temp: 53
- [ ] Bottom hole temp

### 12. LITHOLOGIC LOG:
(Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore</th>
<th>From</th>
<th>To</th>
<th>Remarks</th>
<th>Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>5</td>
<td>CLAY</td>
<td>CLAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>5</td>
<td>22</td>
<td>GRANITE DECOMPOSED BROWN</td>
<td>GRANITE DECOMPOSED BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>22</td>
<td>45</td>
<td>GRANITE MEDIUM BROWN</td>
<td>GRANITE MEDIUM BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>49</td>
<td>107</td>
<td>GRANITE MEDIUM BROWN</td>
<td>GRANITE MEDIUM BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>107</td>
<td>119</td>
<td>GRANITE MEDIUM BROWN</td>
<td>GRANITE MEDIUM BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>119</td>
<td>147</td>
<td>GRANITE MEDIUM BROWN</td>
<td>GRANITE MEDIUM BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>147</td>
<td>161</td>
<td>GRANITE SOFT BROWN</td>
<td>GRANITE SOFT BROWN</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>161</td>
<td>180</td>
<td>GRANITE MEDIUM WHITE</td>
<td>GRANITE MEDIUM WHITE</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### 13. DRILLER'S CERTIFICATION:
We certify that all minimum well construction standards were complied with at the time this rig was removed.

- Company Name: MCPHERSON & WRIGHT DRILLING
- Firm Official: [Signature] Date: 8/28/2004
- Driller or Operator: [Signature] Date: 8/28/2004

### Additional Information:
- Forward white copy to Water Resources
OSCAR E. ANDERSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 11, 2016

Well Log ID: 171259  Elev (ft): 2540 ±10  Depth (ft): 133  Quad: Albion

Latitude: 46.793628  Longitude: -117.183896  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 7, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1851 Banner Road, Pullman, Wash., on west side of road (downhill)

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; "Box 81, Pullman" on undated driller’s report. Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>5 – 85</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>85 – 88</td>
</tr>
<tr>
<td>Basalt</td>
<td>88 – 115</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>115 – 133</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515074901, 1851 BANNER RD PULLMAN, SE1/4 HARSHAW SMITH SHRT PLAT #1; owner is now SMITH, CORABELLE E; 2.8 acres, 1½ story residence, built in 1922.

Oscar Emmanuel Anderson died in 1993, he helped build the family home in 1927, his wife still lived there in 1993, and they had two daughters, Alice June Harshaw and Corabelle Smith (The Lewiston Tribune, 1993.

Note: The short plat is named after the two daughters, and one daughter is the current owner.

References Cited:

### WELL LOG

**State of Washington**  
**Department of Ecology**

**Record by:** Driller  
**Source:** Well Report

**Location:** State of Washington  
**County:** Whitman

**Map:**  
**Diagram of Section**

**Drilling Co.:** Detray  
**Address:** 1526 15th St, Pullman, WA

**Method of Drilling:** Date: 19-

**Owner:** Oscar C Anderson  
**Address:** Box 81, Pullman, WA

**Land surface, datum:** above below

**SWL:** 60' Date: 19 Dims: 6"x133"  

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Depth Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil</td>
<td></td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>5</td>
<td>85</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td></td>
<td>85</td>
<td>88</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>88</td>
<td>115</td>
</tr>
<tr>
<td>Basalt, scoria, pumice</td>
<td>115</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Casing: - 6&quot;</td>
<td></td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>Gaint: - liner</td>
<td></td>
<td>88</td>
<td>133</td>
</tr>
<tr>
<td>Surface drill - Cuttings</td>
<td>0</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Under - clear - good</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pump Test**  
**Pressure Test:** 12 gpm at 40 DD F. Date

**Air:**

---

Turn up Sheet of sheets
DWAYNE ANDREWS WELL

[DRILLED 1994]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, February 18, 2016

Well Log ID: NA

Elev (ft): 2660 ±10

Depth (ft): 178

Quad: Moscow West

Latitude: 46.686634

Longitude: -117.020939 decimal degrees (WGS84)

1/4, SW 1/4, SW 1/4, Sec. 30, T. 39N, R. 5W

Well Address and (or) Other Location Information:

3125 US 95 South, Moscow, Idaho, on west side of road

Location Method:

Location is for well, as plotted by Bush and others (1998, well 47); Latah County Assessor; Google Earth imagery; topographic map. First name is likely misspelled.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden and Latah Formation (sediments of Bovill)</td>
<td></td>
<td>0</td>
<td>130</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>130</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>157</td>
<td>164</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>164</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand (recorded by driller as decomposed granite)</td>
<td>172</td>
<td>178</td>
<td></td>
</tr>
</tbody>
</table>

42
Comments:

The clay reported between 157–164 ft by driller is interpreted to be sediment that was invaded by the Lolo flow. The basalt above and below that comprise thin units (22- and 8-ft thick, respectively) strongly suggests that they are invasive. The thick clay on top of the uppermost basalt and the clay that was invaded would explain the low yield of 3 gpm that was reported by driller.

Latah County Tax Parcel RP39N05W306315, 3125 HWY 95 S, owner now is NIEHENKE, NORBERT; 10.08 acres, GOVT LOT 4.

There are two wells at this property: Dwayne Andrews well, and Norbert Niehenke well 2 (drilled in 2013.

Mr. Duane S. Andrews died in 2002; retired biological research technician, Forest Service; associated with the University of Idaho’s Research Station in Moscow (Moscow-Pullman Daily News, 2002.

References Cited:


1. DRILLING PERMIT NO. 86-94-N-2012-000

2. OWNER:
Name: Wayne Andrews
Address: Moscow 934 E 3rd
City: Moscow State: ID Zip: 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

<table>
<thead>
<tr>
<th>N</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twp. 39</td>
<td>North [ ] or South [ ]</td>
</tr>
<tr>
<td>Rge. 5</td>
<td>East [ ] or West [ ]</td>
</tr>
<tr>
<td>Sec. 30</td>
<td>SW 1/4 SW 1/4 1/4 1/4</td>
</tr>
<tr>
<td>Gov't Lot</td>
<td>acre</td>
</tr>
<tr>
<td>County: LA TAY</td>
<td></td>
</tr>
</tbody>
</table>

Address of Well Site: 3 mi S Moscow Hwy 95
City: Moscow

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Other

5. TYPE OF WORK:
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD:
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>Amount</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>bentonite</td>
<td>0</td>
<td>50 lbs slurry</td>
</tr>
</tbody>
</table>

Was drive shoe used? [ ] Yes [ ] No
Was drive shoe seal tested? [ ] Yes [ ] No

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>135</td>
<td>364 Steel</td>
</tr>
</tbody>
</table>

Length of Headpipe: Length of Tailpipe:

9. PERFORATIONS/Screens

☐ Perforations
☐ Screen Type

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
1/2 ft. below ground Artesian pressure lb.
Depth flow encountered:

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>361 M</td>
<td>178</td>
<td></td>
<td>3 min</td>
</tr>
</tbody>
</table>

Water Temp. Bottom hole temp. Water Quality test or comments:

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Date</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks: Lithology, Water Quality &amp; Temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Overburden clay</td>
<td>0 130</td>
<td>130</td>
</tr>
<tr>
<td>Basalt firm</td>
<td>135 137</td>
<td>137</td>
</tr>
<tr>
<td>Clay</td>
<td>157 164</td>
<td>164</td>
</tr>
<tr>
<td>Soft basalt</td>
<td>164 173</td>
<td>173</td>
</tr>
<tr>
<td>Dec, granit</td>
<td>172 178</td>
<td>178</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

If we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Wittwell Drilling
Firm Official: Carl Witt
Firm No. Date: 5/6/94

Supervisor or Operator: Roger Witt
Date: 5/6/94

(If once if Firm Official & Operator)
MERLE BACHMAN WELL
[DRILLED IN 1992, REAMED IN 1993]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: NA Elev (ft): 2540 ±10 Depth (ft): 180 7.5’ Quad: Potlatch

Latitude: 46.929734° Longitude: -116.941429° decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 3, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1094 Meckel Lane, Potlatch, Idaho; on north side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 23, 2018 — well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Loess, clay</td>
<td>2 – 41</td>
</tr>
<tr>
<td>*Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>41 – 90</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>90 – 114</td>
</tr>
<tr>
<td>Basalt</td>
<td>114 – 158</td>
</tr>
<tr>
<td>*Basalt, weathered</td>
<td>158 – 175</td>
</tr>
<tr>
<td>Basalt</td>
<td>175 – 180</td>
</tr>
</tbody>
</table>

*Onaway Basalt is exposed along east side of Highway 95; thus, the basal part of this well could be in Onaway.
Comments:

Latah County Tax Parcel RP41N05W030523, owner now is DAVIS LIVING TRUST, 1094 MECKEL LN, 21.80
AC TAX #7042, 3 41 5, MH.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL OWNER
Name: Zachman
Address: 83955 Driftwood Rd, 83855
Drilling Permit No: 87-92-N-40
Water Right Permit No: 

2. NATURE OF WORK
☐ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel ☐ Concrete ☐ Other
Thickness Diameter From To
☐ 6 inches 18 inches 47 feet 47 feet

Was casing drive shoe used? ☐ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☐ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☐ Torch ☐ Gun
Size of perforation inches by inches

Well screen installed? ☐ Yes ☐ No
Manufacturer's name
Type ☐ Other
Model No.

Diameter Slot size Set from feet to feet
Gravel packed? ☐ Yes ☐ No ☐ Size of gravel
Placed from feet to feet
Surface seal depth ☐ Material used in seal: ☐ Cement grout
☐ Bentonite ☐ Pudding clay
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Wald
☐ Cemented between strata

Describe access port

6. LOCATION OF WELL
Sketch map location must agree with written location

7. WATER LEVEL
Static water level 98 feet below land surface.
Flowing? ☐ Yes ☐ No G.P.M. flow 
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature O.F. Quality
Describe artesian or temperature zones below:

8. WELL TEST DATA
☐ Pump ☐ Baller ☐ Air ☐ Other
Discharge G.P.M. Pumping Level Hours Pumped
100 G.P.M. Constant

9. LITHOLOGIC LOG

10. Work started 8-3-92 finished 9-1-92

11. DRILLERS CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Michael & Wright Drilling
Firm Name: 2248 Burnell
Address: Lewiston, Idaho 83501
Date: 9-16-92
Signed by (Firm Official) Michael & Wright Drilling
and (Operator) David McPherson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources,
within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name: Miece K. Brehmnan
Address: P.O. Box 444, Pocatello, ID 83255
Drilling Permit No.: 87-92-7N-0040-091
Water Right Permit No.: 87-07165

2. NATURE OF WORK
☑ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase  ☐ Modification
☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE
☒ Domestic  ☐ Irrigation  ☐ Monitor
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other: _______ (specify type)

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Auger  ☐ Reverse rotary
☐ Cable  ☐ Mud  ☐ Other: _______ (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other: _______
Thickness Diameter From To
3-50 inches 6 inches + 1 feet 4 3/0 feet
1-29 inches 1 inches feet feet
Was casing drive shoe used? ☐ Yes  ☐ No
Was a packer or seal used? ☐ Yes  ☐ No
Perforated? ☐ Yes  ☐ No
How perforated? ☐ Factory  ☐ Knife  ☐ Torch  ☐ Gun
Size of perforation: inches by inches
Number of perforations: From To
perforations feet feet
perforations feet feet
Well screen installed? ☐ Yes  ☐ No
Manufacturer: _______ Type: _______
Top Packer or Headpipe:________
Bottom of Tailpipe:________
Diameter:________ Slot size:________ Set from:________ feet to:________ feet
Diameter:________ Slot size:________ Set from:________ feet to:________ feet
Gravel packed? ☐ Yes  ☐ No  ☐ Size of gravel:________
Placed from:________ feet to:________ feet
Surface seal depth:________ Material used in seal:________ Cement grout
Bentonite  ☐ Puddling clay
Sealing procedure used:________
☐ Temp. surface casing  ☐ Overcore to seal depth
Method of joining casing:________
☐ Threaded  ☐ Welded  ☐ Solvent Weld  ☐ Cemented between strata
Describe access port:________

6. LOCATION OF WELL
Sketch map location must agree with written location.
Subdivision Name:________
Lot No.:________ Block No.:________
County:________
Address of Well Site:________
(give at least name of road)
N 4° 46' 14" Sec. 3 T. 41 N R. 5 E or W _______

7. WATER LEVEL
Static water level:________ feet below land surface.
Flowing? ☐ Yes  ☐ No  ☐ G.P.M. flow
Artesian closed-in pressure:________ p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature:________ °F. Quality:________
Describe artesian or temperature zones below:

8. WELL TEST DATA
☐ Pump  ☐ Bailier  ☐ Air  ☐ Other
Discharge G.P.M.:________
Pumping Level:________
Hours Pumped:________

9. LITHOLOGIC LOG
Bore Diam. From To Material Water
Dip:________ Depth:________
8981 2

10. REamed Hole From 6-8"
Work started:________ finished:________

11. DRILLER'S CERTIFICATION
☐ We certify that all minimum well construction standards were complied with at the time the rig was removed.

McPherson & Wright Drilling
2246 Burrell
Lewis, Idaho 83501
(208) 843-2200
Ray McPherson

(Operator) (if different than the Drilling Supervisor)
STEVEN BACKMEYER WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 24, 2016

Well Log ID:  159221  Elev (ft):  2310 ±10  Depth (ft):  200  7.5’  Quad:  Elberton

Latitude:  46.985196  Longitude:  -117.221503  decimal degrees (WGS84)

⅓,  SW ⅔,  NE ⅔,  Sec. 11 ,  T. 17 ,  R. 44

Well Address and (or) Other Location Information:
Park Street, Elberton, Wash., north of the river. "Lots 1, 2, 3, 8, 9, 10 in Block 9 and Lots 1, 2, 3, 4, 5, and 6 in Block 19, First Addition to Elberton" according to driller's report.

Location Method:
Whitman County Assessor; Google Earth imagery; topographic map. Elberton quadrangle Well 5 of Bush and others (2005 [2006]) which was incorrectly mapped south of the river.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 25</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member and Roza Member, undivided</td>
<td>25 – 31</td>
</tr>
<tr>
<td>Clay, brown, and basalt, broken</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>31 – 160</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>160 – 165</td>
</tr>
<tr>
<td>Basalt</td>
<td>165 – 200</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004417111200(?), NE NW1/4 & PT S1/2 RR 2.9 5 AC, owner is now DIVINE, DORIS (PO BOX 335, GARFIELD WA); 40.0 acres.

Above, from Plat maps of Thornton and Elberton (Anderson Map Company, 1910).
References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Steven F. Backmeyer

LOCATION OF WELL: County: Whitman
Draining and distance from nearest subdivision corner: Lots 1, 2, 3, 8, 9, 10 in Block 9 and Lots 1, 2, 3, 4, 5, 6 in Block 19

(4) TYPE OF WORK:
- Owner's number of well: [ ] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other
- Method: [ ] New well [ ] Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [ ] Jetted

(5) DIMENSIONS:
- Diameter of well: 6 inches
- Drilled: 200 ft.
- Depth of completed well: 200 ft.

(6) CONSTRUCTION DETAILS:
- Casing installed: 6" Diam. from 6" to -31 ft.
- Threaded [ ] Welded [ ]
- Perforations: Yes [ ] No [ ]
- Type of perforator used: [ ]
- Size of perforations from ft. to ft.
- Screws: Yes [ ] No [ ]
- Manufacturer's Name:
  Type:
  Model No.:
  Diam. Slot size from ft. to ft.
  Diam. Slot size from ft. to ft.
- Gravel packed: Yes [ ] No [ ]
- Size of gravel:
  Gravel placed from ft. to ft.
- Surface seal: Yes [ ] No [ ]
- To what depth: 25 ft.
- Material used in seal: bentonite
- Did any strata contain unusable water? Yes [ ] No [ ]
- Type of water:
- Depth of strata:
- Method of sealing strata off:

(7) PUMP:
- Manufacturer's Name:
- Type:
- H.P.:

(8) WATER LEVELS:
- Land-surface elevation above mean sea level: 2205 ft.
- Static level:
- ft. below top of well
- Date 1/8/82
- Artesian pressure:
- lbs. per square inch
- Date
- Artesian water is controlled by:
- (Cap, valve, etc.)

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes [ ] No [ ] If yes, by whom:
- Yield: 12 gal./min. with ft. drawdown after hrs.
- ESTIMATED ATRIFIT

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
  - Time: Water Level:
    - Time: Water Level:
      - Time: Water Level:

- Date of test
- Water test:
  - gal./min. with ft. drawdown after hrs.
  - Artesian flow:
  - g.p.m.
  - Date
  - Temperature of water: Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
- Formation: Describe by color, character, size of material and structure, and show thickness of strata and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation:
  - MATERIAL
  - FROM
  - TO
  - Top Soil
  - Brown Clay
  - Brown Clay & Broken Basalt
  - Basalt
  - Broken Basalt w/Water
  - Basalt

- 200' PVC Liner installed
- Drive shoe installed

RECEIVED
JUL 15 1982
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started: July 7, 1882. Completed: July 8, 1882

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: PONDEROSA DRILLING & DEVELOPMENT
(Person, firm, or corporation) (Type of print)

Address: E. 6010 BROADWAY, Spokane, WA 99206

[Signed]: Tom Richardson (Well Driller)

License No. 1295 Date: July 8, 1982

(USE ADDITIONAL SHEETS IF NECESSARY)
RANDY BALDREE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: 161374  Elev (ft): 2415 ±10  Depth (ft): 105  Quad: Elberton

Latitude: 46.876502  Longitude: -117.227831  decimal degrees (WGS84)

 Quarter, Quarter, NE Quarter, Sec. 14, T. 16 N, R. 44 E

Well Address and (or) Other Location Information:
8232 South Palouse River Road, Colfax, Wash., north side of road; "Bodey" on mailbox; well is southeast of house, east of large tree and wire fence that borders easternmost driveway

Location Method:
Location is for well at only house in NE¼ of section 14; Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 9 of Bush and others (2005 [2006]). Site visits (May 24, 2016; September 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 10</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>10 – 34</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>34 – 45</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>45 – 70</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>70 – 71</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>71 – 100</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>100 – 105</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004416141490, NE1/4 3 AC IN SI/2 NO OF RD, owner now is BODEY, JESSICA; 3.0 acres; grantors were BALDREE, RANDEL on 5/17/2012, and BODEY, JOHN D on 3/25/2016, both to Jessica Bodey.

References Cited:

WATER WELL REPORT

STATE OF WASHINGTON

START CARD NO. M059895
Unique Well I.D. # ABV965
Water Right Permit No.

OWNER: BALDRE, RANDY
Address: ROUTE 1, BOX 209, COLFAX, WA 99111

LOCATION OF WELL: COUNTY WHITMAN
Street Address of Well: S 1/4 NE 1/4 Sec 14 T 16 N., R 44 E WM

PROPOSED USE: IRRIGATION

TYPE OF WORK: Owner's Number of well
If more than one
NEW WELL

DIMENSIONS: Diameter of well 6 inches
Drilled 105 ft. Depth of completed well 105 ft.

CONSTRUCTION DETAILS:
Casing installed: 6" Dia. from +2 ft. to 34 ft.
STL CASING/PVC 4" Dia. from -5 ft. to 100 ft.
" Dia. from ft. to ft.

Perforations: YES
Type of perforator used SKILL SAW
SIZE of perforations 1/8 in. by 6 in.
140 perforations from 95 ft. to 105 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: NO
Manufacturer's Name
Type
Diam. slot size ft. to ft.
Diam. slot size ft. to ft.

Gravel packed: NO
Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES
To what depth? 10 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water:
Depth of strata ft.
Method of sealing strata off OVERBORE

PUMP: Manufacturer's Name
Type

WATER LEVELS:
Land-surface elevation
above mean sea level...
Static level 10 ft. below top of well Date 03/19/96
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? No If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Recovery data
Time Water Level Time Water Level Time Water Level

Date of test / / 
Bailer test gal./min. ft. drawdown after hrs.
Air test 20 gal./min. w/ stem set at 100 ft. for 1 hrs.
Artesian flow S.P.M. Date
Temperature of water Was a chemical analysis made? No

WELL LOG

MATERIAL
FROM TO
TOPSOIL 0 10
CLAY GREY HARD 10 34
BASALT BLACK BROKEN 34 45
BASALT BLACK HARD 45 70
BASALT FRACTURED 70 71
BASALT BLACK HARD 71 100
BASALT BLACK BROKEN 100 105

Work started 03/18/96 Completed 03/19/96

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME PONDEROSA DRILLING (Person, firm, or corporation) (Type or print)
ADDRESS E 6010 BROADWAY
License No. 2257
(SIGNED) [Signature]
Registration No. PO-NP-EI*248JE Date 03/19/96
ARREED BARABASZ WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018

Quad: Palouse

[Not in WA DOE database]

Latitude: 46.918153° Longitude: -117.079954° decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 36 , T. 17 N , R. 45 E

Well Address and (or) Other Location Information:
1901 Tidwell Road, Palouse, Wash., on west side of road, north of State Route 27 and northeast of a bend in the Palouse River

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 24, 2018, but did not see well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>13</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>137</td>
</tr>
<tr>
<td>Basalt</td>
<td>138</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>202</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>218</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>233</td>
</tr>
<tr>
<td>Sand, fine</td>
<td>239</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 826850000000040, 1901 TIDWELL RD, PALOUSE 99161, PALOUSE S1/2 36-17-45 1.09 AC LESS ST HY, owner is BARABASZ, ARREED F; 1 acre; one story residence built in 1979.

Well log provided in Ralston (1996, p. 19).

References Cited:

17/45 13 sw/se Rogers DTW = 81' Q = 25 gpm
0 - 1 soil
1 - 10 clay
10 - 15 sandy clay
15 - 22 basalt
22 - 23 basalt, broken
23 - 213 basalt
213 - 237 sandy clay
237 - 316 clay
316 - 373 decomposed granite, water
373 - 375 blue clay

17/45 13 se/se Kriebel DTW = ?? Q = 12 gpm
0 - 5 clay
5 - 213 basalt
213 - 217 clay
217 - 230 sand

17/45 28 nw/nw Paul Rogers DTW = ?? Q = 15 gpm
0 - 210 clay, tan
210 - 298 clay, brown
298 - 330 argillite, fractured

17/45 30 Shoemaker DTW = 24' Q = 20 gpm
0 - 58 clay
58 - 61 boulders
61 - 76 clay
76 - 80 boulders
80 - 90 clay
90 - 100 basalt
100 - 161 clay and gravels
161 - 175 rock
175 - 220 clay
220 - 229 rock
229 - 270 clay
270 - 355 basalt
355 - 367 clay
367 - 381 broken rock
381 - 392 broken rock and clay
392 - 421 shale and rock

17/45 36 se/sw A. Barabasz DTW = ?? Q = 50 gpm
0 - 2 soil
2 - 13 clay
13 - 137 basalt
137 - 138 basalt, weathered
138 - 202 basalt
202 - 218 basalt, weathered
218 - 233 clay
233 - 239 sandy clay
239 - 255 fine sand, water

TED BEASLEY WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, July 17, 2016; November 9, 2017

Well Log ID: NA Elev (ft): 2392 Depth (ft): 250 7.5’ Quad: Albion

Latitude: 46.76967 Longitude: -117.22250 decimal degrees (WGS84)

| Well Address and (or) Other Location Information: |
| 254 Brayton Road, Pullman, Wash., on east side of road; about 1500 ft south of Pullman-Albion Road intersection, fourth house south of intersection |

| Location Method: |
| Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-04); Whitman County Assessor; Google Earth imagery; topographic map. |

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>11(?)</td>
</tr>
<tr>
<td>Basalt</td>
<td>38</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>104</td>
</tr>
<tr>
<td>Clay, green, and basalt</td>
<td>128</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>140</td>
</tr>
<tr>
<td>Basalt</td>
<td>159</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>203</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
</tbody>
</table>
Meyer Ridge Member(?)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, soft</td>
<td>225</td>
<td>230</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>230</td>
<td>238</td>
</tr>
<tr>
<td>Basalt</td>
<td>238</td>
<td>240</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>240</td>
<td>250</td>
</tr>
</tbody>
</table>

Comments:

Moxley (2012) interpreted the basalt below the sand and clay interbed as belonging to the Roza Member (of the Wanapum Basalt). I instead correlated the red zones to the red zones in the Meyer Ridge Member (of the Grande Ronde Basalt) at the DOE City Yard wells which would make the basalt beneath the interbed to be the Sentinel Bluffs Member (of the Grande Ronde Basalt). Either interpretation is acceptable.

Whitman County Tax Parcel 122000004000000, 254 BRAYTON RD, SURVEY OF PULLMAN REALTY 1 ACRE, owner is now MAGNUSON, NANCY S.

Ted Beasley was a real estate agent who died in 2008 (Kimball Funeral Home and Crematory, 2008).
References Cited:


## WELL LOG

**WEATHERED BASALT**

**SAND**

**GREEN CLAY**

**FRACURED BASALT**

**Porous BASALT**

**62 FT Basalt**

**RED BASALT**

**BASALT**

**RED BASALT**

### ADCOCK AIR DRILLING

511 AIRWAY DR.
LEWISTON, IDAHO
PHONE 211-3601

6 TO 12 INCH AIR DRILLED WELLS

**OWNER OF WELL:** Ted Beasley

**LOCATION OF WELL:** Pullman

**NEAREST POST OFFICE:** Pullman

**STATE:** Wash.

**COUNTY:** Whitman

**DRILLING BEGUN:** 1/1/56

**WELL FINISHED:** 1/30/56

### WELL RECORD

**CASING SIZE:** 4" x 6.5"

**CASING DEPTH:** 250 FT

**HOLE SIZE:** 8"

**HOLE DEPTH:** 230 FT

**CAPACITY OF WELL:** 1/2 GPM

**PUMP SETTINGS:** 2.25 FT

**CASING PERFORATIONS:** 24 FT in Bottom of Casing

### INVOICE

**DATE:** 7/31/56

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 FT of 8&quot; in Hole</td>
<td>$10.00</td>
<td>2500.00</td>
</tr>
<tr>
<td>220 FT of liner</td>
<td>.25</td>
<td>55.00</td>
</tr>
<tr>
<td>40 FT of skin casing</td>
<td>.00</td>
<td>40.00</td>
</tr>
<tr>
<td>100 surface seal</td>
<td>5.00</td>
<td>500.00</td>
</tr>
</tbody>
</table>

**TOTAL AMOUNT DUE:** $2,742.75

**MEMO:**

[Signature]

[Date] 7/31/56

[Stamp: 2/2/56]
BEASLEY-KINCAID PARTNERSHIP WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 18, 2018

Well Log ID: 191503  Elev (ft): 2620 ±10  Depth (ft): 225  Quad: Pullman

Latitude: 46.711937°  Longitude: -117.214717°  decimal degrees (WGS84)

NE ¼, SW ¼, Sec. 12, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
20991 U.S. 195, Pullman, Wash.; north of highway

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼-¼ Section

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden Clay</td>
<td>0</td>
</tr>
<tr>
<td>Saddle Mountains Basalt Weissenfels Ridge Member or Asotin Member Basalt</td>
<td>125</td>
</tr>
</tbody>
</table>

*The lack of rock chip chemistry in this area means that the interpreted sequence may not be correct.
Comments:

Whitman County Tax Parcel 200004414123190, 20991 SR 195, SW N OF HWY 195 20991 SR 195 (SITE), owner now is JENSEN, CHRIS S; 6.0 acres; 02/01/06: grantor was FEDERAL NATIONAL MTG to JENSEN, CHRIS S.

References Cited:
### WATER WELL REPORT

**State of Washington**

**Owner:** Beasley-Kincad Partnership

**Address:** 20991 SR 195, Pullman, WA

**Location:** County - Whitman

**Street Address of Well:** 20991 SR 195

**Proposed Use:** [ ] Domestic

[ ] Irrigation

[ ] Industrial

[ ] Municipal

[ ] Dairy

[ ] Test Well

[ ] Other

**Type of Work:**

- [ ] Abandoned

- [ ] New well

- [ ] Deepened

- [ ] Reconditioned

- [ ] Method: Dug

- [ ] Cable

- [ ] Bonded

- [ ] Driven

- [ ] Rotary

- [ ] Jetted

**Dimensions:**

- Diameter of well: 8 inches

- Depth of completed well: 225 feet

**Construction Details:**

- Casing Installed: 8

- Diameter, ft.: 2.5

- Length, ft.: 137.5

- Welded

- Liner Installed

- Threaded

- Diameter, ft.: 16

- Length, ft.: 225

- Perforations: Yes [ ] No [x]

- Type of perforator used: Saw

- Size of perforations: 1/8

- Size of gravel: 7

- Size of gravel: 50

- Gravel placed from: 185 ft.

- Gravel placed from: 225 ft.

- Surface seal: Yes [x]

- Size of gravel: 137.5 ft.

- Material used in seal: Bentonite

- Did any strata contain unusable water? Yes [x]

- No [ ]

- Type of water:

- Depth of strata

- Method of sealing strata off

**Pump:**

- Manufacturer's Name

- Model No.

- Type

- Diameter, ft.: 1

- Slot size, ft.: 1

- Diameter, ft.: 1

- Slot size, ft.: 1

- Gravel packed: Yes [x]

- No [ ]

- Size of gravel

- Gravel placed from

- Ft.

- To what depth?

- 137.5 ft.

- Material used in seal

- Bentonite

- Did any strata contain unusable water?

- Yes [x]

- No [ ]

- Type of water

- Depth of strata

- Method of sealing strata off

**Water Levels:**

- Static level

- Date: 9-2-99

- Artisan pressure

- Date: 9-2-99

- Artisan water is controlled by

- Cap, valve, etc.

**Well Tests:**

- Drawdown is amount water level is lowered below static level

- Was a pump test made? Yes [x]

- No [ ]

- If yes, by whom?

- Yield:

- Gal/min.

- With ft. drawdown after

- Hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

- Time

- Water Level

- Time

- Water Level

- Time

- Water Level

- Date of test

- Bailer test:

- Gal/min.

- With ft. drawdown after

- Hrs.

- Almost

- Gal/min.

- With static set at

- Ft.

- For

- Hrs.

- Artisan flow

- G.P.M.

- Date: 9-2-99

- Temperature of water

- Was a chemical analysis made? Yes [x]

- No [ ]

**Well Constructor Certification:**

I, Stuivenga Vessey Drilling, (Name)

(Address)

(Signed)

Licence No.

(Registration)

Date:

(Use Additional Sheets if Necessary)

Ecology is an Equal Opportunity and Affirmative Action employer. For additional accommodation needs, contact the Water Resources Program at 407-6600. The TDD number is (206) 407-8006.
**MARK BECHTEL WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 14, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>D0045082</th>
<th>Elev (ft):</th>
<th>2761</th>
<th>Depth (ft):</th>
<th>700</th>
<th>7.5’ Quad:</th>
<th>Robinson Lake</th>
</tr>
</thead>
</table>

Latitude: 46.76893  
Longitude: -116.935307  
decimal degrees (WGS84)

¼ SW ¼ NW ¼, Sec. 35T. 40N, R. 5 W

**Well Address and (or) Other Location Information:**
3715 Moscow Mountain Road, Moscow, Idaho; on south side of road

**Location Method:**
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 163, well sample 8); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>21</td>
<td>350</td>
</tr>
<tr>
<td>*Idaho Batholith</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granite, soft</td>
<td>350</td>
<td>418</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>418</td>
<td>590</td>
</tr>
<tr>
<td>Granite, white</td>
<td>590</td>
<td>612</td>
</tr>
<tr>
<td>Granite, soft, fractured</td>
<td>612</td>
<td>700</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP40N05W352505, owner now is ANDERSON, GAYLE M; 3715 MOSCOW MTN RD; 6.17 AC TAX #6652; 35 40 5.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 00 45082
   DRILLING PERMIT NO. 841098
   Water Right or Injection Well No.

2. OWNER:
   Name MARK BECHTEL
   Address 1041 Comp Can Way, ID
   City Troy
   State ID Zip 83871

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub, or Directions to well.
   Twp. 40 North □ South □
   Rge. 5 East □ West □
   Sec. 35 1/4 1/4 N 1/4 W 1/4
   Gov't Lot • County LATAH
   Lat. ° Long. °
   Address of Well Site 20 miles on min. view Rd City MCDOW
   (Give at least name of road = Distance to Road or Landmark)
   Lt. Blk. Sub. Name

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD:
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   Seal Material From To Weight / Volume Seal Placement Method
   Bentonite 0 21 450 Top Gun
   Was drive shoe used? □ N Shoe Depth(s) 3-1/2'
   Was drive shoe sealed? □ N How? Air Pressure

8. CASING/LINER:
   Diameter From To Gauge Material Casing Liner Welded Threaded
   6' 12' -354 250 Steel
   Length of Headpipe Length of Tailpipe
   Packer □ Y □ N Type

9. PERFORATIONS/SCREENS Packer TYPE
   Perforation Method Screen Type & Method of Installation
   From To Slot Size Number Diameter Material Casing Liner

10. FILTER PACK
   Filter Material From To Weight / Volume Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
   10 ft. below ground Artesian pressure □ lb.
   Depth flow encountered □ ft. Describe access port or control devices:
   Top of casing

12. WELL TESTS:
   • Pump □ Bailer □ Air □ Flowing Artesian
   Yield gal./min. Drawdown Pumping Level Time
   5
   Water Temp. ° 100 Bottom hole temp.
   Water Quality test or comments:
   Depth first Water Encounter

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
   Water
   Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
   10 0 21 Sandy Clay
   6 1/2 330 □
   6 350 1/2 Soft Granite
   6 1/2 352 Med Hard Granite
   6 390 1/2 White Limestone Granite (soft)
   6 42 700 Soft limestone Granite

14. DRILLER'S CERTIFICATION
   We certify that all minimum well construction standards were complied with at the
time the rig was removed.
   Company Name
   Principal Driller
   and Driller or Operator II

   Operator I
   Principal Driller and Rig Operator Required.
   Operator I must have signature of Driller/Operator II.
BILL BECK WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 16, 2016

Well Log ID: 163540  Elev (ft): 2800  Depth (ft): 506  7.5’  Quad: Viola

Latitude: 46.792956  Longitude: -117.042759  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 17 , T. 15 N , R. 46 E

Well Address and (or) Other Location Information:
3682 Estes Road, Pullman, Wash.; well is south of long driveway west off road

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>To 28</td>
</tr>
<tr>
<td>*Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Alternating firm and soft zones</td>
<td>From 28</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>To 203</td>
</tr>
<tr>
<td>Granite, firm</td>
<td>From 203</td>
</tr>
<tr>
<td></td>
<td>To 506</td>
</tr>
</tbody>
</table>
Comments:

*Driller logged as granite. It is very difficult to distinguish weathered granite from slightly transported sediments of Bovill. I chose the break between alternating soft and firm at 203 ft in depth to be the contact between the sediments of Bovill and granite. Oral reports of deep, soft dry wells along Estes and Estes Warehouse roads have been noted.

Whitman County Tax Parcel 200004615171901, 3682 ESTES RD, PULLMAN, NE1/4 PT LOT 1, owner is BECK, WILLIAM; 1.0 acre; 1½ story residence built in 1985.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Bill Bock  
**Address:** 214 Box 91B Pullman NE NE Sec. 12 T. 15 N. R. H. W. M.

---

**LOCATION OF WELL:** Whitman County

---

**STREET ADDRESS OF WELL:**

---

**PROPOSED USE:**
- Domestic
- Irrigation
- Municipal
- Industrial

**TYPE OF WORK:**
- Abandoned
- New well
- Deepened
- Reconditioned
- Driven
- Bored
- Cable
- Rotary
- Jetted

**DIMENSIONS:**
- Diameter of well: 8"  
- Depth of completed well: 46 ft

---

**CONSTRUCTION DETAILS:**
- **Casing installed:**
  - Diam from: 8"  
  - To: 1"  
  - Depth: 129 ft
- **Welded**
- **Liner installed:**
  - Diam from: 8"  
  - To: 4  
  - Depth: 343 ft
- **Threaded**
- **Perforations:**
  - Yes
  - Size of perforations:
  - Perforations from:
    - Diam from: 8"  
    - To: 4"  
    - Depth: 343 ft
- **Screens:**
  - Yes
  - Manufacturer's Name:
- **Gravel packed:**
  - Yes
  - Size of gravel:
- **Gravel placed from:**
  - To:
- **Surface seal:**
  - Yes
  - To:
- **Material used in seal:**
  - **Did any strata contain usable water?**
  - **Type of water?**
  - **Method of sealing strata off**

---

**PUMP:**
- **Manufacturer's Name**
- **Type**

---

**WATER LEVELS:**
- **Static level:**
  - 60  
  - 4 ft below top of well
- **Date:** 5/1/96
- **Artesian pressure:**
  - 5 lbs per square inch
- **Artesian water is controlled by:**
  - **Date:**

---

**WELL TESTS:**
- **Drawdown test:**
  - Time:
  - Water Level:
  - Recovery time (when pump turned off): 4 ft
  - Water Level:

---

**WELL CONSTRUCTOR CERTIFICATION:**
- **I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.**

**NAME:** W.T. F. Well Drilling

---

**License No.: 0623**

---

**Address:** 214 Box 91B Pullman NE NE Sec. 12 T. 15 N. R. H. W. M.

---

**Date:** 6/1/96

---

**(USE ADDITIONAL SHEETS IF NECESSARY)**
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 2, 2016

Well Address and (or) Other Location Information:
1095 O’Donnell Road (formerly 1200 Nottingham Place), Moscow, Idaho; south of O’Donnell Road, at southeast end of Clairmont Road.

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. Thirty acres south of O’Donnell Road (per driller’s report). Gated entrance to property; drove by November 18, 2016.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Palouse Formation or Latah Formation (Sediments of Bovill)(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>106</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>127</td>
</tr>
<tr>
<td>Sand</td>
<td>148</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W369086, 1095 O'DONNELL RD, owner now is DOWLING, KAREN.

Above, photo for 1200 Nottingham Place, Moscow, Idaho (Zillow.com, 2016).

Rick and Rosetta Beebe lived at 1200 Nottingham Place in 2013 (City of Moscow, 2013), which apparently is the southern extension of Clairmont Road.

References Cited:


1. DRILLING PERMIT NO. 87-96-N-0011-000
Other IDWR No.

2. OWNER:
Name: Richard C. Beebe
Address: 1232 Tamarack
City: Moscow
State: ID Zip: 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. USE:
[ ] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation

5. TYPE OF WORK check all that apply
   [X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD
   [X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES
<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENZINE 1 1/11 1/2</td>
<td>DRY</td>
<td></td>
</tr>
</tbody>
</table>

Was drive shoe used? [ ] Y [ ] N Shoe Depth(s)
Was drive shoe seal tested? [ ] Y [ ] N How?

8. CASING/LINER:
<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>100</td>
<td>180</td>
<td>40</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe: Length of Tailpipe:

9. PERFORATIONS/SCREENS
   [X] Perforations Method: SAW
   [ ] Screens Screen Type:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>145</td>
<td>163</td>
<td>1/2 x 3/4</td>
<td>30</td>
<td>1/2&quot;</td>
<td>PVC</td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    4 ft. below ground Artesian pressure ____________ lb.

   Depth flow encountered ____________ ft. Describe access port or control devices:

SESE 36 ft N 45 W

11. WELL TESTS:
    Yield gal./min. Drawdown Pumping Level Time
    156.00

   Water Temp. __________________________ Bottom hole temp. ________________________

   Water Quality test or comments: __________________________ Depth first Water Encountered ________________________

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A0</td>
<td>200</td>
<td>30TL</td>
<td>CLAY</td>
<td>1A2</td>
</tr>
<tr>
<td>1A4</td>
<td>121</td>
<td>122</td>
<td>&quot;</td>
<td>1A5</td>
</tr>
<tr>
<td>1A6</td>
<td>150</td>
<td>160</td>
<td>CLAY</td>
<td>1B0</td>
</tr>
</tbody>
</table>

RECEIVED
NORTHERN IDWR
JAN 2 1996

13. DRILLER'S CERTIFICATION
   I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

   Meperson & Wright Drilling
   2246 Burrell
   Lewiston, Idaho 83501
   (208) 743-7295

   Firm Name: Meperson & Wright Drilling
   Firm No: 0376

   Firm Official: __________________________ Date: __________
   and
   Supervisor or Operator: __________________________ Date: __________
   (Sign once if Firm Official & Operator)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 2, 2016

Well Log ID: D0013726  Elev (ft): 2690 ±10  Depth (ft): 105  Quad: Viola

Latitude: 46.758293  Longitude: -117.024660  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1095 O’Donnell Road (formerly 1200 Nottingham Place), Moscow, Idaho; south of O’Donnell Road, at southeast end of Clairmont Road.

Location Method:
Assumed location is for well house(?) near pond; Latah County Assessor; Google Earth imagery; topographic map. Gated entrance to property; drove by November 18, 2016.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 7</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>7 – 57</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td>Basalt</td>
</tr>
<tr>
<td></td>
<td>57 – 86</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>86 – 93</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>93 – 105</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W369086, 1095 O'DONNELL RD, owner now is DOWLING, KAREN.

Above, photo for 1200 Nottingham Place, Moscow, Idaho (Zillow.com, 2016).

Rick and Rosetta Beebe lived at 1200 Nottingham Place in 2013 (City of Moscow, 2013), which apparently is the southern extension of Clairmont Road.

References Cited:


RECEIVED
10/19/00

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL TAG NO. D 60 13726

2. OWNER:
   Name: Richard Beebe
   Address: 1200 Nottingham
   City: Moscow
   Zip: 83843

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other

5. TYPE OF WORK check all that apply
   (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   SEAL/FLTR PACK
   Material From To
   Bentonite 0 78
   Amount 500 #
   Method Top Pour

   Was drive shoe used? □ Y □ N
   Shoe Depth(s) _
   Was drive shoe seal tested? □ Y □ N
   HOW? _

8. CASING/LINER:
   Diameter From To
   8 & 2 56
   Gauge 60
   Material Steel
   Casing 0 5
   Liner 100 6
   Material PVC

   Length of Headpipe
   Length of Tailpipe

9. PERFORATIONS/SCREENS
   X Perforations Method SAW
   Screens
   Screen Type

   From To Slot Size Number Diameter Material Casing Liner
   93 105 7/16 72 6 PVC □ □

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    65 ft. below ground Artesian pressure __ lb.

    Depth flow encountered __ ft. Describe access port or control devices:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
   Water
   Remarks: Lithology, Water Quality & Temperature
<table>
<thead>
<tr>
<th>Bone</th>
<th>From</th>
<th>To</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>10  0 7</td>
<td>10 9 0 7</td>
<td>SANDY CLAY</td>
<td></td>
</tr>
<tr>
<td>2 8 9</td>
<td>7 8 9</td>
<td>SAND</td>
<td></td>
</tr>
<tr>
<td>7 8 6 9</td>
<td>9 3 7 6</td>
<td>Yellow Clay</td>
<td></td>
</tr>
</tbody>
</table>

13. DRILLER’S CERTIFICATION
   "We certify that all minimum well construction standards were complied with at
   the time the rig was removed.

   Company Name: WILEN KOTT DRILLING
   Firm No. 125
   (Sign once if Firm Official & Operator)
   Driller or Operator Date 10-2-00

   Date: Started 9-29-00 Completed 10-3-00

   FORWARDED WHITE COPY TO WATER RESOURCES

   77
FRANK BENNETT WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 2016

<table>
<thead>
<tr>
<th>Well Log ID: NA</th>
<th>Elev (ft): 2610 ±10</th>
<th>Depth (ft): 300</th>
<th>7.5’</th>
<th>Quad: Moscow East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.716164</td>
<td>Longitude: -116.984875</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW ¼, SE ¼, SE ¼, Sec. 17, T. 39N, R. 5W</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
1020 E Palouse River Drive, Moscow, Idaho; on north side of road, west of South Mountain View Road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller’s report. Site visit (September 20, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>2 – 95</td>
</tr>
<tr>
<td>Wanapum Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>95 – 105</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>105 – 127</td>
</tr>
<tr>
<td>Clay, brown, some wood (Crosthwaite, 1975, p. 51)</td>
<td>127 – 138</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>138 – 140</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand(?) and clay(?)</td>
<td>140 – 300</td>
</tr>
</tbody>
</table>
Comments:
The two thin basalt intervals were interpreted as Lolo basalt invading sediments at this locality. The 160 ft were logged as decomposed granite which is difficult to distinguish from poorly sorted sand and clay which has not been transported a great (long) distance. I believe this well was completed in the Vantage sediments, but it could be an area where the Vantage and sediments of Moscow transition into each other.

Latah County Tax Parcel RPM00000179505, 1020 E PALOUSE RIV; owner is BENNETT, FRANK R; 7.0 acres, S 1/2 SE 17 39 5 (INSIDE CITY).

References Cited:
1. WELL OWNER
Name: FRANK BENNETT
Address: Moscow
Owner’s Permit No: 87-72-N-12

2. NATURE OF WORK
☐ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED
☐ Cable ☑ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Diameter of hole 8 1/2 inches
Total depth 300 feet
Casing schedule: D-Steel ☑ Concrete ☐
Thickness Diameter
250 inches 8 inches From 122 To
--- inches --- inches --- feet --- feet
--- inches --- inches --- feet --- feet
--- inches --- inches --- feet --- feet
Was a packer or seal used? ☐ Yes ☑ No
Perforated? ☐ Yes ☑ No
How perforated? ☐ Factory ☑ Knife ☐ Torch
Size of perforation inches by inches
Number From To
--- perforations --- feet --- feet
--- perforations --- feet --- feet
--- perforations --- feet --- feet
Well screen installed? ☐ Yes ☑ No
Manufacturer’s name
Type
Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet
Gravel packed? ☐ Yes ☑ No
Size of gravel
Placed from feet to feet
Surface seal? ☐ Yes ☑ No To what depth feet
Material used in seal ☐ Cement grout ☑ Puddling clay

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level 85 feet below land surface
Flowing? ☐ Yes ☑ No G.P.M. flow
Temperature ° F. Quality
Artesian closing pressure p.s.i.
Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA
☐ Pump ☐ Bailer ☐ Other
Discharge G.P.M. Draw Down Hours Pumped
48 G.P.M. AIR TEST

9. LITHOLOGIC LOG
| Hole | Depth From | Material | Water
|------|------------|---------|-----
| 2   | 0-2 1/4    | Soft    | Yes |
| 3   | 2-4 1/4    | Clay    | No  |
| 4   | 4-6 1/4    | Weathered Basalt | Yes |
| 5   | 6-8 1/4    | Clay    | No  |
| 6   | 8-10 1/4   | Clay    | No  |

10. Work started 5-7-72 finished 5-15-72

11. DRILLER’S CERTIFICATION
This well was drilled under my supervision and this report is true to the best of my knowledge.

Driller’s or Firm’s Name
Address
Signed By
Date
HOWARD BERGLUND WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 9, 2018

Well Log ID: NA  Elev (ft): 2719  Depth (ft): 142  Quad: Robinson Lake
7.5’

Latitude: 46.755273°  Longitude: -116.924215°  decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 2, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
3919 Darby Road, Moscow, Idaho; on south side of road

Location Method:
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 163, well sample 17); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden*</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>0 – 76</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay, gray</td>
<td>76 – 122</td>
</tr>
<tr>
<td>Sand and clay, gray</td>
<td>122 – 142</td>
</tr>
</tbody>
</table>

*Probably includes sediments of Bovill
Comments:

Latah County Tax Parcel RP39N05W020030, owner now is BERGLUND, JOHN 1/2 INTEREST; 3919 DARBY RD, 39.08 AC SWNE S OF DARBY RD; 2 39 5.

References Cited:

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:
Name: Howard Berland
Address: Moscow, Idaho 83849

Owner's Permit No.:

NATURE OF WORK (check): Replacement well [ ]
New well [ ]
Deepened [ ]
Abandoned [ ]

Water is to be used for: Domestic [ ]

METHOD OF CONSTRUCTION: Rotary [ ]
Cable [ ]
Dug [ ]
Other [ ]

(explain)

CASING SCHEDULE: Threaded [ ]
Welded [ ]

"Diam. from ft. to ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.

Thickness of casing: 0.250
Material: [ ]
Steel [ ]
Concrete [ ]
Wood [ ]
Other [ ]

(explain)

PERFORATED? Yes [ ]
No [ ]
Type of perforator used:

Size of perforations:
" by "

perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

WAS SCREEN INSTALLED? Yes [ ]
No [ ]

Manufacturer's name:

Type: [ ]
Model No.:

Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

CONSTRUCTION: Well gravel packed? Yes [ ]
No. [ ]

size of gravel
Gravel placed from ft. to ft. Surface seal provided? Yes [ ]
No. [ ]

To what depth? ft.
Material used in seal:

Casing set in decomposed [ ]
Absolutely [ ]

Did any strata contain unusable water? Yes [ ]
No. [ ]

Type of water:
Depth of strata ft.
Method of sealing strata off:

Surface casing used? Yes [ ]
No. [ ]

Cemented in place? Yes [ ]
No. [ ]

Locate well in section:

LOCATION OF WELL: County [ ]
Sec. [ ]
T[ ]
N[ ]
R[ ]

Use other side for additional remarks

Work started: FEB 13, 1969
Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.

Name: [ ]
Address: [ ]

Signed by: [ ]
License No. [ ]
Date: March 1, 1969

83
Well Log ID: 454796  Elev (ft): 2140 ±10  Depth (ft): 100  Quad: Colfax South

Latitude: 46.871856  Longitude: -117.307952  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 18, T. 16 N, R. 44 E

Well Address and (or) Other Location Information:
2011 Chicken Ranch Road, Colfax, Wash., on west side of road, just north of South Palouse River Road.

Location Method:
Location is for driveway area to newer house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 13, 2016), gated drive.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0  – 13</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>13  – 90</td>
</tr>
<tr>
<td>Basalt, soft, weathered</td>
<td>90  – 100</td>
</tr>
</tbody>
</table>
Comments:

There is an outcrop of the Lolo–Roza contact at 2220 ft elevation along west side of road about 750 ft north of the Ada Bidle well.

Whitman County Tax Parcel 200004416184491, 2011 CHICKEN RANCH RD COLFAX, SE 1/4 PT S1/2 W OF CO RD ADMINISTRATIVE SPLIT, BIDLE, ADA L; 1.0 acre, taxable value of improvements is $152,900.

[Also, Whitman County Tax Parcel 200004416184490, 2011 CHICKEN RANCH RD, SE1/4 PT S1/2 W OF CO RD, BIDLE, ADA L; 26.0 acres, no improvements.]

References Cited:
**Water Well Report**

**Construction/Decommission**
- *Construction*
- *Decommission*
  - ORIGINAL INSTALLATION Notice of Intent Number

**PROPOSED USE:**
- DeWater
- Domestic
- Irrigation
- Test Well
- Municipal
- Other

**TYPE OF WORK:**
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method:
  - Drilled
  - Bored
  - Driven
  - Cable
  - Rotary
  - Jetted

**DIMENSIONS:**
- Diameter of well: 6 inches, drilled: 100 ft.
- Depth of completed well: 100 ft.

**CONSTRUCTION DETAILS**
- Casing: Welded
  - Diam. from +10 ft. to -99 ft.
- Installed:
  - Liner installed: 4.5 ft.
  - Diam. from +5 ft. to -100 ft.

**Perforations:**
- Yes
- No
- Size of perforation: 1/2 in.
- No. of perfor: 42
- Diam. from +50 ft. to -100 ft.

**Screens:**
- Yes
- No
- K-Pac Location

**Manufacturer's Name**

**Gravel/Filter packed:**
- Yes
- No
- Size of gravel/sand

**Surface Seal:**
- Yes
- No
- To what depth? 18 ft.

**PUMP:**
- Manufacturer's Name
- H.P.

**WATER LEVELS:**
- Land-surface elevation above mean sea level: 50 ft.
- Static level: 50 ft. below top of well Date: 1-2-06
- Artesian pressure: lbs. per square inch
- Artesian water is controlled by (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- No
- If yes, by whom?

**Yield:**
- gal./min. with ft. drawdown after hrs.
- gal./min. with ft. drawdown after hrs.
- gal./min. with ft. drawdown after hrs.

**Recovery data (time taken as zero when pump turned off):**

**WELL CONSTRUCTION CERTIFICATION:**
- Constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.
- Driller/Engineer/Trainee Name (Print): Tim J. Uhlenkott
- Driller/Engineer/Trainee Signature: 
- Driller or trainee License No.: 2766

**If Trainee, Driller's Licensed No.:**

**Driller's Signature:**

---

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

**Formation:**
- Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Clay</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Hard Black Bell</td>
<td>13</td>
<td>90</td>
</tr>
<tr>
<td>Soft White Bell</td>
<td>90</td>
<td>100</td>
</tr>
</tbody>
</table>

---

**RECEIVED**

**SEP 28 2006**

**DEPARTMENT OF ECOLOGY**

**WELL DRILLING UNIT**

---

**RECEIVED**

**OCT 4 2006**

**DEPARTMENT OF ECOLOGY**

**EASTERN REGIONAL OFFICE**

**Start Date:** 9-2-06 **Completed Date:** 9-2-06

---

**Drilling Company:** UHLENKOTT DRILLING

**Address:** 725 Townhouse Rd. 
City, State, Zip: Grangeville, ID 83530

---

ECON 050-1-20 (Rev 2003)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 30, 2016; November 9, 2017

Well Log ID: 165132 Elev (ft): 2565 ±10 Depth (ft): 390 7.5’ Quad: Pullman

Latitude: 46.709064 Longitude: -117.151948 decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 9, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
557 Old Moscow Road, Pullman, Wash.; on south side of road, at end of long driveway

Location Method:
Location is for house in old Xmas tree farm area (Kimball Funeral Home and Crematory, 2015); Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>Clay, brown</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N2 magnetostratigraphic unit</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514093590, 557 OLD MOSCOW RD, SW PT E 1/2 09-14-45 17 AC, owners are now WINTERBOTTOM, EDWARD R/CHRIS L; grantor was BIENZ FAMILY TRUST on 10/01/09; building permit issued 10/10/2012 for NEW 2390SF HOME AND BOUNUS RM ADD W/ 737SF ATTACHED GARAGE.

Above, plat map showing Bienz property (in yellow) for Whitman County Tax Parcel 200004514093590.
Darrel Rudolph Bienz, 88, of Pullman, died January 23, 2015, in Pullman, Wash.; in anticipation of his retirement in 1992 from WSU (horticulture faculty), he and his wife (Betty) bought a house and acreage on the Old Moscow Road where he planted evergreen trees. The project grew into a you-cut Christmas tree business, and the farm also produced nursery stock for landscaping and ornamental use (Kimball Funeral Home and Crematory, 2015).

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

Owner: DARNEL BIENZ
Address: OLD MOSCOW RD, PULLMAN

Location of Well: County: WHITMAN
Street Address: OLD MOSCOW RD, PULLMAN

Proposed Use: Domestic

Type of Work: New well

Dimensions: Diameter of well: 8 inches
Drilled: 380 feet
Depth of completed well: 327 ft

Construction Details:
Casing installed: 8" Diameter from 1 ft. to 29 ft

Perforations: Yes

Type of perforator used: SAW

Screens: Yes

Manufacturer's Name:

Pump:

Type:

Water Levels:
Land-surface elevation above mean sea level:
Static level: 295 ft. below top of well
Artesian pressure: lbs. per square inch

Well Tests:
Drawdown in amount water level is lowered below static level
Was a pump test made? Yes
Yield: --- gal./min. with
ft. drawdown after
hr.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test:

Boiler test:

Artesian test:

Temperature of water: 54. Was a chemical analysis made? Yes

WELL CONSTRUCTOR CERTIFICATION:
I, the well constructor, have performed the work at the location described above in accordance with the requirements of the applicable regulations.

Name: WALTER W. MILLER
License No. 0047

Address: 22 DOX 615, GAANFIGUE L

(Signed) (WELL DRILLER)
Contractor's Registration No.

Date: 6/10, 1990

(USE ADDITIONAL SHEETS IF NECESSARY)
# Geologic Interpretation of Water Well Driller’s Log

**By John H. Bush, April 30, 2018**

## Well Information

<table>
<thead>
<tr>
<th>Well Log ID</th>
<th>Elev (ft)</th>
<th>Depth (ft)</th>
<th>Quad</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>2695</td>
<td>354</td>
<td>Robinson Lake</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>Location Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.769748°</td>
<td>-116.968724°</td>
<td>(latitude, longitude, and elevation from Fairley and others, 2006); Latah County Assessor; Google Earth imagery; topographic map</td>
</tr>
</tbody>
</table>

## Location Information

- **Well Address and (or) Other Location Information:**
  - 3240 Mountain View Road, Moscow, Idaho; on east side of road

## Geographic Units

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 106</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>106 – 238</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>238 – 254</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>266 – 354</td>
</tr>
</tbody>
</table>
Comments:

Dry well

Latah County Tax Parcel RP40N05W330903, owner now is REISENAUER, CHRIS S; 3240 MTN VIEW RD, S 1/2 NWNE, 33  40  5.

References Cited:

1. DRILLING PERMIT No. 96-96-N-0026-000
Other IDWR No. 

2. OWNER: Dave Bizarre
   Name:
   Address: MT View Rd.
   City: Moscow
   State: ID Zip: 

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

<table>
<thead>
<tr>
<th>N</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>5</td>
</tr>
</tbody>
</table>

Twp. 40 N. Rge 5 W. Sec 33
Gov't Lot 10 acres

Lat: Long:

Address of Well Site: MT View Rd
City: Moscow

4. USE:
   - Domestic [✓]
   - Municipal [ ]
   - Monitor [ ]
   - Irrigation [ ]
   - Thermal [ ]
   - Injection [ ]
   - Other [ ]

5. TYPE OF WORK: New Well [✓]
   Modify [ ]
   Abandonment [ ]
   Other [ ]

6. DRILL METHOD:
   - Air Rotary [✓]
   - Cable [ ]
   - Mud Rotary [ ]
   - Other [ ]

7. SEALING PROCEDURES
   SEAL/FILTER PACK | AMOUNT | METHOD
   --- | --- | ---
   bentonite | 8 | 110 | 300 lbs | dry |

Was drive shoe used? [✓] N
Shoe Depth(s): 
Was drive shoe seal tested? [✓] Y
How: 

8. CASING/LINER:
   Diameter From To Gauge Material
   8" 110 264 steel

   Casing Liner Welded Threaded
   [ ] [ ] [ ] [ ]

Length of Headpipe: Length of Tailpipe: 

9. PERFORATIONS/SCREENS
   - Perforations Method
   - Screens Screen Type

   From To Slot Size Number Diameter Material
   [ ] [ ] [ ] [ ] [ ]

   Casing Liner
   [ ] [ ] [ ] [ ] [ ]

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    ft. below ground Artesian pressure lb.
    Depth flow encountered ft. Describe access port or control devices:

    NUDE 33 40N 5W

11. WELL TESTS:
    Yield gal/min Drawdown Pumping Level Time
    dry

    Water Temp. Bottom hole temp.
    Water Quality test or comments:

    Depth first Water Encountered

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
    10 0 160 overburden
    10 160 110 basalt, firm
    8 110 264 basalt, firm
    8 228 254 clay
    8 254 360 soft granit
    8 360 354 granit, firm

13. DRILLER'S CERTIFICATION
    I/we certify that all minimum well construction standards were complied with at the time the rig was removed.
    Firm Name: Witt Well Drilling
    Firm Official: Earl Witt
    Supervisor or Operator: Roger Witt

    Completed Depth 354 (Measurable)
    Date: Started 7/10/96 Completed 7/16/96
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: NA Elev (ft): 2710 Depth (ft): 293 Quad: Robinson Lake

Latitude: 46.769946° Longitude: -116.968278° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
3240 Mountain View Road, Moscow, Idaho; on east side of road

Location Method:
Location is for well, on north side of driveway (latitude, longitude, and elevation from Fairley and others, 2006); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden—Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill Clay (?)</td>
<td>0 – 101</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member Basalt</td>
<td>101 – 258</td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>258 – 280</td>
</tr>
<tr>
<td>Clay</td>
<td>280 – 293</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W330903, owner now is REISENAUER, CHRIS S; 3240 MTN VIEW RD, S 1/2 NWNE, 33 40 5.

References Cited:

1. DRILLING PERMIT NO. 89-76-N-49

2. OWNER:
   Name: Dave Bizeau
   Address: STH 80 NE, Rising Star Lane
   City: Newboe State: ID Zip: 83738

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. USE:
   Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐
   Thermal ☐ Injection ☐ Other ☐

5. TYPE OF WORK check all that apply
   New Well ☑ Modify ☐ Abandonment ☐ Other ☐
   (Replacement etc.)

6. DRILL METHOD
   Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ☐

7. SEALING PROCEDURES
   SEAL/CAP PACK AMOUNT METHOD
   Material From To Sacks or Pounds
   bentonite 0 105 300 lbs dry

   Was drive shoe used? ☐ N  ☐ Y  ☐ How?
   Was drive shoe seal tested? ☐ Y  ☐ N  ☐ How?

8. CASING/LINER:
   Diameter From To Gauge Material
   8 7 1 105 3/4 steel
   Casing Liner Welded Threaded
   ☐ ☐ ☐ ☐

   Length of Headpipe  ______  Length of Tailpipe  ______

9. PERFORATIONS/SCREENS
   ☐ Perforations  ☐ Method  ☐
   ☐ Screens  ☐ Screen Type  ☐

   From To Slot Size Number Diameter Material Casing Liner
   ☐ ☐ ☐ ☐ ☐ ☐ ☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    50 ft. below ground Artesian pressure 10 lb.
    Depth flow encountered  ______ ft. Describe access port or control devices:

11. WELL TESTS:
    Yield gal./min. Drawdown Pumping Level Time
    Approx. 1 105 8 30 min.
    Water Temp.  ☐  Bottom hole temp.  ☐
    Water Quality test or comments:  ☐
    Depth first Water Encountered  ☐

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water
    Store Di. From To Remarks: Lithology, Water Quality & Temperature Y N
    10 0 101 overburden, clay
    0 0 105 silt, firm
    0 0 105 silt, firm
    0 0 105 granite

13. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at
    the time the rig was removed.
    Firm Name: Witt Well Drilling
    Firm Official                      Date  8/2/1996
    Supervisor or Operator: Witt
    (Signature of Firm Official & Operator)  8/3/1996

96067
DAVE BIZEAU WELL 3
[DRILLED JUNE 16, 1997]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: D0000054  Elev (ft): 2682  Depth (ft): 153  7.5’
Quad: Robinson Lake

Latitude: 46.773636°  Longitude: -116.967314°  decimal degrees (WGS84)

⅔, SW ¼, SE ⅔, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1010 Idlers Rest Road, Moscow, Idaho; on southeast side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Candel, 2014, p. 164, well sample 26); Fairley and others, (2006) located well in same drainage, about 200 ft to the southeast in PLS provided by driller; Latah County Assessor; Google Earth imagery; topographic map; site visit March 20, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>0 – 133</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>133 – 140</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>140 – 145</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member(?)</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>145 – 152</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W288418, owner now is BIZEAU-SMULSKI LIVING TRUST; 1010 IDLERS REST RD, 27.82 AC SWSE LESS TAX #7096, 28 40 5.

Uncertain if both Dave Bizeau wells 3 and 4 are visible above in drainage valley, south of driveway to 1010 Idlers Rest Road

References Cited:


1. DRILLING PERMIT NO. P. 54.
   Other IDWR No. 87-87-3.18

2. OWNER: 
   Name: Dave Zogg
   Address: 8705 N.E. Rising Star Lane
   City: Newberg
   State: OR
   Zip: 97132

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. USE:
   Domestic □ Municipal □ Monitor □ Irrigation
   Thermal □ Injection □ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   SEAL FILTER PACK AMOUNT METHOD
   Material From To Sacks or Bales
   bentonite 0.5 53 dry

   Was drive shoe used? □ N Shoe Depth(s) 134
   Was drive shoe seal tested? □ Y □ How?

8. CASING/LINER:

   Diameter From To Gauge Material
   8" 11 136 250 STEEL

   Length of Headpipe
   Length of Tailpipe

9. PERFORATIONS/Screens

   From To Slot Size Number Diameter Material

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    123 ft. below ground

11. WELL TESTS:
    Yield gal/min. Drawdown Pumping Level Time
    approx. 10 138 30 min.

    Water Temp.
    Bottom hole temp.
    Water Quality test or comments:
    Depth first Water Encountered 140

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Remarks: Lithology, Water Quality & Temperature
    Date: Started 6/16/97
    Completed 6/16/97

13. DRILLER'S CERTIFICATION
    I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Firm Name: Wittwell Drilling
    Firm No. 58
    Firm Official: Roger Witt
    Date: 6/16/97
    Supervisor or Operator: 
    (Sign once if Firm Official & Operator)
DAVE BIZEAU WELL 4

[DRILLED SEPTEMBER 21, 2000]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: D0017695   Elev (ft): 2598   Depth (ft): 173   Quad: Robinson Lake

Latitude: 46.773329°   Longitude: -116.967163°   decimal degrees (WGS84)

SW ¼, SE ¼, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1010 Idlers Rest Road, Moscow, Idaho; on southeast side of road, (OR possibly 3240 Mountain View Road)

Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006); Latah County Assessor; Google Earth imagery; topographic map; although driller recorded NW¼, NE¼, Sec. 33, T. 40 N., R. 5 W; site visit March 20, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 90</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>90 – 173</td>
</tr>
</tbody>
</table>


Comments:

Latah County Tax Parcel RP40N05W288418, owner now is BIZEAU-SMULSKI LIVING TRUST; 1010 IDLERS REST RD, 27.82 AC SWSE LESS TAX #7096, 28 40 5.

Uncertain if both Dave Bizeau wells 3 and 4 are visible above in drainage valley, south of driveway to 1010 Idlers Rest Road.

However, well 4 actually may belong to the parcel to the south: Latah County Tax Parcel RP40N05W330903, owner now is REISENAUER, CHRIS S; 3240 MTN VIEW RD, S 1/2 NWNE, 33 40 5, as shown on next page.
References Cited:

11. WELL TESTS:

- Yield gal/min: 128
- Drawdown:
- Pumping Level:
- Time:
- Water Temp.:
- Bottom hole temp.:
- Water Quality test or comments:
- Depth first Water Encounter:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

- Remarks: Lithology, Water Quality & Temperature

13. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

- Company Name:
- Firm No.:
- Firm Official:
- Date: 9/23/00
- Driller or Operator:
- Date: 9/23/00

(Sign once by Firm Official & Operator)
KEITH BLACKER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 20, 2016; November 9, 2017


Latitude: 46.802986   Longitude: -117.140677   decimal degrees (WGS84)

¼, SE ¼, NE ¼, Sec. 9, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1482 Rose Creek Road, Pullman, Wash., on northeast side of road, on hill top

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 87</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>87 – 234</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>234 – 241</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>241 – 252</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>252 – 253</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating hard and fractured</td>
<td>253 – 310</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>310 – 319</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>319 – 379</td>
</tr>
</tbody>
</table>
Comments:

Grande Ronde subdivisions based upon correlations of thicknesses and porous zone to DOE Pullman Test and Observation well and WSU wells.

Whitman County Tax Parcel 121400000020000, 1482 ROSE CREEK RD, CARL KETCHIE SHPLT (TT-2) (OCL 9-15-45) 24 ACRES, owners are BLACKER, KEITH/DENISE, one story residence built in 1987, 1826 sq ft., rustic log and wood shake.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Construction
- Decommission

PROPOSED USE:
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

TYPE OF WORK:
- Owner's number of well (if more than one)
- New Well
- Reconditioned
- Method: Dug
- Bored
- Driven
- Deepened
- Cable
- Rotary
- Jetted

DIMENSIONS:
- Diameter of well ___ inches, drilled ___ ft.
- Depth of completed well ___ ft.

CONSTRUCTION DETAILS
- Casing: Welded ___ Diam. from ___ ft. to ___ ft.
- Installed: Liner installed ___ Diam. from ___ ft. to ___ ft.
- Threaded ___ Diam. from ___ ft. to ___ ft.

Perforations:
- Yes
- No

Type of perforator used

SIZE of perfs ___ in. by ___ in. and no. of perfs from ___ ft. to ___ ft.

Screens:
- Yes
- No
- K-Pac Location

Manufacturer's Name

Type ___ Slot Size ___ from ___ ft. to ___ ft.

Diam. ___ Slot Size ___ from ___ ft. to ___ ft.

Gravel/Filter packed:
- Yes
- No
- Size of gravel/sand

Materials placed from ___ ft. to ___ ft.

Surface Seal:
- Yes
- No
- To what depth ___ ft.

Materials used in seal ___ Bentonite

Did any strata contain unusable water?
- Yes
- No

Type of water ___ Depth of strata ___ ft.

Method of sealing strata off

PUMP:
- Manufacturer's Name
- Type

WATER LEVELS:
- Land-surface elevation above mean sea level ___ ft.
- Static level ___ ft. below top of well Date 10/30/06
- Arterial pressure ___ lbs. per square inch Date
- Arterial water is controlled by ___ (cap, valve, etc.)

WELL TESTS:
- Drawdown is amount water level is lowered below static level.
- Was a pump test made?
- Yes
- No
- If yes, by whom?
- Yield: gal./min. with ___ ft. drawdown after ___ hrs.
- Yield: gal./min. with ___ ft. drawdown after ___ hrs.
- Yield: gal./min. with ___ ft. drawdown after ___ hrs.
- Recovery rate (time taken to zero when pump turned off) water level measured from well top to water level.

Time Water Level Time Water Level Time Water Level

Date of test ___

Bailes test ___ gal./min. with ___ ft. drawdown after ___ hrs.

Arterial pressure ___ lbs. per square inch Date 10/30/06

Arterial flow ___ g.p.m. Date ___

Temperature of water ___ Was a chemical analysis made?
- Yes
- No

RECEIVED

OCT 09 2007

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT
OCT 12 2007

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Start Date 10/04/06 Completed Date 10/30/06

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller

Driller/Engineer/Trainee Signature

Driller or Trainee License No.

If trainee, licensed driller's
Signature and License no.

WITTL WELL DRILLING
Address 691 SOUTH GRACE RD
City, State, Zip JULIETTA ID, 83535
Drilling Company
Contractor's Registration No. WMT 023558 Date 1/09/07
Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)
### DON BLACKKETTER WELL

**Geologic Interpretation of Water Well Driller’s Log**  
By John H. Bush, January 20, 2018

<table>
<thead>
<tr>
<th>Well Log ID</th>
<th>Elev (ft)</th>
<th>Depth (ft)</th>
<th>Quad</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>2595 ±10</td>
<td>85</td>
<td>Viola</td>
<td>7.5'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>decimal degrees (WGS84)</th>
</tr>
</thead>
<tbody>
<tr>
<td>46.828424°</td>
<td>-117.036701°</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well Address and (or) Other Location Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1060 Trestle Road, Viola, Idaho; on northwest side of road</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location Method:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location is for well; Latah County Assessor; Google Earth imagery; topographic map; site visit March 16, 2018.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member(?)</td>
<td></td>
</tr>
</tbody>
</table>

| Clay                          | 84         | 85         |

---

1 Thin unit of basalt above, so this clay could be incorporated sediment in the basalt of Lolo.
Comments:

Latah County Tax Parcel RP40N06W122422; owner now is HUFFMAN, KIP A; 1060 TRESTLE RD; 14.00 AC TAX #5208 NENW; 12 40 6.

Well is east of driveway "circle," about halfway between house and large shed.

D**** Blackketter was a former resident at 1060 Trestle Road (Spokeo, Inc., 2018).

References Cited:

109

1. DRILLING PERMIT NO. 87-94-N-43-000
Other IDWR No. ____________________________

2. OWNER: _____________________________________________
Name: __________________________
Address: ________________ ________________
City: __________________________ State: ______ Zip: ______

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

<table>
<thead>
<tr>
<th>N</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twp. 46°</td>
<td>Rge. 13° E</td>
</tr>
<tr>
<td>Sec. 14 1/4</td>
<td>NW 1/4</td>
</tr>
<tr>
<td>Govt Lot 16 acres</td>
<td>160 acres</td>
</tr>
</tbody>
</table>

Address of Well Site: __________________________
City: __________________________

4. PROPOSED USE: 
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK: 
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD: 
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>0-24</td>
<td>50 lbs, slurry</td>
</tr>
</tbody>
</table>

Was drive shoe used? Y ☐ N ☐ Was drive shoe seal tested? Y ☐ N ☐ How? 

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 1/4</td>
<td>24</td>
<td></td>
<td></td>
<td>Steel</td>
</tr>
</tbody>
</table>

Length of Headpipe: __________ Length of Tailpipe: __________

9. PERFORATIONS/SCREENS

☐ Perforations Method __________________________
☐ Screens Screen Type __________________________

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

22 ft. below ground Artesian pressure ______ lb.
Depth flow encountered ______ ft. Describe access port or control devices: ______

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gallons/minute</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Artesian</th>
<th>Flowing Artesian</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Temp. ___________ Bottom hole temp. ___________
Water Quality test or comments: __________________________

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Bore Diam.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 1/4</td>
<td>19</td>
<td>34</td>
<td>Outcrop, firm</td>
</tr>
<tr>
<td>8 1/4</td>
<td>24</td>
<td>34</td>
<td>Limestone, firm</td>
</tr>
<tr>
<td>8 1/4</td>
<td>5</td>
<td>5</td>
<td>Clay</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

If we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: __________________________
Firm Official: __________________________
Date: ______

Firm No. __________________________
Date: ______

(Verify if Firm Official & Operator)

9/23/94

(Seal)
**TERRY BLAIR WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, September 28, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 159396</th>
<th>Elev (ft): 2515 ±10</th>
<th>Depth (ft): 220</th>
<th>7.5’ Quad: Elberton</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Latitude: 46.940390</th>
<th>Longitude: -117.150362</th>
<th>decimal degrees (WGS84)</th>
</tr>
</thead>
</table>

Well Address and (or) Other Location Information:
11901 Washington State Route 272, Palouse, Wash., on north side of road; "Terry and Robin Blair" on mailbox

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 7 of Bush and others (2005 [2006]). Site visit (September 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From – To</td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td>3 – 17</td>
</tr>
<tr>
<td>Loess, clay</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>17 – 22</td>
</tr>
<tr>
<td>Gravel, basalt</td>
<td>22 – 43</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>43 – 68</td>
</tr>
<tr>
<td>Basalt, broken with clay</td>
<td>68 – 72</td>
</tr>
<tr>
<td>Basalt</td>
<td>72 – 84</td>
</tr>
<tr>
<td>Basalt, soft, broken</td>
<td>84 – 86</td>
</tr>
<tr>
<td>Basalt</td>
<td>86 – 174</td>
</tr>
<tr>
<td>Latah Formation and (or) Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Vantage Member(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown, green</td>
<td>174 – 212</td>
</tr>
<tr>
<td>Precambrian(?)</td>
<td></td>
</tr>
</tbody>
</table>
Comments:

The elevation of the base of the Priest Rapids (2341 ft) in this well is nearly the same as that of exposures along the Palouse River where Precambrian quartzites crop out (about 0.75 mi to the north-northwest) on the east side of the river.

Whitman County Tax Parcel 200004517291469, 11901 SR 272, NE1/4 SE COR N OF RD, owners are BLAIR, TERRY L/ROBIN A; 2.0 acres.

References Cited:

**WATER WELL REPORT**

STATE OF WASHINGTON

(1) OWNER: Name — Terry Blair
Address — Box 445, Palouse, WA. 99161

(2) LOCATION OF WELL: County — Whitman

(3) PROPOSED USE: Domestic □ Industrial □ Municipal □ Irrigation □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one)
New well □ Method: Dug □ Bored □ Deepened □ Cable □ Driven □ Reconditioned □ Rotary □ Jetted □

(5) DIMENSIONS:
Drilled — 220' ft. Depth of completed well — 200' ft.
Diameter of well — 6' inches.

(6) CONSTRUCTION DETAILS:
Casing installed: 6' Diam. from 1'4' ft. to 42' ft.
Threaded □ Welded □ Diameter from ft. to ft.
Perforations: Yes □ No □ Type of perforator used:
Size of perforations from ft. to ft.
Perforations from ft. to ft.
Perforations from ft. to ft.

Screens: Yes □ No □ Manufacturer's Name:
Type — 
Model No. — 
Diam. — Slot size from ft. to ft.
Diam. — Slot size from ft. to ft.

Gravel packed: Yes □ No □ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes □ No □ To what depth? 20' ft.
Material used in seal — Bentonite
Did any strata contain unusable water? Yes □ No □ Type of water — 
Depth of strata — 
Method of sealing strata off — Cased & Sealed

(7) PUMP: Manufacturer's Name:
Type — H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level — 2500
Static level — 30 ft. below top of well Date — 2/11/80
Artesian pressure — lbs. per square inch Date —
Artesian water is controlled by — (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom?
Yield: 24 GPM gal/min. with ft. drawdown after hrs. 
Estimated Airlift —

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test —
Before test — gal/min. with ft. drawdown after hrs.
Artesian flow — q.p.m. Date —
Temperature of water —
Was a chemical analysis made? Yes □ No □

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Clay</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Clay &amp; Basalt Gravel</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Basalt Gravel</td>
<td>22</td>
<td>43</td>
</tr>
<tr>
<td>Basalt Medium Grey</td>
<td>43</td>
<td>48</td>
</tr>
<tr>
<td>Basalt Soft Brown</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td>Basalt Hard Grey</td>
<td>50</td>
<td>68</td>
</tr>
<tr>
<td>Basalt Broken V/Clay</td>
<td>68</td>
<td>72</td>
</tr>
<tr>
<td>Basalt Medium Grey</td>
<td>72</td>
<td>84</td>
</tr>
<tr>
<td>Basalt Soft Broken</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>Basalt Hard Grey</td>
<td>86</td>
<td>150</td>
</tr>
<tr>
<td>Basalt Medium Grey</td>
<td>150</td>
<td>174</td>
</tr>
<tr>
<td>Basalt Hard Brown</td>
<td>174</td>
<td>182</td>
</tr>
<tr>
<td>Clay Hard Blue Green</td>
<td>182</td>
<td>190</td>
</tr>
<tr>
<td>Clay Hard Green</td>
<td>190</td>
<td>202</td>
</tr>
<tr>
<td>Clay Hard Brown</td>
<td>202</td>
<td>212</td>
</tr>
<tr>
<td>Sand</td>
<td>212</td>
<td>220</td>
</tr>
</tbody>
</table>

180' PVC
1.6' Drive Shoe
1 Surface Seal

RECEIVED
FEB 15 1980
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started — 2/7/80
Completed — 2/11/80

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME — Ponderosa Drilling & Development, Inc. (Person, firm, or corporation) (Type or print)
Address — 6010 E. Broadway, Spokane, WA. 99206

(Signed) —
Paul C. Hawkins (Well Driller)
License No. — 41007 Date — 2/13/80

(USE ADDITIONAL SHEETS IF NECESSARY)
TIM BLAIR WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 30, 2016; November 9, 2017

Well Log ID: 173454   Elev (ft): 2240 ±10   Depth (ft): 103   7.5’   Quad: Colfax South

Latitude: 46.789330   Longitude: -117.264026   decimal degrees (WGS84)

¼, ¼, NW ¼, Sec. 15, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
2902 Albion Road, Pullman, Wash., on northeast side of road; just south of Y-junction with Old Albion Road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0 – 38</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td>Basalt 38 – 90</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>clay gray 90 – 94</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, soft 94 – 97</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard 97 – 103</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415152901, 2902 ALBION RD, NW PT BLAIR/SCHMIDT; owners are BLAIR, TIM/SCHMIDT JANET; 13.0 acres; one story residence built in 1884.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Name: Tim Blair
Address: Albion

**LOCATION OF WELL:** County: Whitman

**STREET ADDRESS OF WELL** (or nearest address):

**PROPOSED USE:**
- Domestic
- Irrigation
- Municipal
- DeWater
- Test Well
- Other

**TYPE OF WORK:**
- Abandoned
- New well
- Method: Dug
- Bored
- Deepened
- Cable
- Driven
- Reconditioned
- Rotary
- Jetted

**DIMENSIONS:**
- Diameter of well: 8 inches
- Drilled: 103 feet
- Depth of completed well: 103 ft.

**CONSTRUCTION DETAILS:**
- Casing installed: Yes No
- Diam. ft. to ft.
- Wedged: Diam. ft. to ft.
- Liner installed: Diam. ft. to ft.
- Threaded: Diam. ft. to ft.

**Perforations:**
- Yes No
- In by in.
- Perforations from ft. to ft.
- Perforations from ft. to ft.

**Screens:**
- Yes No
- Manufacturer's Name
- Type
- Model No.
- Dia. ft. to ft.
- Slot size ft. to ft.
- Dia. ft. to ft.
- Slot size ft. to ft.

**Gravel packed:**
- Yes No
- Size of gravel
- Gravel placed from ft. to ft.

**Surface seal:**
- Yes No
- To what depth? 53 ft.
- Material used in seal: bentonite cement
- Did any strata contain usable water? Yes No
- Type of water:
- Depth of strata
- Method of sealing strata off

**PUMP:**
- Manufacturer's Name
- H.P.

**WATER LEVELS:**
- Land-surface elevation above mean sea level ft.
- Static level ft. below top of well Date 8/11/95
- Artesian pressure lbs. per square inch Date
- Artesian water is controlled by (Cap. valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

**Bailer test** gal./min. with ft. drawdown after hrs.
**Airstest** 25 gal./min. with stem set at 10 ft. for 30 min hrs.
**Artesian flow** g.p.m. Date

**WELL CONSTRUCTOR CERTIFICATION:**
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** Witt Well Drilling
**ADDRESS:** 609 Powers, Lr.
**WHERE:** License No. 0623

**Contractor's Registration No.:** 132 Ph
**Date:** 9/8/95

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
DOUG BLAKE WELL

[DRILLED IN 2005, DEEPENED IN 2011]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 8, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 428462, 709484</th>
<th>Elev (ft): 2205 ±10</th>
<th>Depth (ft): 240</th>
<th>Quad: Colfax North</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.910114</td>
<td>Longitude: -117.268798</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
</tbody>
</table>

| ¼, ¼, NE ¼, Sec. 4, T. 16 N, R. 44 E |

Well Address and (or) Other Location Information:
201 Clear Creek Road, Pullman, Wash., on west side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; street number and tax parcel are incorrect on driller's report of 2011. Site visit (September 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>0 – 14</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>¹Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>14 – 85</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating soft and hard</td>
<td>85 – 150</td>
</tr>
<tr>
<td>²Basalt, hard</td>
<td>150 – 208</td>
</tr>
<tr>
<td>Basalt, alternating fractured and hard</td>
<td>208 – 240</td>
</tr>
</tbody>
</table>
Comments:

1. Outcrops of Roza along Clear Creek Road show that the well starts in the Roza flow.

2. Well deepened in 2011, from 150 ft to 240 ft in depth.

Whitman County Tax Parcel 200004416041890, 201 CLEAR CREEK RD, NE1/4 PT GOVT LT 9 W OF CO RD WATKINS SHORT PLAT, owners are BLAKE, DOUGLAS/WENDY, 3.86 acres; (photo below dated 5/20/2011).

References Cited:
Water Well Report

Construction/Decommission

<table>
<thead>
<tr>
<th>PROPOSED USE:</th>
<th>Domestic</th>
<th>Irrigation</th>
<th>Industrial</th>
<th>Test Well</th>
<th>Municipal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF WORK:</th>
<th>Owner's number of well (if more than one)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New well</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| DIMENSIONS:     | Diameter of well (inches, drilled) 150 ft. |
|                | Depth of completed well               ft. |

<table>
<thead>
<tr>
<th>CONSTRUCTION DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casing:</td>
</tr>
<tr>
<td>Installed:</td>
</tr>
<tr>
<td>Perforations:</td>
</tr>
<tr>
<td>Type of perforator used</td>
</tr>
<tr>
<td>Size of perf. (2 in. in. and no. of perf. 26 from 13 ft. to 15 ft.</td>
</tr>
<tr>
<td>Screens:</td>
</tr>
<tr>
<td>Manufacturer's Name</td>
</tr>
<tr>
<td>Type:</td>
</tr>
<tr>
<td>Diam.:</td>
</tr>
<tr>
<td>Diam.:</td>
</tr>
<tr>
<td>Gravel/Filter packed:</td>
</tr>
<tr>
<td>Materials placed from</td>
</tr>
<tr>
<td>Surface Seal:</td>
</tr>
<tr>
<td>Material used in seal</td>
</tr>
<tr>
<td>Did any strata contain unusable water?</td>
</tr>
<tr>
<td>Type of water?</td>
</tr>
<tr>
<td>Method of sealing strata off</td>
</tr>
</tbody>
</table>

| PUMP: Manufacturer's Name |
| Type:                      |

| WATER LEVELS: Land-surface elevation above mean sea level (ft. above) |
| Static level 106 ft. below top of well Date 9-1-05 |
| Artesian pressure lbs. per square inch Date |
| Artesian water is controlled by (cap, valve, etc.) |

| WELL TESTS: Drawdown is amount water level is lowered below static level |
| Was a pump test made?  |
| If yes, by whom?       |
| Yield: gal./min. with ft. drawdown after hrs. |
| Yield: gal./min. with ft. drawdown after hrs. |
| Yield: gal./min. with ft. drawdown after hrs. |
| Recovery data (time taken as zero when pump turned off) |
| Time | Water Level | Time | Water Level |
| Date of test |  |
| Bailer test | gal./min. with ft. drawdown after hrs. |
| Airstest 10 gal./min. with stem set at ft. for hrs. |
| Artesian flow gpm Date |
| Temperature of water 56° Was a chemical analysis made? Yes No |

| WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief. |
| Driller/Engineer/Trainee Name (Print) | |
| Driller/Engineer/Trainee Signature | |
| Driller or trainee License No. | |

| IF TRAINEE, Driller's Licensed No. | 2766 |
| Driller's Signature | |

**EMPLOYEE NAMEiations**

**Employee Name**

**Current Notice of Intent No.** W178066

**Unique Ecology Well ID Tag No.** AHF 694

**Water Right Permit No.**

**Property Owner Name** Doug BLAKE

**Well Street Address** 5 Miles N of Colfax Pullman Pkwy Rd

**City** Colfax

**County**

**Location** SW1/4-1/4NE1/4 Sec 4 Twn 16 R 49 EWM or WWM 1 mile

**Lat/Long (s, t, r)** Lat Deg Long Min/Sec

**still REQUIRED)** Long Deg Long Min/Sec

**Tax Parcel No.**

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

**Formation:** Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Clay</td>
<td>0</td>
</tr>
<tr>
<td>Mud Hd Basalt</td>
<td>11</td>
</tr>
<tr>
<td>Soft Black Basalt</td>
<td>12</td>
</tr>
<tr>
<td>Mud Hd Basalt</td>
<td>13</td>
</tr>
</tbody>
</table>

**DEPARTMENT OF ECOLOGY**

**WELL DRILLING UNIT**

**Start Date** 9-6-05 **Completed Date** 9-5-05

**RECEIVED**

**JAN 19 2006**

**DEPARTMENT OF ECOLOGY**

**ECY 050-1-20 (Rev 2/03)**
**WATER WELL REPORT**

**Construction/Decommission ("x" in circle)**

- [x] Construction
- Decommission

**Notice of Intent Number**: 405(517)

**PROPOSED USE**: [ ] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

**TYPE OF WORK**: Owner's number of well (if more than one) 1

- [ ] New well [ ] Reconstructed
- [ ] Method: [ ] Dog [ ] Bored [ ] Driven
- [ ] Deepened

**DIMENSIONS**: Diameter of well: [ ] inches, drilled [ ] ft. to [ ] ft. Depth of completed well: [ ] 240 ft.

**CONSTRUCTION DETAILS**

- [ ] Casing [ ] Welded [ ] Diam. from [ ] ft. to [ ] ft.
- [ ] Installed: [ ] Liner installed [ ] Diam. from [ ] ft. to [ ] 240 ft.
- [ ] Perforations: [ ] Yes [ ] No
- [ ] Type of perforator used: [ ] Saw
- [ ] Size of perforation: [ ] 1/4 in. by [ ] in. and no. of perforations [ ] 48 from [ ] 220 ft. to [ ] 240 ft.
- [ ] Screens: [ ] Yes [ ] No [ ] K-Pac [ ] Location

**Manufacturer’s Name**: __________

- [ ] Type [ ] Model No.
- [ ] Diam. from ________ to ________ ft.
- [ ] Slot size from ________ to ________ ft.
- [ ] Gravel/Filter packed: [ ] Yes [ ] No [ ] Size of gravel and sand
- [ ] Materials placed from ________ to ________ ft.
- [ ] Surface Seal: [ ] Yes [ ] No [ ] To what depth? ________ ft.
- [ ] Material used in seal
- [ ] Did any strata contain unusable water? [ ] Yes [ ] No
- [ ] Type of water: ________
- [ ] Depth of strata ________
- [ ] Method of sealing strata off

**PUMP**: [ ] Manufacturer’s Name

- [ ] Type ________

**WATER LEVELS**: Land surface elevation above mean sea level ________ ft.

- [ ] Static level: [ ] 140 ft. below top of well Date: 1/6/11
- [ ] Artesian pressure: ________ lbs. per square inch Date: ________

**ARTESIAN WATER**: Controlled by ________ (cap, valve, etc.)

**WELL TESTS**: Drawdown is amount water level is lowered below static level

- [ ] Was a pump test made? [ ] Yes [ ] No If yes, by whom?

<table>
<thead>
<tr>
<th>Yield</th>
<th>Rate</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>gal/min</td>
<td>ft</td>
<td>drawn down after ________ hrs.</td>
</tr>
<tr>
<td>gal/min</td>
<td>ft</td>
<td>drawn down after ________ hrs.</td>
</tr>
<tr>
<td>gal/min</td>
<td>ft</td>
<td>drawn down after ________ hrs.</td>
</tr>
</tbody>
</table>

**Recovery data (time taken as zero when pump turned off)**

- [ ] Time [ ] Water Level

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>________</td>
<td>________</td>
</tr>
<tr>
<td>________</td>
<td>________</td>
</tr>
<tr>
<td>________</td>
<td>________</td>
</tr>
</tbody>
</table>

**Date of test**: ________

- [ ] Bailer test: gal/min with ________ ft. drawn down after ________ hrs.
- [ ] Air test: ________ gal/min with stem set at ________ ft. for ________ hrs.
- [ ] Artesian flow: ________ g.p.m Date: ________

**Temperature of water COLD**: [ ] Yes [ ] No

**CHEMISTRY**: Conducted laboratory analysis of water

**WELL CONSTRUCTION CERTIFICATION**: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- [ ] Driller [ ] Engineer [ ] Trainee

**Driller/Engineer/Trainee Signature**: ________

**Driller or trainee License No.**: 2871

**IF TRAINEE: Driller’s License No.**: ________

**Driller’s Signature**: ________

**ECY 050-1-20 (Rev 4/07)**

---

**CURRENT**

- **Notice of Intent No.**: WE12518
- **Unique Ecology Well ID Tag No.**: BBW-499
- **Water Right Permit No.**: ________
- **Property Owner Name**: DOUG BLAKE
- **Well Street Address**: 501 CLEAR CREEK RD.
- **City**: COLFAX
- **County**: WHITMAN
- **Location**: SW1/4-1/4 NE1/4 Sec 04 Twp 16 R 44 (s, t, r Still REQUIRED)
- **KWM**: ________
- **WWM**: ________
- **Lat/Long**: Lat Deg ________ Lat Min/Sec ________
  Long Deg ________ Long Min/Sec ________
- **Tax Parcel No. (Required)**: 20000441604189C

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

- **Description**: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Med. Basalt</td>
<td>140</td>
<td>208</td>
</tr>
<tr>
<td>Fractioned Basalt</td>
<td>208</td>
<td>212</td>
</tr>
<tr>
<td>Basalt</td>
<td>212</td>
<td>217</td>
</tr>
<tr>
<td>Fractured Basalt with water</td>
<td>217</td>
<td>225</td>
</tr>
<tr>
<td>Basalt</td>
<td>225</td>
<td>240</td>
</tr>
</tbody>
</table>

**1 Shale trap @ 150’**

**1 Shale trap @ 160’**

---

**RECEIVED**

**JAN 20 2010**

**DEPARTMENT OF ECOLOGY**
**EASTERN REGIONAL OFFICE**

**Start Date 1/4/11**
**Completed Date 1/6/11**

**Drilling Company**: H2O WELL SERVICE INC.
**Address**: 582 W. HAYDEN AVE.
**City**: State, Zip HAYDEN, ID, 83835
**Contractor’s Registration No.**: H2OWES11011DW **Date**: 1/7/11

Ecology is an Equal Opportunity Employer
# Marjorie Blood Well

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 14, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2575 ±10</th>
<th>Depth (ft):</th>
<th>118</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Palouse</th>
</tr>
</thead>
</table>

| Latitude: | 46.935788° | Longitude: | -117.032222° | decimal degrees (WGS84) |

| ¼, NW ¼, SE ¼, Sec. 36, T. 42 N, R. 6 W |

## Well Address and (or) Other Location Information:
1041 Duffield Flat Road, Potlatch, Idaho; on northwest side of road

## Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>12</td>
</tr>
<tr>
<td>Clay, light brown, and sand</td>
<td>29</td>
</tr>
<tr>
<td>Clay, yellow, and sand</td>
<td>32</td>
</tr>
<tr>
<td>Clay, brown, and sand</td>
<td>40</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>69</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>74</td>
</tr>
<tr>
<td>Basalt</td>
<td>86</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>112</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP42N06W367956, owner now is BLOOD, CASEY G; 1041 DUFFIELD FLAT RD, 14.42 AC TAX #6969 NWSE; 0.75 AC SWSE 36 42 6.

References Cited:
1. WELL OWNER
Name: Marjorie Blood
Address: Route 1 Box 70, Palouse, WA, 99161
Owner's Permit No.: 87-77-N-12

2. NATURE OF WORK
☐ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☒ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)
☒ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED
☒ Cable ☐ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches
Length of hole: 84 feet
Diving schedule: ☒ Steel ☐ Concrete
Thickness:
Diameter: 8 inches

8 inches: 0 feet
12 inches: 12 feet
14 inches: 14 feet
15 inches: 15 feet
16 inches: 16 feet
17 inches: 17 feet
18 inches: 18 feet
19 inches: 19 feet
20 inches: 20 feet
21 inches: 21 feet
22 inches: 22 feet
23 inches: 23 feet
24 inches: 24 feet
25 inches: 25 feet
26 inches: 26 feet
27 inches: 27 feet
28 inches: 28 feet
29 inches: 29 feet
30 inches: 30 feet
31 inches: 31 feet
32 inches: 32 feet
33 inches: 33 feet
34 inches: 34 feet
35 inches: 35 feet
36 inches: 36 feet
37 inches: 37 feet
38 inches: 38 feet
39 inches: 39 feet
40 inches: 40 feet
41 inches: 41 feet
42 inches: 42 feet
43 inches: 43 feet
44 inches: 44 feet
45 inches: 45 feet
46 inches: 46 feet
47 inches: 47 feet
48 inches: 48 feet
49 inches: 49 feet
50 inches: 50 feet
51 inches: 51 feet
52 inches: 52 feet
53 inches: 53 feet
54 inches: 54 feet
55 inches: 55 feet
56 inches: 56 feet
57 inches: 57 feet
58 inches: 58 feet
59 inches: 59 feet
60 inches: 60 feet
61 inches: 61 feet
62 inches: 62 feet
63 inches: 63 feet
64 inches: 64 feet
65 inches: 65 feet
66 inches: 66 feet
67 inches: 67 feet
68 inches: 68 feet
69 inches: 69 feet
70 inches: 70 feet
71 inches: 71 feet
72 inches: 72 feet
73 inches: 73 feet
74 inches: 74 feet
75 inches: 75 feet
76 inches: 76 feet
77 inches: 77 feet
78 inches: 78 feet
79 inches: 79 feet
80 inches: 80 feet
81 inches: 81 feet
82 inches: 82 feet
83 inches: 83 feet
84 inches: 84 feet

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 27 feet below land surface
Flowing: ☐ Yes ☒ No G.P.M. flow
Temperature: ° F. Quality
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA
☐ Pump ☒ Bailer ☐ Other
Discharge G.P.M.: Draw Down: Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diam.</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>From: 0 to 3</td>
<td></td>
<td>Black dirt</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 to 12</td>
<td></td>
<td>Brown clay</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 to 29</td>
<td></td>
<td>Lt. brown clay</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 to 32</td>
<td></td>
<td>Lt brown clay, sand</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 to 40</td>
<td></td>
<td>Yellow clay, sand</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 to 59</td>
<td></td>
<td>Brown clay, sand</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59 to 74</td>
<td></td>
<td>Blue clay</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>74 to 86</td>
<td></td>
<td>Rock, soft</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>86 to 90</td>
<td></td>
<td>Rock, hard basalt</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 to 104</td>
<td></td>
<td>Rock, med. basalt</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>104 to 112</td>
<td></td>
<td>Hard basalt</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112 to 118</td>
<td></td>
<td>Rock, soft</td>
<td>☒</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Work started: 5-10-77 finished: 6-5-77

11. DRILLERS CERTIFICATION
Firm Name: Don Town Well Drilling Firm No. 155
Address: Rt 4 Bx 429 Moscow, ID Date: 6-30-77
Signed by (Operator): Don Town
USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT
TODD BLOOMFIELD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: 173493 Elev (ft): 2510 ±10 Depth (ft): 102 Quad: Pullman

Latitude: 46.725189° Longitude: -117.239965° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
20172 State Route 194, Pullman, Wash., on north side of road

Location Method:
Location is for well, west of white garage and white house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit March 30, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 26</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>26 – 93</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>93 – 97</td>
</tr>
<tr>
<td>*Basalt</td>
<td>97 – 102</td>
</tr>
</tbody>
</table>

*There is the possibility that this basalt is the top of the Roza Member of the Wanapum Basalt.
Comments:

Whitman County Tax Parcel 200004414023690, 20172 SR 194, PULLMAN, WA 99163; SW N OF CO RD; owner is BLOOMFIELD LAND CO LLC, C/O DEAN BLOOMFIELD, 19221 SR 194, PULLMAN WA; 40 acres.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name.  F. D. BLOOMFIELD

(2) LOCATION OF WELL: County. WHITMAN

(3) PROPOSED USE: Domestic [] Industrial [] Municipal []

(4) TYPE OF WORK: Owner's number of well (if more than one)

Abandoned [ ] New well [ ] Reconditioned [ ]

Deepened [ ] Drilled [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well: 8 4 6 4 inches.

Drilled: 102 feet. Depth of completed well: 102 feet.

(6) CONSTRUCTION DETAILS:

- Casing installed: [ ] Dia. from . . 6 ft. to . . 33 ft.
- Welded [ ] Dia. from ft. to ft.
- Liner installed: [ ] Dia. from ft. to ft.

- Perforations: Yes [ ] No [ ]
- Type of perforator used

- Size of perforations in. by in.
- perforations from ft. to ft.
- perforations from ft. to ft.
- perforations from ft. to ft.

- Screens: Yes [ ] No [ ]
- Manufacturer's Name

- Type Model No.
- Diam. Slot size from ft. to ft.
- Diam. Slot size from ft. to ft.

- Gravel packed: Yes [ ] No [ ]
- Size of gravel
- Gravel placed from ft. to ft.

- Surface seal: Yes [ ] No [ ] To what depth? 33 ft.
- Material used in seal

- Did any strata contain unusable water? Yes [ ] No [ ]
- Type of water
- Depth of strata

(7) PUMP:

- Manufacturer's Name

- Type
- H.P.

(8) WATER LEVELS:

- Land surface elevation above mean sea level ft.
- Static level ft. below top of well Date 5-22-73
- Artesian pressure lbs. per square inch Date
- Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:

- Drawdown in amount water level is lowered below static level
- Was a pump test made? Yes [ ] No [ ]
- If yes, by whom?

- Yield: gal./min. with ft. drawdown after hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

- Date of test

- Bailer test gal./min. with ft. drawdown after hrs.
- Air test 30 gal./min. with stem set at 90 ft. for 1 hrs.
- Artesian flow p.m. Date 7-22-73
- Temperature of water

WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt - Grey - Med</td>
<td>26 93</td>
<td></td>
</tr>
<tr>
<td>Basalt - Blk - Weathered</td>
<td>93 102</td>
<td></td>
</tr>
</tbody>
</table>

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

McPHerson & WRIGHT DRILLING

2246 Burrell

LEWISTON, IDAHO 83501

(208) 743-7236

NAME (WELL DRILLER) (TYPE OR PRINT)

Address

(Signed) (WELL DRILLER)

Date 9-10

(USE ADDITIONAL SHEETS IF NECESSARY)
TOM BOONE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 11, 2018

Well Log ID: 159574
Elev (ft): 2550 ±10
Depth (ft): 180
7.5’ Quad: Palouse

Latitude: 46.912082° Longitude: -117.064454° decimal degrees (WGS84)

¼, ¼, N ½, Sec. 6, T. 16N, R. 46E

Well Address and (or) Other Location Information:
500 North B Street, Palouse, Wash.; on east side of road

Location Method:
Location is for house; Lot 2 per driller’s report; Whitman County Assessor; Google Earth imagery; topographic map; west of locations recorded by Ralston (1996) and Bush and others (2005 [2006], Well 10). Site visit March 26, 2018 — did not see well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt, Columbia River Basalt Group</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>14 – 160</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, white</td>
<td>160 – 180</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 808000000000193, 500 N B ST PALOUSE, PALOUSE N1/2 6-16-46 TT BR
(LOTS 1-6 BLK 8 E OF B ST) 9,900SF, 0.6 acre, owners are BOONE, THOMAS/SANDRA, 18051 SR 272,
PALOUSE WA; 1999 Guerdon (56x26).

References Cited:
Bush, J.H., Duncan, C.H., and Garwood, D.L., 2005 [2006], Bedrock geologic map of the Palouse 7.5-
minute quadrangle, Whitman County, Washington, and Latah County, Idaho: Moscow, Idaho, Palouse
http://www.webpages.uidaho.edu/pbac/GeologicMaps/MapIndex.htm.)

Ralston, D.R., 1996, Analysis of ground water development potential for the City of Palouse,
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Tom Boone  Address: 530 J. St. Mouse, WA 9811

(2) LOCATION OF WELL: County: Whitman  Lot: 2

(2a) STREET ADDRESS OF WELL (or nearest address):  Sec. 6 T. 16 N., R. 46 W.M.

(3) PROPOSED USE:  Domestic ☑  Industrial ☐  Municipal ☐

(4) TYPE OF WORK:
- Abandoned ☐
- New well ☑
- Deepened ☒
- Reconditioned ☐

Method: Dug ☐  Bored ☒  Driven ☐  Jetted ☐

(5) DIMENSIONS: Diameter of well: inches.

Drilled: feet. Depth of completed well: ft.

(6) CONSTRUCTION DETAILS:
- Welded ☐
- Liner Installed ☐
- Threaded ☐

Perforations: Yes ☐  No ☐

Size of perforations: in. by in.

Gravel packed: Yes ☐  No ☒

Gravel placed from: ft. to: ft.

Surface Seal: Yes ☐  No ☐

Material used in seal:  To what depth?: 20 ft.

Did any strata contain unusable water? Yes ☐  No ☒

Type of water?  Depth of strata:

Method of sealing strata off:

(7) PUMP: Manufacturer's Name:

Type:

H.P.:

(8) WATER LEVELS:
- Static level: 130 ft. below top of well Date: 6-11-90
- Artesian pressure: lbs. per square inch Date:

Artesian water is controlled by:

(Cap, valve, etc.)

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes ☐  No ☐

Yield: gal./min. with ft. drawn after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

15: 8 P.M. Air Test

Date of test:

Bailey test gal./min. with ft. drawn after hrs.

Airest gal./min. with stem set at ft. for hrs.

Artesian flow: g.p.m. Date

Temperature of water: Was a chemical analysis made? Yes ☐  No ☒

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO

BEIGE-LAY-FOSSIL 14 160

BEIGE-RED-CLAY 160 180

(USE ADDITIONAL SHEETS IF NECESSARY)

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

McPherson & Wright Drilling

Address: 2245 Burtell

Lewiston, Idaho 83501

(Signed) [Signature]

License No. O523

Contractor's Registration No. [Signature] 135N1 Date 5-31-90

1990
NED BOWMAN WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 17, 2016

Well Log ID: D0035279  Elev (ft): 2570 ±10  Depth (ft): 125  Quad: Moscow West

Latitude: 46.699693  Longitude: -117.035637  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 25, T. 39 N, R. 6 W

Well Address and (or) Other Location Information:
1039 Blue Heron Lane, Moscow, Idaho; south side of road and uphill, second house from end

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. Site visit (September 20, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td>18 – 60</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td>Basalt of Lolo</td>
<td>18 – 60</td>
</tr>
<tr>
<td></td>
<td>Basalt, brown, soft</td>
<td>60 – 125</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>60 – 125</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N06W252417, 1039 BLUE HERON LN; owner is BOWMAN, NED L; 5.42 acres.

References Cited:
1. WELL TAG NO. D
   Water Right or Injection Well No.
   06 25729

2. OWNER:
   Name: NEO BOWMAN
   Address: 2283 Hoquium Rd
   City: Hoquium
   State: WA
   Zip: 98550

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well.
   Twp: 29 North □ or South □
   Rge: 28 East □ or West □
   Sec: 25 □ 1/4 NW 1/4 or □ NW 1/4
   Govt Lot: 1/4 acre □ County: LATAH
   Lat: □ Long: □
   Address of Well Site: Sct of Sand Hollow Rd and Blue Heron City Moscow

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other

5. TYPE OF WORK: check all that apply
   (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD:
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   Seal Material: Bentonite
   From: 0
   To: 18
   Weight / Volume: 450 ft
   Seal Placement Method: Top Pour

   Was drive shoe used? □ Y □ N
   Shoe Depth(s): □ Y □ N

   Was drive shoe seal tested? □ Y □ N
   How?:

8. CASING/LINER:
   Diameter: 6"
   From: 2-2
   To: 5-7
   Material: Steel
   Casing: 4.5 - 4.75
   Liner: PVC
   Welded: □
   Threaded: □

   Length of Headpipe:
   Type:

9. PERFORATIONS/SCREENS Packer TYPE
   Perforation Method: □ Saw
   Screen Type & Method of Installation
   From: -8 - 125
   To: 3/4-4
   Slot Size: 3/6
   Diameter: 4.5
   Material: PVC
   Casing: □
   Liner: C

10. FILTER PACK
    Filter Material:
    From: □
    To: □
    Weight / Volume:
    Placement Method:

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    28 ft below ground Artesian pressure __ lb.
    Depth flow encountered __ ft. Describe access port or control devices:

12. WELL TESTS:
    Yield gal/min: 25
    Drawdown:
    Pumping Level:
    Time: 1.5
    Water Temp: 56°
    Bottom hole temp:
    Water Quality test or comments: Good

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To  Remarks: Lithology, Water Quality & Temperature
    Y N
    10 0 18 Brown Clay
    8 17 21 Salt Brown With Bsh
    8 21 10 Sandy Brown With Bsh
    0 60 125 Med Ht Brn Bsh

14. DRILLER'S CERTIFICATION
    If we certify that all minimum well construction standards were complied with at the time the rig was removed:
    Company Name: LUMENKO Drilling, Firm No. 125
    Principal Driller and Driller or Operator II
    Operator I
    Principal Driller and Rig Operator Required:
    Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
BILL BOYD WELL 3

[DRILLED IN 1988]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 2016; November 9, 2017

Well Log ID: 163545    Elev (ft): 2490 ±10    Depth (ft): 280    7.5’    Quad: Pullman

Latitude: 46.688368    Longitude: -117.160222    decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 21, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1952 Kirkendahl Road, Pullman, Wash., north of road

Location Method:
Well is west of house, in a garden area just east of circular cement cover (April 19, 2016 site visit);
Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil and clay</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>8 – 102</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>102 – 120</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>120 – 124</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>124 – 164</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>164 – 201</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>201 – 236</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>236 – 278</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>278 – 280</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514212629, 1952 KIRKENDAHL RD, NW PT NW N OF CO RD; owner now is DRUFFEL LIMITED PARTNERSHIP, LEE; 5.0 acres; grantors were BOYD, WILLIAM H JR to BOYD, CHAD on 12/02/13; and then BOYD, CHAD to DRUFFEL LIMITED PARTNERSHIP, LEE on 12/06/13.

Mr. Bill Boyd died in 2013, aged 75; his son is Chad (Kimball Funeral Home and Crematory, 2013).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Bill Boyd
Address: 202 2nd St. 683 B Pullman, WA

(2) LOCATION OF WELL: County: Whitman
Location: NW 1/4 Sec. 31 T. 14 N., R. 45 W. W.M.

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 880 inches.
Drilled: 280 ft. Depth of completed well 280 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 11 ft. to 20 ft.
Threaded ☐ Welded ☐ Diam. from 10 ft. to 150 ft.

Perforations: Yes ☒ No ☐
Type of perforator used:
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name:
Type:
Model No.:
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☒ No ☐
Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐
Material used in seal:
Did any strata contain unusable water? Yes ☐ No ☒
Type of water:
Depth of strata:
Method of sealing strata:

(7) PUMP: Manufacturer's Name:
Type:

(8) WATER LEVELS:
Land-surface elevation above mean sea level...
Static level 78 ft. below top of well Date: 8-9-88
Artesian pressure lbs. per square inch Date:
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil - red</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Bedrock - clay - mud</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Gravel - black - freezable</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Clay - brown</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Bedrock - bury - mud</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Gravel - black - water</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Gravel - gray - sandstone</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>Gravel - gray - sand</td>
<td>27</td>
<td>28</td>
</tr>
</tbody>
</table>

Work started: 8-7-1988, Completed: 8-9-1988

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name: McLean & Wright Drilling
Address: 246 Lerwick Lewiston, ID

[Signed] McLean & Wright (Well Driller)

License No. 0523 Date: 8-15-1988

(USE ADDITIONAL SHEETS IF NECESSARY)
ROBERT BOYD WELL 1

[DRILLED JULY 21, 1989]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 172232   Elev (ft): 2630 ±10   Depth (ft): 120   7.5’
    ¼, NW ¼, SE ¼, Sec. 26, T. 15 N, R. 45 E

Latitude: 46.756159°   Longitude: -117.105423°   decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1252 Orville Boyd Road, Pullman, Wash., on north side of road

Location Method:
Location is for well house, by telephone pole, west of 3-car garage and house; Whitman County
Assessor; Google Earth imagery; topographic map; incorrect ¼ section and section on driller’s report.
Site visit March 14, 2018. [John Bush was at drill site for Bob Boyd Well 2 in 2002 (on south side of
road), drilled because the Robert Boyd Well 1 on hill by house had insufficient water.]

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>From 0 – 56</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 56 – 103</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>From 103 – 118</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 118 – 120</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515264290, 1252 ORVILLE BOYD RD 99163, SE1/4 PT NW1/4 ORVAL BOYD SHPLT; owner now is PATON, ALLEN MCCABE; 11.5 acres; 08/30/13: grantor was PATON, SUSAN to PATTON, ALLEN; a previous owner was Orval Boyd (at least up to 1997); 1½ story residence built in 1949.

Well house is to left (west) of telephone pole.

[Mr. Orval R. Boyd died in 2003, aged 90 (Moscow-Pullman Daily News, 2003).]

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(2) LOCATION OF WELL:
County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE:
• Domestic
• Industrial
• Municipal
• Irrigation
• DeWater
• Test Well
• Other

(4) TYPE OF WORK:
• Abandoned
• New well
• Deepened
• Reconditioned
• Method: Dug
• Cable Driven
• Rotary
• Jetted

(5) DIMENSIONS:
Diameter of well 8 + 6 inches.
Depth of completed well 120 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 + 1 ft. to 62 ft.

(7) PUMP:
Manufacturer's Name
Type
H.P.

(8) WATER LEVELS:

(9) WELL TESTS:

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL
FROM TO
1. clay - 0 ft
2. sand - 50 ft
3. sand - 100 ft
4. sand - 118 ft

CONSTRUCTION DETAILS:

(USE ADDITIONAL SHEETS IF NECESSARY)
BOB BOYD WELL 2

[DRILLED DECEMBER 5, 2002]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 26, 2016

Well Log ID: 617131 Elev (ft): 2570 ±10 Depth (ft): 205 7.5’ Quad: Viola

Latitude: 46.755138 Longitude: -117.103162 decimal degrees (WGS84)


Well Address and (or) Other Location Information:
1252 Orville Boyd Road, Pullman, Wash., house is on north side of road, well is on south side.

Location Method:
Well is in draw in field on south side of road, southeast of home; John Bush also was on site in 2002 at time of drilling. PLSS subdivisions incorrect and tax parcel number correct on driller’s report. Site visits (April 10, 2016; March 14, 2018).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>34</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>43</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>81</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>173</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>176</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard, fine grained</td>
<td>186</td>
</tr>
</tbody>
</table>


Comments:

The basalt chips from the bottom of the well were examined by John Bush at the time the well was drilled. Water levels had dropped after penetrating the Vantage. The bottom of the well was plugged, and the water level returned to within 15 ft of surface.

Whitman County Tax Parcel 200004515264290, 1252 ORVILLE BOYD RD, SE1/4 PT NW1/4 ORVAL BOYD SHPLT # 661645 BLA 696945, owner now is PATON, ALLEN MCCABE; 11.5 acres; previous owner was Orval Boyd, through 1996 or 1997 at least.

Center: well is in field, between two concrete abutments; Right, plat map: tax parcel in yellow, (Mr. Paton also owns the adjacent 10.0 acre parcel, outlined in red with no fill, to the south.)

Mr. Orval R. Boyd died in 2003, aged 90 (Moscow-Pullman Daily News, 2003); his wife Violet died in 1997 (BillionGraves.com, 2016).

References Cited:


WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle)

Notice of Intent Number

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
[ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)
[ ] New well [ ] Reconditioned Method: [ ] Drig [ ] Bored [ ] Driven
[ ] Deepened [ ] Liner installed Diameter: [ ] Diam. From [ ] ft. to ft.

DIMENSIONS: Diameter of well [ ] in. inches, drilled [ ] ft.
Depth of completed well [ ] ft.

CONSTRUCTION DETAILS

Casing: [ ] Welded Diameter: [ ] in. Diameter: [ ] ft. to [ ] ft.
[ ] Liner installed Diameter: [ ] in. Diameter: [ ] ft. to [ ] ft.
Threaded Diameter: [ ] in. Diameter: [ ] ft. to [ ] ft.

Perforations: [ ] Yes [ ] No Type of perforator used: [ ] Saw

SIZE of perfs: 1/8 in. by [ ] ft. and no. of perfs [ ] from [ ] to [ ]

Screens: [ ] Yes [ ] No K-Pac Location

Manufacturer’s Name

Type

Model No.

Diam. Slot size from ft. to ft.

Screen

Diam.

Slot size from ft. to ft.

Gravel/Filter packed: [ ] Yes [ ] No Size of gravel/sand

Materials placed from ft. to ft.

Surface Seal: [ ] Yes [ ] No "To what depth" [ ] ft.

Material used in seal: [ ] Bentonite

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water

Depth of strata

Method of sealing strata off

PUMP: Manufacturer’s Name

Type

WATER LEVELS: Land-surface elevation above mean sea level [ ] ft.

Static level [ ] ft. below top of well Date [ ]

Artesian pressure [ ] lbs. per square inch Date

Artesian water is controlled by [ ] (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? [ ] Yes [ ] No If yes, by whom

Yield: [gal./min. with ] ft. drawdown after hrs.

Yield: [gal./min. with ] ft. drawdown after hrs.

Yield: [gal./min. with ] ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time

Water Level

Time

Water Level

Time

Water Level

Date of test

Bailer test: [gal./min. with ] ft. drawdown after hrs.

Artest 10 [gal./min. with stem set at ] for hrs.

Artesian flow: g.p.m. Date

Temperature of water [ ] Was a chemical analysis made? [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I, [ ] Driller [ ] Engineer [ ] Trainee Name (rev.) [ ] TED WRIGHT

Driller/Engineer/Trainee Signature

Driller or trainee License No.

IF TRAINEE: Driller’s License No.

Driller’s Signature

Drilling Company: MCPHERSON & WRIGHT DRILLING

Address: 2246 BURRELL

City: State: Zip: LEWISTON: ID: 83501

Reservoir Registration No.: MCPHWD13SN1 Date: 8/23/09

CURRENT

Notice of Intent No. W124232

Unique Ecology Well ID Tag No. AHR700

Water Right Permit No.

Property Owner Name: BOB BOYD

Well Street Address: 1252 ORVILLE BOYD RD.

City: PULLMAN County: WHITMAN

Location: SE1/4-1/4 NE1/4 Sec. 26 Twn. 15N R 45

Lat/Long: Lat Deg [ ] Lat Min/Sec [ ] Long Deg [ ] Long Min/Sec [ ]

Tax Parcel No. (Required): 20000-45-15-26-4200

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL

FROM

TO

SOIL BLACK

0 [ ] 1 [ ]

CLAY LIGHT BROWN STIFF

1 [ ] 34 [ ]

BASALT STRONG BLACK

34 [ ] 43 [ ]

BASALT WEATHERED WEAK

43 [ ] 81 [ ]

BASALT STRONG BLACK

81 [ ] 173 [ ]

BASALT WEATHERED WEAK

173 [ ] 176 [ ]

CLAY LIGHT BROWN STIFF

176 [ ] 186 [ ]

BASALT STRONG BLACK

186 [ ] 205 [ ]

Start Date: 12/2/02 Completed Date: 12/5/02

SEP 11 2009

DEPARTMENT OF ECOLOGY

REGIONAL OFFICE

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
# Geologic Interpretation of Water Well Driller’s Log

**By John H. Bush, May 2, 2018**

**CHRIS BOYD WELL 1**

*Drilled October 12, 2004*

Geologic Interpretation of Water Well Driller’s Log

<table>
<thead>
<tr>
<th>Well Log ID: 391024</th>
<th>Elev (ft): 2590 ±10</th>
<th>Depth (ft): 400</th>
<th>Quad: Viola</th>
</tr>
</thead>
</table>

Latitude: 46.751407°  Longitude: -117.084690° decimal degrees (WGS84)

Section ¼, SW ¼, SE ¼, Sec. 25, T. 15 N, R. 45 E

**Well Address and (or) Other Location Information:**

3805 Pullman Airport Road, Pullman, Wash.; south side of road; shared driveway with 3801 and 3803

**Location Method:**

Location is for office building; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼-section; site visit March 14, 2018 — well not observed from road; used same location as for Chris Boyd well 2

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>GEOLOGIC UNIT</th>
<th>DESCRIPTION</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td></td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member Basalt of Lolo Basalt, weathered brown</td>
<td></td>
<td>17</td>
<td>27</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>27</td>
<td>240</td>
</tr>
<tr>
<td>Grande Ronde Basalt(?) N2 magnetostratigraphic unit(?) Basalt, soft</td>
<td></td>
<td>240</td>
<td>312</td>
</tr>
<tr>
<td></td>
<td>Basalt with green seams</td>
<td>312</td>
<td>355</td>
</tr>
<tr>
<td></td>
<td>R2 magnetostratigraphic unit(?) Basalt</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Boyd's Bird Company is located at 3805 Pullman-Airport Road; big white mailbox opposite driveway to 3801 Pullman Airport Rd is labeled “BOYDS BIRD CO” along with two other mailboxes for 3801 and 3803.

Whitman County Tax Parcel 200004515258900; 3801-03-05 PULLMAN-AIRPORT RD; PT S 1/2 PT SW & SE TT E; BOYD, LESTER/PATRICIA; 8.77 acres; 1½ story residence built 1934 (1,824 ft²) at 3801 Pullman Airport Rd; 1 story residence built 1930 (384 ft²) at 3803 Pullman Airport Rd; office building at 3805 Pullman Airport Rd; Miscellaneous Improvements include 24x40 metal shed, 96x60 barn, and 32x18 feeder shed.

Whitman County Tax Parcel 200004515254890 (retired), 3801 AIRPORT RD, SE 1/4 PT S 1/2 1/2AC M/L; #1 AVIARY: 3805 AIRPORT RD #2) RENTAL: 3807 AIRPORT RD; owner is BOYD, LESTER, 905 SE SUNNYMEAD WAY, PULLMAN WA; one story residence built in 1949 (2592 ft²).

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Chris Boyd Address: 3805 Arpt Rd Pullman WA 99163

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address): 3805 Arpt Rd

(3) PROPOSED USE: Domestic √ Industrial □ Municipal □ DeWater □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one): 2

Abandoned □ New well X Method: Dug □ Bored □ Drilled □ Deepened □ Cable □ Rotary □ Reconditioned □jetted □

(5) DIMENSIONS: Diameter of well: 6 inches

Drilled: 1400' feet Depth of completed well: 1400 ft

(6) CONSTRUCTION DETAILS:
Casing installed: 6.5' Diameter from +20 ft to -18 ft
Welded: 6.5' Diameter from -10 ft to -400 ft
Perforations: Yes √ No □ Type of perforator used: Saw
Size of perforations: 36 perforations from -360 ft to -400 ft

(7) PUMP: Manufacturer's Name: 
Type: H.P.

(8) WATER LEVELS: Land surface elevation above mean sea level: 
Static level: 140 ft below top of well Date: 10-13-04
Artesian pressure: lbs per square inch Date: 
Artesian water is controlled by (Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No X If yes, by whom?

Yield: gal/min. with ft. drawdown after hours

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time: Water Level: Time: Water Level: Time: Water Level

Date of test: 10-13-04 (Air Test)

Basin test: gal/min. ft. drawdown after hours

Artesian (gal/min. with stem set at ft. for hours)

Artesian flow: gpm Date

Temperature of water: 57°F

Was a chemical analysis made? Yes □ No X

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of strata and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of material

MATERIAL FROM TO
Clay 10 17
Browns White Belt 17 27
Med Hld Blst 27 99
Head Blk Blst 99 240
Soft Blk Blst 240 312
Soft Blk Blt & Grav. Sands 312 365
Hard Grav. Blst 365 400

RECEIVED
NOV 02 2004
DEPARTMENT OF ECOLOGY
WESTERN REGION OFFICE

RECEIVED
NOV 08 2004
DEPARTMENT OF ECOLOGY

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best knowledge and belief.

NAME HALEN KOTT DRILLING
(PERSON, PARTNERSHIP, CORPORATION, ETC) HALEN KOTT
type or print)

Address Rt 1 Box 262a Granville IA 83530
(Signed) HALEN KOTT (WELL DRILLER)

Contractor's Registration No. Date 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources program at (206) 407-6600. The TDD number is (206) 407-6606.
CHRIS BOYD WELL 2

[DRILLED OCTOBER 16, 2004]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: 391021  Elev (ft): 2590 ±10  Depth (ft): 500  Quad: Viola

Latitude: 46.751407°  Longitude: -117.084690°  decimal degrees (WGS84)

______ ¼,  SW ¼,  SE ¼,  Sec. 25,  T. 15 N,  R. 45 E

Well Address and (or) Other Location Information:
3805 Pullman Airport Road, Pullman, Wash.; south side of road; shared driveway with 3801 and 3803

Location Method:
Location is for office building; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼-section; site visit March 14, 2018 — well not observed from road; used same location as Chris Boyd well 1

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 — 36</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>36 — 48</td>
</tr>
<tr>
<td>Basalt</td>
<td>48 — 240</td>
</tr>
<tr>
<td>Grande Ronde Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>240 — 360</td>
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<td>R2 magnetostratigraphic unit(?)</td>
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<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>360 — 401</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>401 — 475</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>475 — 500</td>
</tr>
</tbody>
</table>
**Comments:**

Boyd's Bird Company is located at 3805 Pullman-Airport Road; big white mailbox opposite driveway to 3801 Pullman Airport Rd is labeled "BOYDS BIRD CO" along with two other mailboxes for 3801 and 3803.

Whitman County Tax Parcel 200004515258900; 3801-03-05 PULLMAN-AIRPORT RD; PT S 1/2 PT SW & SE TT E; BOYD, LESTER/PATRICIA; 8.77 acres; 1½ story residence built 1934 (1,824 ft²) at 3801 Pullman Airport Rd; 1 story residence built 1930 (384 ft²) at 3803 Pullman Airport Rd; **office building at 3805 Pullman Airport Rd**; Miscellaneous Improvements include 24x40 metal shed, 96x60 barn, and 32x18 feeder shed.

Whitman County Tax Parcel 200004515254890 (retired), 3801 AIRPORT RD, SE 1/4 PT S 1/2 1/2AC M/L; #1

**AVIARY: 3805 AIRPORT RD #2) RENTAL: 3807 AIRPORT RD; owner is BOYD, LESTER, 905 SE SUNNYMEAD WAY, PULLMAN WA; one story residence built in 1949 (2592 ft²).**

**References Cited:**
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: CHRIS BOYD
Address: 3805 Airport Way Pullman WA 99163

(2) LOCATION OF WELL: County: WHITMAN

(2a) STREET ADDRESS OF WELL (or nearest address): 3805 Airport Way

(3) PROPOSED USE: ☑ Domestic ☐ Irrigation ☐ Industrial ☑ Municipal ☐ Other

(4) TYPE OF WORK: Owner's number of well (if more than one) ☑ 2

(5) DIMENSIONS: Diameter of well □ inches
Drilled: 500 feet. Depth of completed well: 500 feet

(6) CONSTRUCTION DETAILS:
Casing installed: ☑ 6 1/2' Diam. from +2 ft to -38 ft.
Welded: □
Lower installed: □

Perforations: Yes ☑ No □
Type of perforator used: SAW
SIZE of perforations: 1/8 in by 1/4 in.
45 perforations from -460 ft to -500 ft
perforations from ft to ft
perforations from ft to ft
perforations from ft to ft

Screens: Yes □ No ☑
Manufacturer's Name:
Type: □ Model No:
Dia: □ Slot size: □ ft to ft
Dia: □ Slot size: □ ft to ft

Gravel packed: Yes ☑ No □
Size of gravel: □
Gravel placed to ft

Surface seal: Yes ☑ No □
Type: Bentonite
to what depth? 135 ft
Material used in seal: □
Did any strata contain unusable water? Yes ☑ No □
Depth of strata: □
Type of water: □
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type:

(8) WATER LEVELS: Land-surface elevation above mean sea level:
Static level: 340 ft below top of well 10-15-04
Artesian pressure: lbs per square inch Date:
Artesian water controlled by (Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No ☑ If yes, by whom?
Yield: gal/min. at ft. drawdown after hrs
"" "" ""
"" "" ""
"" "" ""
"" "" ""

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test 10-15-04 (Air Test)
Base test: gal/min. at ft. drawdown after hrs
Artesian: gal/min. with stem set at 1500 ft for 11/2 hrs
Artesian flow: gpm Date
Temperature of water: Was a chemical analysis made? Yes □ No ☑

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
Clay 10 36
Bak. 86 36 48
Bak. 240 360
Bak. Dk 360 401
Bak. 441 475
Soil 48 500

RECEIVED
NOV 2 2004

DEPARTMENT OF ECOLOGY
RURAL DEVELOPMENT OFFICE


WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: (PRINT)
Address: BOX 26A, GREENVILLE ID 83530
(Signed) WILLIAM H. WENKE
Well Driller No: "
Well D riller
Contractor's Regstration No: Date 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (208) 407-6600. The TDD number is (208) 407-6006.
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 2, 2018

Well Log ID: 686343
Elev (ft): 2570 ±10
Depth (ft): 450
7.5’ Quad: Viola

Latitude: 46.751808°
Longitude: -117.089545° decimal degrees (WGS84)

½, SE ¼, SW ¼, Sec. 25, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
3632 Pullman Airport Road, Pullman, Wash.; north side of road

Location Method:
Location is approximate, for field in central area of parcel; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 14, 2018 — well not observed from road

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>30</td>
</tr>
<tr>
<td>Grande Ronde Basalt (?)</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit (?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>175</td>
</tr>
<tr>
<td>Basalt</td>
<td>300</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>345</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>375</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>400</td>
</tr>
<tr>
<td>Basalt</td>
<td>428</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515253902; DOR Code: 39 - Commercial - Misc Commercial; 3632 PULLMAN-AIRPORT RD, PULLMAN 99163; SW 1/4 LOT B CHRIS BOYD SHORT PLAT #2; owners are BOYD, CHRIS D/E LEIGH; 120 S RIVER RD; PALOUSE WA; 3.5 acres.

Shaded parcel (to the right, on north side of Pullman-Airport Road with yellow highlighted text) is likely LOT B. [Yellow highlighted parcel at left is 200004515253901, 1851 ORVILLE BOYD RD; SW 1/4 LOT A CHRIS BOYD SHORT PLAT #2 AND BLA #714331; owners PECK, JAMES/CASSANDRA; 8.8 acres.]
WATER WELL REPORT
Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)
☐ Construction
☐ Decommission

ORIGINAL INSTALLATION NOTICE OF INTENT NUMBER
393016

PROPOSED USE:
☐ Domestic
☐ Industrial
☐ Municipal
☐ DeWater
☐ Irrigation
☐ Test Well
☐ Other

TYPE OF WORK:
☐ New well
☐ Reconditioned
☐ Method: ☑ Deg
☐ Bored
☐ Driven
☐ Deepened
☐ Welded

DIMENSIONS: Diameter of well 60 inches, drilled 450 ft.
Depth of completed well 450 ft.

CONSTRUCTION DETAILS
Casing:
☐ Welded

Installed:
☐ Liner installed 100% Diameter: From 30 ft. to 450 ft.
☐ Threaded

Perforations:
☐ Yes ☐ No

Type of perforator used:

SIZE of perforations 1/8 in. by 1/8 in. and no. of perforations 416 # of 500 #.

Screen:
☐ Yes ☐ Y/N ☐None

Manufacturer's Name:

Type:

Model No.:

Diam. Slot size from ft. to ft.

Diam. Slot size from ft. to ft.

Gravel/Filter placed:
☐ Yes ☐ No

Size of gravel/muck:

Materials placed from ft. to ft.

Surface Seal:
☐ Yes ☐ No

To what depth? 40 ft.

Material used in seal:

Kentonite geotextile

Did any strata contain unsuitable water? ☐ Yes ☐ No

Type of water:

Depth of strata:

Method of scaling strata off:

PUMP:

Manufacturer's Name:

Type:

H.P.:

WATER LEVELS:
Land-surface elevation above mean sea level ft.
Static level 20 ft. below top of well Date 7/12/2010
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Draftdown is amount water level is lowered below static level

Was a pump test made? ☑ Yes ☐ No If yes, by whom?

Yield:
gal./min. with ft. drawdown after hrs.

Yield:
gal./min. with ft. drawdown after hrs.

Yield:
gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level

Date of test 7/12/10

Tests:

Kill test

Oil test

Artesian flow

p.m. Date

Temperature of water 50°

Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee
Name (First) Brett Ulenkott

Driller/Engineer/Trainee Signature

Driller or trainee License No. 21497

IF TRAINEE: Driller's License No.

Driller's Signature

Drilling Company: Brett Ulenkott Drilling

Address: PO BOX 233

City, State, Zip Cottonwood ID 83522

Contractor's RN 250018188A

Registration No. Date 7/20/10

RECEIVED

JUL 23 2010

DEPARTMENT OF ECOLOGY

EASTERN REGIONAL OFFICE

Start Date 7/1/2010 Completed Date 7/12/2010

ECY 059-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
HAROLD BOYD WELL 2

[DRILLED IN 1992]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 167571  Elev (ft): 2520 ±10  Depth (ft): 150  Quad: Pullman

Latitude: 46.669472°  Longitude: -117.143034°  decimal degrees (WGS84)

¼, SE ¼, NE ¼, Sec. 28, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
602 Staley Road, Pullman, Wash.; on south side of road

Location Method:
Location is for well, by northwest corner of garage; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 21, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 7</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>7 – 55</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>55 – 56</td>
</tr>
<tr>
<td>Basalt</td>
<td>56 – 139</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>139 – 147</td>
</tr>
<tr>
<td>Basalt</td>
<td>147 – 150</td>
</tr>
</tbody>
</table>
Comments:

Harold Boyd well 1, likely nearby, was 100 ft deep, hit basalt at 10 ft, and bailed 30–35 gpm with 25 ft drawdown (well 28H2 of Foxworthy and Washburn, 1963, p. 50–51, and plate 1).

Whitman County Tax Parcel 200004514281491, 602 STALEY RD, NE1/4 SE1/4 S OF RD N OF RR; owners now are KEIFER, DANIEL/MORGAN; 1.0 acre; 08/01/08: grantors were BOYD, CHAD/ANNA to KEIFER, DANIEL/MORGAN.

Well is in lawn, between garage and blue-edged trampoline


Foxworthy and Washburn (1963, p. 50–51, plate 1) referenced an earlier well (28H2) for Harold Boyd (also in Section 28), but did not provide a well log for it; they located well [28]H2 east of [28]H1 for a L.C. Staley well (likely at the Staley Ranch at 801 Staley Road, and for which they provided a log for 14/45–28H1 (p. 64)).

References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Harold Bugel
Address: Lot 2, Block 64, Pullman

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL: (or nearest address):

(3) PROPOSED USE: Domestic [ ] Irrigation [ ] Industrial [ ] Municipal [ ] DeWater [X] Test Well [ ] Other [ ]

(4) TYPE OF WORK: [ ] Abandoned [ ] New well [ ] Reconditioned [ ] Deepened [ ] Method: [ ] Dug [ ] Drilled [X] Tested [ ]

(5) DIMENSIONS: Diameter of well: 8 6 / 6 inches.
Drilled: 60 feet. Depth of completed well: 72 feet.

(6) CONSTRUCTION DETAILS:
Casing installed: [ ] Diam. from: +1 ft. to: 20 ft.
Welded: [X] Diam. from: ft. to: ft.
Liner installed: [X] Diam. from: ft. to: ft.
Perforations: [ ] Yes [X] No
Type of perforator used:
SIZE OF perforations: in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: [ ] Yes [X] No
Manufacturer's Name:
Type: 
Model No: 
Diam. from ft. to ft.
Diam. from ft. to ft.
Gravel packed: [ ] Yes [X] No
Size of gravel: 
Gravel placed from ft. to ft.
Surface seal: [ ] Yes [X] No
To what depth: 20 ft.
Material used in seal:
Did any strata contain unusable water? [ ] Yes [X] No
Type of water:
Depth of strata:
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: 
H.P.:

(8) WATER LEVELS:
Land-surface elevation: ft.
Above mean sea level: ft.
Static level: 69 ft. below top of well Date: 7-11-92
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by (Cap, valve, etc.):

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test:

Bailier test: gal./min. with ft. drawdown after hrs.
Aerose test: 12 gal./min. with stem set at 140 ft. for 1 hrs.
Artesian flow: g.p.m. Date:
Temperature of water: Was a chemical analysis made? [ ] Yes [X] No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information:

MATERIAL
FROM TO

(11) WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

McPherson & Wright Drilling

_NAME__ 2244 8th Street
_Lewiston, Idaho 83501_

_ADDRESS__

(Signed) Neil Wright

(license No. 0523)

_CONTRACTOR__

_CONTRACTOR'S__

_REGISTRATION_

_1990_

(USE ADDITIONAL SHEETS IF NECESSARY)
W.M. BOYD WELL

[LESTER BOYD WELL]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

[Not in WA DOE database] Quad: Viola

Latitude: 46.751891° Longitude: -117.084568° decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 25, T. 15 N, R. 45 W

Well Address and (or) Other Location Information:
3801 Pullman Airport Road, Pullman, Wash.; on south side of road

Location Method:
Location is for house (brick first floor, with white dormers); Whitman County Assessor; Google Earth imagery; topographic map; location from Bush and Provant (1998, Well 18, Boyd L. (W.M.)); elevation from Lum and others (1990, p. 72, L. Boyd well 15/45-25Q1); log from Walters and Glancy (1969, p. 136, W.M. Boyd well 15/45-25Q1); site visit March 14, 2018 — well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td></td>
<td></td>
<td>0</td>
<td>65</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td>65</td>
<td>264</td>
</tr>
</tbody>
</table>


Comments:
Whitman County Tax Parcel 200004515258900; 3801 PULLMAN-AIRPORT RD; PT S 1/2 PT SW & SE TT E; owners are BOYD, LESTER/PATRICIA; 8.7 acres; 1½ story residence built 1934.

W.M. Boyd likely is William Merrill Boyd. His son LaVerne Lester Boyd lived most of his later years on the William Boyd farmstead near Pullman; he (LaVerne) had a son Lester Boyd of Pullman (Find A Grave, 2018).

References Cited:


Table 4 - Driller's logs of representative wells, Whitman County - Continued

<table>
<thead>
<tr>
<th>Materials</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15/45-8M1. Ross Howell. Altitude about 2,495 ft.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilled in 1888. Cased to 30 ft.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Clay, white and yellow</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>&quot;Rock&quot; (basalt)</td>
<td>1</td>
<td>30</td>
</tr>
</tbody>
</table>

| 15/45-14Q1. Mary Stirewalt. Altitude about 2,520 ft. | | |
| Drilled in 1938. | | |
| Basalt, dense | 240 | 240 |
| Basalt, porous | 26 | 266 |
| Quartzite (?) | 19 | 285 |

| Drilled by Spray Bros., 1941. Cased to 65 ft. | | |
| Silt | 65 | 65 |
| Basalt, hard; stringer of sand | 135 | 200 |
| Basalt, very hard | 64 | 264 |

| Drilled by owner, 1953. Cased to 74 ft. | | |
| Dirt, black | 2 | 2 |
| Clay (water below 60 ft.) | 62 | 64 |
| Shale, water-bearing | 10 | 74 |
| Basalt | 124 | 198 |
| Rock, porous, brown | 6 | 204 |
| Soapstone (?) | 12 | 216 |
| Basalt | 14 | 230 |
| Soapstone (?) | 25 | 255 |
| Basalt | 37 | 292 |
| Rock, porous, brown | 10 | 302 |

| Drilled by Noel, 1926. | | |
| Soil [loess] | 41 | 41 |
| "Rock" [basalt] | 97 | 138 |
| Clay | 24 | 162 |

| Drilled by A. R. McInroy. Cased to 16 ft. | | |
| Soil [loess] | 16 | 16 |

From Walters and Glancy (1969, p. 136)
STEVE BRANDT WELL

[Drilled in 1990, Deepened in 1994]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 18, 2016

Well Log ID: NA Elevation (ft): 2643.89 Depth (ft): 279 7.5’ Quad: Moscow West

Latitude: 46.746140 Longitude: -117.001810 decimal degrees (WGS84)

SE ¼, SE ¼, SE ¼, Sec. 6, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1151 N Main Street, Moscow, Idaho, on west side of highway; south of Pintail Lane and north of Rodeo Drive

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile) and Badon (2007, p. 129); Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>45</td>
</tr>
<tr>
<td>Clay</td>
<td>46</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>115</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>153</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RPM000000069770, 1151 N MAIN ST; owner is BRANDT, STEVEN E; .55 AC SESE, 6 39 5.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Steve Brandt
Address: Moscow
Owner's Permit No. 87-90-N

2. NATURE OF WORK

☑ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED

☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Diameter</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>inches</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was casing drive shoe used? ☐ Yes  ☐ No
Was a packer or seal used? ☐ Yes  ☐ No
Perforated? ☐ Yes  ☐ No
How perforated? ☐ Factory  ☐ Knife  ☐ Torch  ☐ Gun
Size of perforation ______ inches by ______ inches

<table>
<thead>
<tr>
<th>Number</th>
<th>Perforations</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well screen installed? ☐ Yes  ☐ No
Manufacturer's name

Type: Model No.

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Slot size</th>
<th>Set from</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inches</td>
<td>feet</td>
<td></td>
</tr>
</tbody>
</table>

Gravel packed? ☐ Yes  ☐ No
Size of gravel

Placed from feet to feet

Surface seal depth ______ feet
Material used in seal: ☐ Cement grout

<table>
<thead>
<tr>
<th>Bentonite</th>
<th>Puddling clay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sealing procedure used: ☐ Slurry pit  ☐ Temp. surface casing  ☐ Overbore to seal depth

Method of joining casing: ☐ Threaded  ☐ Welded  ☐ Solvent Weld
☐ Cemented between strata

Describe access port

6. LOCATION OF WELL

Sketch map location must agree with written location.

N

W

S

□ Subdivision Name

Lot No.  ______  Block No. ______

County: Latah

S 1/4 660 1/4 Sec.  T 39  N  H 5  E

6/89

7. WATER LEVEL

Static water level: 128 feet below land surface.
Flowing? ☐ Yes  ☐ No  ☐ G.P.M. flow
Artesian closed-in pressure ______ p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature ______ °F.  Quality ______

Describe artesian or temperature zones below:

8. WELL TEST DATA

☐ Pump  ☐ Bailer  ☐ Air  ☐ Other

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Pumping Level</th>
<th>Hours Pumped</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore</th>
<th>Depth</th>
<th>Material</th>
<th>Water Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>overburden, clay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-45</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>45-46</td>
<td>quartz sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46-115</td>
<td>clay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>115-153</td>
<td>basalt, firm</td>
<td></td>
</tr>
</tbody>
</table>

10. Work started 4/11/90 finished 4/13/90

11. DRILLERS CERTIFICATION

□ I certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Wittell Drilling  Firm No. 58
Address: 268 Powers Lane  Date: 4/12/90
Signed by (Firm Official)  Earl Witt
(Operator)  Roger Witt

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 15</td>
<td>125</td>
<td></td>
<td>31 min.</td>
</tr>
</tbody>
</table>

Water Temp. | Bottom hole temp.

Water Quality test or comments:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: Lithology, Water Quality & Temperature

Y N

13. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Witt Well Drilling Firm No. 58

Date: Started 8/16/94 Completed 8/31/94

Field Inspector: Marc L. Witt Date: 8/15/95

Supervisor or Operator: Roger Witt Date: 8/15/95

(Embossed seal if Firm Official & Operator)
CRAIG AND KELLY BRANTNER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 10, 2018

Well Log ID: 1111519 Elev (ft): 2420 ±10 Depth (ft): 133 7.5’ Quad: Palouse

Latitude: 46.920445° Longitude: -117.094999° decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 35, T. 17N, R. 45E

Well Address and (or) Other Location Information:
18402 State Route 27, Palouse, Wash.; on north side of long lane extending west of highway, inside a meander loop of the Palouse River

Location Method:
Location is approximate for house on survey map of property parcel; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 24, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 — 20</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>20 — 50</td>
</tr>
<tr>
<td>Clay, blue, and basalt, broken</td>
<td>50 — 57</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>57 — 92</td>
</tr>
<tr>
<td>Blue clay and sand</td>
<td>92 — 97</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>97 — 100</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, compacted, wood</td>
<td>100 — 133</td>
</tr>
</tbody>
</table>

1 In the Palouse city area, it is not uncommon to have sand or clay beds incorporated within the Lolo flow (Bush and others, 2016), thus difficult to determine upper boundary of the Vantage Member.
Comments:
Whitman County Tax Parcel 200004517354390; 18402 SR 27, BRANTNER SR 27 SHORT PLAT #728614 & REVISED SHORT PLAT # 732249, owners are BRANTNER, CRAIG B/KELLY J; 5 acres; 9/17/2015: NEW SFR 1617SF MAIN-1192SF DAYLIGHT BASEMENT-665SF ATTACHED GARAGE; 11/19/2015: NEW 1600SF POLE BUILDING.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Construction
- Decommission

PROPOSED USE:
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

TYPE OF WORK: Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Dog
- Bored
- Driven
- Deepened
- Cable
- Rotary
- Jettied

DIMENSIONS:
- Diameter of well 5.5 inches, drilled 133 ft.
- Depth of completed well 112 ft.

CONSTRUCTION DETAILS
- Casing: Welded 8" Diam. from 0 ft. to 20 ft.
- Installed: Liner installed 5" Diam. from -12 ft. to 97 ft.
- Threaded 5" Diam. From -102 ft. to 112 ft.

Perforations:
- Yes
- No

Type of perforator used

SIZE of perfor in by in, and no. of perfor from ft. to ft.

Screens:
- Yes
- No
- K-Pac Location

Manufacturer's Name

Type: Stainless Steel

Model No.

Diam. Slot size 18 from ft. to 102 ft.

Diam. Slot size from ft. to ft.

Gravel Filter packed:
- Yes
- No

Size of gravel/sand 1/8

Materials placed from 95 ft. to 120 ft.

Surface Seal:
- Yes
- No

To what depth? 18 ft.

Material used in seal: Bentonite

Did any strata contain unusable water:
- Yes
- No

Type of water:

Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type: H.P.

WATER LEVELS:
- Land-surface elevation above mean sea level ft.
- Static level 80 ft. below top of well Date 10/28/15
- Artesian pressure lbs. per square inch Date
- Artesian water is controlled by (cap, valve, etc.)

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made:

Yield: 25 gal./min. with ft. drawdown after hrs.

Yield: 10 gal./min. with ft. drawdown after hrs.

Yield: 15 gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from
well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test 10/28/15

Bailer test gal./min. with ft. drawdown after hrs.

Airtest 20 gal./min. with stem set at 100 ft. for 1/2 hrs.

Artesian flow g.p.m. Date

Temperature of water Cold

Was a chemical analysis made:
- Yes
- No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.
- Driller
- Engineer
- Driller/Engineer/Trainee Name: Ken Hoyer

Drilling Company: H2O Well Service Inc.

Address: 582 W. Hayden Ave.

City, State, Zip: Hayden, WA, 89335

Contractor's Registration No.: H2OWESI01DW Date: 10/29/15

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
DALE BRANTNER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 10, 2018

Well Log ID: 455942 Elev (ft): 2510 ±10 Depth (ft): 283 7.5’ Quad: Palouse

Latitude: 46.922705° Longitude: -117.089077” decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 35, T. 17N, R. 45E

Well Address and (or) Other Location Information:
18702 State Route 27, Palouse, Wash.; on west side of road

Location Method:
Location is for well, east of house, inside white fence; Whitman County Assessor; Google Earth imagery; topographic map. Range is incorrect on driller’s report. Site visit March 24, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>15</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>47</td>
</tr>
<tr>
<td>Sand</td>
<td>139</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>177</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>226</td>
</tr>
<tr>
<td>Grande Ronde Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>273</td>
</tr>
</tbody>
</table>

1In the Palouse city area, it is not uncommon to have sand or clay beds incorporated within the Lolo flow (Bush and others, 2016), thus difficult to determine upper boundary of the Vantage Member.
Comments:
Whitman County Tax Parcel 200004517354903, 18702 SR 27, SE 1/4 PT N1/2 CITIMORTGAGE INC 12-01/50918 633020, owners are BRANTNER, DALE C/BEVERLY; 9.96 acres;

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Name: **DALE BRAUNER**
Address: **310 N E St, Palouse WA 99161**

**LOCATION OF WELL:** County: **Whitman**

**STREET ADDRESS OF WELL** (or nearest address)

**PROPOSED USE:**
- Domestic [X]
- Irrigation [X]
- Industrial [ ]
- Municipal [ ]
- DeWater [ ]
- Other [ ]

**TYPE OF WORK:**
- Owner’s number of well (if more than one)
  - Abandoned [ ]
  - New well [X]
  - Method: Dug [ ]
  - Bored [ ]
  - Deepened [ ]
  - Cable [ ]
  - Rotary [X]
  - Recommissioned [ ]
  - Jetted [ ]

**DIMENSIONS:**
- Diameter of well: **8” 6”** inches.
- Depth of completed well: **283’** ft.

**CONSTRUCTION DETAILS:**
- Casing installed: **8”** Diam. from **1’** ft. to **20’** ft.
- Welded Liner installed: **6”** Diam. from **12’** ft. to **77’** ft.
- Threaded [ ]

- Perforations: **Yes [X]** No [ ]
  - Type of perforator used: **[ ]**
  - Size of perforations: **[ ]** in. by **[ ]** in.
  - perforations from **[ ]** ft. to **[ ]** ft.
  - perforations from **[ ]** ft. to **[ ]** ft.
  - perforations from **[ ]** ft. to **[ ]** ft.

- Screens: **Yes [X]** No [ ]
  - Manufacturer’s Name: **[ ]**
  - Type: **[ ]**
  - Model No.: **[ ]**
  - Diam: **[ ]** from **[ ]** ft. to **[ ]** ft.
  - Slot size: **[ ]** from **[ ]** ft. to **[ ]** ft.
  - Gravel packed: **Yes [X]** No [ ]
  - Size of gravel: **[ ]**
  - Gravel placed from **[ ]** ft. to **[ ]** ft.

- Surface seal: **Yes [X]** No [ ]
- To what depth? **20’** ft.
- Material used in seal: **Concrete**
- Did any strata contain unusable water? **Yes [X]** No [ ]
- Type of water? **[ ]**
- Depth of strata: **[ ]**
- Method of sealing strata off: **[ ]**

**PUMP:**
- Manufacturer’s Name: **[ ]**
- Type: **[ ]**
- H.P.: **[ ]**

**WATER LEVELS:**
- Land-surface elevation: **[ ]** ft. above mean sea level
- Static level: **[ ]** ft. below top of well
- Date: **[ ]**
- Artesian pressure: **[ ]** lbs. per square inch
- Date: **[ ]**
- Artesian water is controlled by: **[ ]**
- (Cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? **Yes [X]** No [ ]
- If yes, by whom? **[ ]**
- Yield: **[ ]** gal./min. with **[ ]** ft. drawdown after **[ ]** hrs.
- **[ ]**
- **[ ]**
- **[ ]**
- **[ ]**
- **[ ]**
- **[ ]**
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of test</th>
</tr>
</thead>
</table>
| Bailer test: **[ ]** gal./min. with **[ ]** ft. drawdown after **[ ]** hrs.
| Arterest: **[ ]** gal./min. with stem set at **[ ]** ft. for **[ ]** hrs.
| Artesian level: **[ ]** g.p.m. Date: **[ ]**
| Temperature of water: **[ ]** |
| Was a chemical analysis made? **Yes [X]** No [ ] |

**RECEIVED**

FEB 28 2000

DEPARTMENT OF ECOLOGY

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** **[ ]**
**(SIGNATURE)**

**ADDRESS:**

**LICENSE NO:** **[ ]**

**Contractor’s Registration No.:** **[ ]**

**License No.:** **[ ]**

**USE ADDITIONAL SHEETS IF NECESSARY**

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
Dave and Mary Brawdy Well

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, April 16, 2016

Well Log ID: 176599  Elev (ft): 2576.54  Depth (ft): 400  Quad: Moscow West

Latitude: 46.706798  Longitude: -117.073145  decimal degrees (WGS84)

¼,  SW ¼,  SW ¼,  Sec. 7 ,  T. 14 N ,  R. 46 E

Well Address and (or) Other Location Information:
1203 Brown Rd., Pullman, Wash., on northwest side of road; Well plots northeast of Quonset hut-style barn. Street number and PLSS subdivisions incorrect on driller’s report.

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile). Visual of Quonset hut (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>21</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>38</td>
</tr>
<tr>
<td>Basalt</td>
<td>40</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>205</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>unknown magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>unknown member</td>
<td></td>
</tr>
<tr>
<td>unknown flow</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>228</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004614073900, 1203 BROWN RD., SW PT 2.36 AC, owners are BRAWDY, DAVID/MARY; one story residence built in 1967.

There are four mailboxes (1101, 1103, 1201, and 1203) at one long driveway here, running northwest off Brown Road.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Dave & Mary Brawdy
Address: 1101 Brown Rd, Pullman WA 99163

(2a) LOCATION OF WELL: County: Whitman

(3) PROPOSED USE: X Domestic □ Irrigation □ Industrial □ Municipal □ DeWater □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
Abandoned □ New well X Method: Dug □ Bored □ Deepened □ Reconditioned □ Drill □ Rotatory □ Jetted □

(5) DIMENSIONS: Diameter of well 6" inches,
Drilled 400 feet. Depth of completed well 400 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from +2 ft. to -228 ft.
Welded X 4" Diam. from -220 ft. to -400 ft.
Liner installed □ Slot size □ ft. to. ft.
Threaded □ Slot size □ ft. to. ft.

Perforations: Yes □ No □
Type of perforator used: Skillsaw
Size of perforations 1/8 in. by 6 in.
45 perforations from ft. to ft.

Screens: Yes □ No □
Manufacturer's Name
Type □ Model No. □
Diam. □ Slot size □ ft. to. ft.
Diam. □ Slot size □ ft. to. ft.

Gravel packed: Yes □ No □
Size of gravel □ ft. to. ft.

Gravel placed from ft. to. ft.

Surface seal: Yes □ No □
To what depth? □ Bentonite 200 ft.
Material used in seal □
Did any strate contain unusable water? Yes □ No □
Type of water? □ Depth of strate. □

Method of sealing strate off.

(7) PUMP: Manufacturer's Name
Type: □ H.P.

(8) WATER LEVELS:
Land-surface elevation 200 ft. below top of well Date
Static level □ ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by □ (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes □ No □ if yes, by whom?
Yield: gal. / min. with ft. drawdown after hrs.

Date of test
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Boiler test gal. / min. with ft. drawdown after hrs.
Airtest 25 gal. / min. with stem set at 398 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes □ No □

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
Clay Brown 0 21
Basalt Black Medium 21 38
Basalt Broken 38 40
Basalt Black Hard 40 84
Basalt Medium W/Gray 84 100
Basalt Black Medium 100 205
Basalt W/Green Gray Clay Soft 205 228
Basalt Black Medium 228 378
Basalt Fractured W/Water 378 400

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME H2O WELL SERVICE INC 1-800-772-4901
Address 582 W HAYDEN AVE HAYDENLAKE ID 83835

(Signed) Jim McLeslie License No. 2257
Contractor's Registration No. H2OWEST1101DW Date 12/3/97 19
(USE ADDITIONAL SHEETS IF NECESSARY)
F.C. BRAYTON WELL 2

[DRILLED IN 2002]

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, July/August, 2016; November 9, 2017

Well Log ID: 347100  Elev (ft): 2363  Depth (ft): 225  Quad: Albion

Latitude: 46.76295  Longitude: -117.22448  decimal degrees (WGS84)

NE ¼, NE ¼, NE ¼, Sec. 26, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
781 Brayton Road, Pullman, Wash., on west side of road

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, CS-06, "Bobo's old house"); Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Dirt and clay</td>
<td>0 – 16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>16 – 105</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>105 – 113</td>
</tr>
<tr>
<td>Sand</td>
<td>113 – 136</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>136 – 143</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>143 – 225</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004415261903, 781 BRAYTON RD, NE1/4 PT NE1/4, now owned by BACKES, RICHARD A/NANCY A; 3.16 acres; grantors were BRAYTON, FC/EILEEN on 10/01/06.

Frederick Charles "Bobo" Brayton died at age 89 in 2015 (The Seattle Times, 2015).

References Cited:

**WATER WELL REPORT**

**Construction/Decommission:** 124040

**Current Notice of Intent No:** W065641

**Unique Ecology Well Tag No:** AAW729

**Department:** FISC

**Property Owner Name:** F. C. B. Breton

**Well Street Address:** 781 Breton Rd

**City:** Fallston

**County:** Harford

**Location:** NE1/4 NE1/4 Sec. 26 Twn. 15N R. 44E

**WWM circle one:**

**Lat/Long:**

- (N S, E W)
- (Lat Deg) 38 45 45, (Lat Min/Sec) 20 20 20

**Constr./Decommission Procedure:**

Formation: Described by color, character, size of material and structure in each stratum penetrated with at least one entry for each change of information. Indicate water encountered.

**Use Additional Sheets if Necessary:**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
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<td>12</td>
</tr>
<tr>
<td>clay</td>
<td>16</td>
<td>165</td>
</tr>
<tr>
<td>sand</td>
<td>105</td>
<td>113</td>
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<tr>
<td>sand</td>
<td>136</td>
<td>143</td>
</tr>
<tr>
<td>gravel</td>
<td>143</td>
<td>225</td>
</tr>
</tbody>
</table>

**Received:** SEP 26 2002

**Department of Ecology:**

**Well Drilling Unit:**

**WATER LEVELS:**

- Land surface elevation above mean sea level: 145 feet
- Static level: 145 feet below top of well Date: 8/17/02
- Artesian pressure: 10 lbs per square inch Date:
- Artesian water controlled by: (cap valve etc.)

**WELL TESTS:**

- Drawdown is among water level is lowered below static level
- Was a pump test made: [ ] Yes [ ] No If yes by whom:
  - Yield: [ ] gal/min with [ ] ft drawdown after [ ] hrs
  - Yield: [ ] gal/min with [ ] ft drawdown after [ ] hrs
  - Yield: [ ] gal/min with [ ] ft drawdown after [ ] hrs

**RECEIVED:**

- Date: 8/17/02

**Driller:** Driller [ ]

**Engineer:** Engineer [ ]

**Trainer:** Trainer [ ]

**Name:** W. W. Wendt

**Address:** P.O. Box 204

**City:** Fallston

**State:** MD

**Zip:** 21046

**Phone:** 833-51

**ECOLOGY is an Equal Opportunity Employer**

**ECD 050 1 20 (Rev 4/01)**
FREDERICK BRAYTON WELL

[DRILLED IN 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 17, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>510957</th>
<th>Elev (ft):</th>
<th>2390</th>
<th>Depth (ft):</th>
<th>185</th>
<th>Quad: Albion</th>
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<tbody>
<tr>
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<td>Longitude:</td>
<td>-117.223830</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NE ¼, NE ¼, NE ¼, Sec. 26, T. 15 N, R. 44 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
701 Brayton Road, Pullman, Wash., on west side of road

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, CS-05, "Bobo's new house"); Whitman County Assessor; Google Earth imagery; topographic map. Well street address and owner's first name are misspelled on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>0 – 112</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>112 – 130</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>*Basalt, soft, broken, brown</td>
<td>130 – 180</td>
</tr>
<tr>
<td>Basalt, &quot;ratty,&quot; brown</td>
<td>180 – 185</td>
</tr>
</tbody>
</table>
Comments:

*The break between Wanapum and Grande Ronde units is difficult to pick. Other wells in the area have Vantage sediments between the two basalts. The lack of sediments is possible, and the choice was made where brown broken basalt was first recorded.

Whitman County Tax Parcel 20004415261904, NE1/4 PT NE1/4, owner is BRAYTON, FREDERICK C (701 BRAYTON RD); 8.69 acres.

Frederick Charles "Bobo" Brayton died at age 89 in 2015 (The Seattle Times, 2015).

References Cited:


**WATER WELL REPORT**

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

**Construction/Decommission ("x" in circle)**
- [X] Construction
- [ ] Decommission

**NOTICE OF INTENT NUMBER**

- **PROPOSED USE:** [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] Driller's License No.
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

**TYPE OF WORK:** Owner's number of well (if more than one)
- [ ] New well
- [ ] Reconditioned
- Method: [ ] Dug
- [ ] Bored
- [ ] Driven
- [ ] Deepened
- [ ] Dug
- [ ] Cased
- [ ] Rotary
- [ ] Jetted

**DIMENSIONS:** Diameter of well 8 inches, drilled 130 ft.

- Depth completed well 185 ft.

**CONSTRUCTION DETAILS**

- Casing: [ ] Welded
- Diam. from 12 to 18 in.
- Installed: [ ] Liner installed
- Diam. from 125 in. to 185 ft.

**Perforations:** [ ] Yes
- Type of perforator used: SAW

**Screen Size:** of perf. 1/8 in.
- by 4 in.
- and no. of perf. 22
- from 145 ft. to 185 ft.

**Screen:** [ ] Yes
- No
- K-Pac
- Location

**Manufacturer's Name:**

**Type:**

**Diameter:** Slot size from ft. to ft.

**Diam.:** Slot size from ft. to ft.

**Gravel/Filter packed:** [ ] Yes
- No
- Size of gravel/sand

**Materials placed from ft. to ft.**

**Surface Seal:** [ ] Yes
- No
- To what depth? 20 ft.

**Material used in seal:** BENTONITE

**Did any strata contain unusable water?** [ ] Yes
- [ ] No

**Type of water:**

**Method of sealing strata off:**

**PUMP:** Manufacturer's Name

**Type:** H.P.

**WATER LEVELS:** Land-surface elevation above mean sea level ______ ft.

- Static level: 96 ft. below top of well Date 6-29-07
- Artesian pressure ______ lbs. per square inch Date

**Artesian water is controlled by ______ (cap, valve, etc.)**

**WELL TESTS:** Drawdown is amount water level is lowered below static level

- Was a pump test made? [ ] Yes
- [ ] No
- If yes, by whom? ______

- Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
- Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
- Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

**Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date of test:**

**Bailer test:** gal./min. with ______ ft. drawdown after ______ hrs.

**Airstest:** 50 gal./min. with stem set at 185 ft. for 1.5 hrs.

**Artesian flow:** g.p.m. Date

**Temperature of water 55°. Was a chemical analysis made?** [ ] Yes
- [ ] No

---

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- [ ] Driller
- [ ] Engineer
- [ ] Trainee

**Driller/Engineer/Trainee Signature:**

**Driller or trainee License No.:**

**IF TRAINEE: Driller's License No.:**

**ECY 050-1-20 (2007)**
HERB BRAYTON WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 18, 2016; November 9, 2017

Well Log ID: 293787  Elev (ft): 2396  Depth (ft): 182  7.5’  Quad: Albion

Latitude: 46.76081  Longitude: -117.22373  decimal degrees (WGS84)

SE ¼, NE ¼, NE ¼, Sec. 26, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
901 Brayton Road, Pullman, Wash., on west side of road

Location Method:
Latitude, longitude, and elevation from Moxley (2012, p. 73, CS-08, "Brayton rental"); Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>3 – 18</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>18 – 65</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>65 – 72</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>72 – 90</td>
</tr>
<tr>
<td>Sand</td>
<td>90 – 113</td>
</tr>
<tr>
<td>Clay</td>
<td>113 – 120</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>120 – 128</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>128 – 135</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>135 – 137</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
</tbody>
</table>
Vantage Member(?)  
Clay, gray  137 – 138

Grande Ronde Basalt  
N2 magnetostratigraphic unit  
Sentinel Bluffs Member  
Basalt, alternating hard and fractured  138 – 182

Comments:
Whitman County Tax Parcel 200004415261902, 901 BRAYTON RD, NE PT E 1/2 E Of RR 26-15-44; owners now are COURT, MICHAEL and GRETCHEN KAUFMAN; 3.0 acres; grantor was BRAYTON, HERBERT on 12/21/12; 1½ story residence built in 2014.

Above, "Court" parcel is near upper right on plat map.
References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name  Herb Brayton  Address  Pullman

LOCATION OF WELL: County Whitman

STREET ADDRESS OF WELL (or nearest address)

PROPOSED USE:  Domestic ☐  Irrigation ☐  Industrial ☐  Municipal ☐
  DeWater ☐  Test Well ☐  Other ☐

TYPE OF WORK:  Owner's number of well (if more than one)
  Abandoned ☐  New well ☐  Method: Dug ☐  Drilled ☐  Bored ☐
  Deepened ☐  Reconditioned ☐

DIMENSIONS:
  Diameter of well: 8" to 10"  12" to 18" inches.
  Drilled: 10 ft.  Depth of completed well: 150 ft.

CONSTRUCTION DETAILS:
  Casing installed: 8"  Diam. from: 1 ft. to 21 ft.
  Welded: 6"  Diam. from: 1 ft. to 121 ft.
  Liner installed: 6"  Diam. from: 1 ft. to 121 ft.
  Threaded: 6"  Diam. from: 1 ft. to 121 ft.

Perforations: Yes ☐  No ☐
  Type of perforator used
  Size of perforations: 1 in. by 1 in.

Screens: Yes ☐  No ☐
  Manufacturer's Name
  Type
  Model No.
  Diam. Slot size. from ft. to ft.
  Diam. Slot size. from ft. to ft.

Gravel packed: Yes ☐  No ☐
  Size of gravel
  Gravel placed from ft. to ft.

Surface seal: Yes ☐  No ☐
  To what depth? 14 ft.
  Material used in seal
  Did any strata contain usable water? Yes ☐  No ☐
  Method of sealing strata off

PUMP:  Manufacturer's Name
  Type
  H.P.

WATER LEVELS:
  Land-surface elevation
  Above mean sea level
  Static level: 45 ft. below top of well Date 3/14/93
  Artesian pressure: lbs. per square inch Date
  Artesian water is controlled by

WELL TESTS:
  Drawdown is amount water level is lowered below static level
  Was a pump test made? Yes ☐  No ☐
  If yes, by whom?
  Yield: gal./min. with ft. drawdown after hrs.

  Recovery data (time taken as zero when pump turned off)
  (water level measured from well top to water level)
  Time  Water Level  Time  Water Level

Date of test

DECEIVER
APR 23 1993

WELL CONSTRUCTOR CERTIFICATION:
I have constructed and/or accept responsibility for construction of this well,
and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best
knowledge and belief.

NAME William Kolb
ADDRESS 159 Exors Ln
(Signed) William Kolb
License No. 0623
WELL DRILLER
Contractor's Registration No. 137 PB Date April 6 1983

(USE ADDITIONAL SHEETS IF NECESSARY)
CARL BRENNE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2017

Well Log ID: 768602  Elev (ft): 2440 ±5  Depth (ft): 350  Quad: Colfax North

Latitude: 46.929314  Longitude: -117.319021  decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 31, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
411 Red Tail Ridge Road, Colfax, Wash.; at end of road

Location Method:
Well is in field west of big log cabin house and north of driveway; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0  –  80</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>80  –  121</td>
</tr>
<tr>
<td>Basalt</td>
<td>121  –  233</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, orange</td>
<td>233  –  250</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>250  –  325</td>
</tr>
<tr>
<td>Basalt, soft (possible pillows)</td>
<td>325  –  350</td>
</tr>
</tbody>
</table>
Comments:
Whitman County tax parcel 101420000080000, 411 REDTAIL RIDGE RD; RED TAIL RIDGE SUBD, Lot 08, Block 00; owner is BRENNE, CARL; 8.17 acres.

References Cited:
WATER WELL REPORT

Notice of Intent Number W301707

Property Owner Last Name Brenne

Organization Name

Well Tag ID Number (e.g., AAA-001) BCP 091

Variance Granted? (Circle One) Yes  No

Water Right Permit Required? (Circle One) Yes or No If Yes, enter Water Right Permit Here (Required)

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Commercial
- Domestic
- Individual Irrigation
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Deepened Well
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Driven
- Jetted
- Rotary

Drilling Start Date 5/24/2011
Drilling Completion Date 5/27/2011

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)

Well Street Address Red Tail Ridge Subdivision - Lot 8 Off North Palouse Rd.

Well City Colfax

Well County Whitman

Well Zip Code 99111

Tax Parcel Number 1-0142-00-00-08-00

If claiming tax parcel exemption (Circle One) Tribal Federal Property Right of Way Railroad Land

Township 17 N Range 44 Circle One East or West Section 31 N W NW

Latitude Decimal Degrees; Longitude West Decimal Degrees

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well ft 60 in, Drilled 350 ft in, Depth of Completed Well 330 ft in

Casings (At least one Casing must have 6 in of stickup and all fields must be filled out for each casing entered)

Type (Circle One) Concrete Plastic Steel Other

Diameter 6 inches Stickup 3/4 inches Depth 2 ft in, TO 80 ft in

Type (Circle One) Concrete Plastic Steel Other

Diameter 6 inches Stickup 3/4 inches Depth 2 ft in, TO 80 ft in

Liners? Circle One Yes No (If yes, then complete the below fields that apply)

Type 1 (Circle One) PVC Steel Other

Diameter 4 1/2 in, From 30 ft in TO 350 ft in

Type 2 (Circle One) PVC Steel Other

Diameter 4 1/2 in, From 30 ft in TO 350 ft in

Perforations? Circle One Yes No (If yes, then complete the below fields that apply)

Type of Perforator (Circle One) Drill Mills Knife Saw cup Star Torch Cut Other

Perforation size 3/8 in by 4 in Total Perforations 17 ft

Perforation 1 from 310 ft in TO 350 ft inches Perforation 2 from 310 ft in TO 350 ft inches

Screens? (Circle One) Yes No (If yes, then complete the below fields that apply)

Mfr 1 Type Diam Slot Size From 30 ft in TO 350 ft in

Mfr 2 Type Diam Slot Size From 30 ft in TO 350 ft in

ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.
If you need this document in an alternate format, please call the Water Resources Program at 360-407-5872.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes ☐ If yes, then complete the below fields that apply

<table>
<thead>
<tr>
<th>Packing Material 1</th>
<th>Circle One</th>
<th>10-20</th>
<th>20-40</th>
<th>8-12</th>
<th>Coarse Sand</th>
<th>Pea Gravel</th>
</tr>
</thead>
<tbody>
<tr>
<td>From ft in TO ft in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing Material 2</th>
<th>Circle One</th>
<th>10-20</th>
<th>20-40</th>
<th>8-12</th>
<th>Coarse Sand</th>
<th>Pea Gravel</th>
</tr>
</thead>
<tbody>
<tr>
<td>From ft in TO ft in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surface Seal Was there an existing surface seal? Yes or ☐ Depth of Seal ___ ft in

Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Yes ☐ If yes, Mfr Name Pump Type __________ HP __________

Static Water Level (Circle One and fill in the blanks if needed)

<table>
<thead>
<tr>
<th>Yes</th>
<th>Measured Level (Below top of well) 270 ft in Date Measured 5/27/11</th>
</tr>
</thead>
</table>

Flowing Artesian (Circle One) Greater Than or Equal To 25 GPM PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)__ __________

Dry Hole

Unusable Water Strata? (Circle One) Yes ☐ If Yes is circled, method of sealing strata off:

Strata 1 (Specify Unusable Water Type) From ft in TO ft in

Strata 2 (Specify Unusable Water Type) From ft in TO ft in

General Well Tests (Circle all that apply and fill in the blanks)

<table>
<thead>
<tr>
<th>Baller Test</th>
<th>Date of test (Circle One) Greater Than or Equal To GPM, with Drawdown after hrs min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Test</td>
<td>Date of test 5/27/11 (Circle One) Greater Than or Equal To 25 GPM, with stem set at ___ ft in Test Duration hrs min</td>
</tr>
<tr>
<td>Pump Test</td>
<td>Date of test Test performed by</td>
</tr>
</tbody>
</table>

Note: Drawdown = the amount the water level is lowered below the static level

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Note: Recovery = The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Layer Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>Soft black, coal</td>
<td>80</td>
<td>121</td>
</tr>
<tr>
<td>Medium black, coal</td>
<td>121</td>
<td>183</td>
</tr>
<tr>
<td>Orange clay</td>
<td>183</td>
<td>233</td>
</tr>
<tr>
<td>Hard black, coal</td>
<td>233</td>
<td>350</td>
</tr>
<tr>
<td>Hard brown, coal</td>
<td>350</td>
<td>375</td>
</tr>
<tr>
<td>Hole Caved to 330 feet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

(Circle One) Driller Trainee Engineer Name Drilling Company

Driller/Trainee/Engineer Signature Bret Uhlentok Drilling

Address PO Box 233

City, State, Zip Cottonwood, ID 83522

Driller/Trainee/PE License No. Phone Number 208-462-3200

If Trainee Mentor Driller License No. Email Address
MARTHA BROOKS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 3, 2016

Well Log ID: 156393  Elev (ft): 2340 ±10  Depth (ft): 255  Quad: Colfax North

Latitude: 46.883656  Longitude: -117.323955  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
651 Chicken Ranch Road, Colfax, Wash., on southwest side of road; well is west of house, about 10 ft higher than house and behind wire fence.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 3 of Bush and others (2005 [2006]) plots on this property. Site visit (September 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>21</td>
<td>147</td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>147</td>
<td>190</td>
</tr>
<tr>
<td>Basalt</td>
<td>190</td>
<td>255</td>
</tr>
</tbody>
</table>

Comments:
Whitman County Tax Parcel 200004416182902, NW1/4 LYING S OF RD; owners are now RIEBOLD, THOMAS/SUSAN; 10.0 acres; 1 story residence, built in 1910. No grantors are listed, so we are not 100 percent sure this is the proper parcel, except for the fact that Bush and others 2005 [2006]) plotted Colfax North quadrangle Well 3 on this property.
Above left, well is to right of large fence post, in front of green bushes.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Martha Brooks
Address: NE V NW Sec 18 T 10 N R 44 W

(2) LOCATION OF WELL: Whitman
(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: Domestic □ Industrial □ Municipal □
Dwating □ Irrigation □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well
Abandoned □ New well □ Method: Dug □ Bored □
Deepened □ Reclassified □ Rotary □ Jetted □

(5) DIMENSIONS:
Diameter of well 8 4/6 inches.
Drilled 255 feet. Depth of completed well 255 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 * Diam. from 1 ft. to 28 ft.
Welded □ Threaded □ Perforations: Yes □ No □
Liner installed: Diam. from ft. to ft.
Perforations from ft. to ft.
Perforations from ft. to ft.
Perforations from ft. to ft.

Screens: Yes □ No □
Manufacturer's Name
Type: __________________________ Model No: __________________________
Diam. Slot size: Diam. Slot size:
Gravel packed: Yes □ No □ Size of gravel
Gravel placed from ft. to ft.
Surface seal: Yes □ No □ To what depth? 28 ft.

(7) PUMP: Manufacturer's Name
Type: __________________________ H.P.: __________________________

(8) WATER LEVELS:
Land Surface elevation above mean sea level 147 ft.
Static level 147 ft. below top of well Date 8-24-92
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured
from well top to water level)
Time Water Level Time Water Level

Date of test

Well constructor certification:
I constructed and/or accept responsibility for construction of this well,
and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best
knowledge and belief.

NAME: McPHERSON & WRIGHT DRILLING
ADDRESS: 2246 Burrell
LEWISTON, IDAHO 83501

License No. 0523

Contractor's Reproduction

Date Sept 16, 1992

(USE ADDITIONAL SHEETS IF NECESSARY)
AL BRUNS WELL 1
[DRILLED IN 1988]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, January 11, 2018

Well Log ID: 149245  Elev (ft): 2650 ±10  Depth (ft): 212  7.5’  Quad: Palouse

Latitude: 46.906068°  Longitude: -117.045835°  decimal degrees (WGS84)

¼, ¼, NW ¼, Sec. 5, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
1853 South River Road, Palouse, Wash., on south side of road

Location Method:
Assumed location is for house owned by Albert and Ruth Bruns on South River Road about 0.3
mi west of Washington-Idaho state line; Whitman County Assessor; Google Earth imagery;
topographic map; driller recorded "Lot 2."
Ralston (1996, Table 1, p. 8) incorrectly reported location as T. 16 N., R 46 E, Sec. 6, "nw/se."
Well 20 of Bush and others (2005 [2006]) (which was incorrectly located in T. 16 N., R 46 E,
Sec. 6, NE¼); site visit March 26, 2018—well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Sand, tan</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 83</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>83 – 209</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>209 – 210</td>
</tr>
<tr>
<td>Basalt</td>
<td>210 – 212</td>
</tr>
</tbody>
</table>
Comments:

Likely Whitman County Tax Parcel 826900000000013, PALOUSE N1/2 5-16-46 15.03 AC 1988MH CANDLEWOD, owners are BRUNS, ALBERT/RUTH; 1853 S RIVER ROAD, 15.03 acres. [MH, modular home (year is 1988; type is Candlewood) was moved to Tax Parcel 826900000000033, PALOUSE N1/2 5-16-46 MOVED MH TO PP 3-89/29573352850008742001, owners are BRUNS, ALBERT/RUTH; 1853 S RIVER ROAD, 6 acres.]

References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: AC BRUNS
Address: 1040 GRINNELL RD

(2) LOCATION OF WELL:
County: Whitman
Lot: 25 Sec.: 5

(3) PROPOSED USE:
Domestic [] Industrial [] Municipal []
Irrigation [] Test Well [] Other []

(4) TYPE OF WORK:
Owner's number of well (if more than one)...
New well [ ] Method: Dug [ ] Bored [ ]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS:
Diameter of well 8 ft. 6 in. Depth of completed well 21.2 ft.
Drilled ______ ft. Depth of completed well 21.2 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 1 ft. to 28 ft.
Threaded [ ] " Diam. from _____ ft. to _____ ft.
Welded [ ] " Diam. from _____ ft. to _____ ft.

Perforations: Yes [ ] No [ ]
Type of perforator used:

SIZE OF perforations

perforations from ______ ft. to ______ ft.
perforations from ______ ft. to ______ ft.
perforations from ______ ft. to ______ ft.

Screens: Yes [ ] No [ ]
Manufacturer's Name:
Type: ______
Model No. ______

Diam. Slot size from ______ ft. to ______ ft.
Diam. Slot size from ______ ft. to ______ ft.

Gravel packed: Yes [ ] No [ ]
Size of gravel: ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes [ ] No [ ]
To what depth: ______ ft.
Material used in seal: ______
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water: ______
Depth of strata: ______
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: ______

(8) WATER LEVELS:
Land-surface elevation above mean sea level ______ ft.
Static level ______ ft. below top of well Date: 5-23-88
Artesian pressure ______ lbs. per square inch Date: ______
Artesian water is controlled by: ______ (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test: ______
Ball test: gal./min. with ______ ft. drawdown after ______ hrs.
Artesian flow ______ g.p.m. Date: ______
Temperature of water ______ Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MATERIAL FROM TO

Formation Notes:

JUL 8 1988

DECLARATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: McPherson & Wright Drilling
Payment, firm, or corporation: Lewisville, Tex
Address: Lewisville, Tex
Phone: 1-801

[Signed] Lewis Wright
WELL DRILLER

License No: 52.3 Date: 6-10-88

(USE ADDITIONAL SHEETS IF NECESSARY)
### Geologic Interpretation of Water Well Driller’s Log

**By John H. Bush, January 24, 2018**

Well Log ID: 1629103  Elev (ft): 2710 ±10  Depth (ft): 620  Quad: Viola

Latitude: 46.75609  Longitude: 117.07069  decimal degrees (WGS84)

\[
\text{¼, NW ¼, SW ¼, Sec. 30, T. 15 N, R. 45 E}
\]

**Well Address and (or) Other Location Information:**

451 Iron Eagle Lane, Pullman, Wash., on north side of Pullman Airport Road

**Location Method:**

Location is for well, in field at top of hill northwest of the Evangelical Free Church; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 14, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>156</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>290</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green and brown</td>
<td>340</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>519</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004615303692, 451 IRON EAGLE LANE, PARCEL B THUNDER EAGLE BUSCH PULLMAN AIRPORT RD CLUSTER A SHORT PLAT NO. 742398; owners are BUSCH, ERIC & JACQUELYN; 07/28/17: grantor was EVANGELICAL FREE CHURCH to THUNDER EAGLE LLC; 07/03/18: grantor was THUNDER EAGLE LLC to BUSCH, ERIC & JACQUELYN; 4.0 acres.

Well is in field on northwest side of gravel access road (assumed to now be Iron Eagle Lane).

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

[ ] Construction
[ ] Decommission

PROPOSED USE:
[ ] Domestic
[ ] Industrial
[ ] Municipal
[ ] DeWater
[ ] Irrigation
[ ] Test Well
[ ] Other

TYPE OF WORK: Owner's number of well (if more than one)
[ ] New well
[ ] Reconditioned
[ ] Method: [ ] Dug
[ ] Bored
[ ] Driven
[ ] Deepened
[ ] Cable
[ ] Rotary
[ ] Jetted

DIMENSIONS: Diameter of well

CONSTRUCTION DETAILS:

Casing [ ] Yielded:

Installed:
[ ] Liner installed
[ ] Diam. from:
[ ] Ft.

[ ] Threaded:
[ ] Diam. From:
[ ] Ft.

Perforations:
[ ] Yes
[ ] No

Type of perforator used [ ] Skill saw cut

SIZE of perfor:

[ ] in. by

[ ] ft. to

[ ] ft.

[ ] in. and no. of perfor

Screens:
[ ] Yes
[ ] No

Location:

Manufacturer's Name:

WESTERN RUBBER (FABRICATION

Type

Model No.

Diam.

Slot size

from ft. to ft.

Diam.

Slot size

from ft. to ft.

Gravel/Filter packed:
[ ] Yes
[ ] No

Size of gravel/sand

Materials placed from ft. to ft.

Surface Seal:
[ ] Yes
[ ] No

To what depth:

[ ] ft.

Material used in seal:

[ ] bentonite

[ ] hole plug

Did any strata contain unusable water?
[ ] Yes
[ ] No

Type of water:

[ ] Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type:

H.P.

WATER LEVELS: Land-surface elevation above mean sea level

Static level:

below top of well

Date:

Artesian pressure lbs. per square inch

Artesian water is controlled by

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made?

[ ] Yes
[ ] No

If yes, by whom?

Yield:

gal./min. with ft. drawn down after hrs.

Yield:

gal./min. with ft. drawn down after hrs.

Yield:

gal./min. with ft. drawn down after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time

Water Level

Time

Water Level

Time

Water Level

Date of test

Bailer test

gal./min. with ft. drawn down after hrs.

Airstest

30 gal./min. with stem set at 600 ft. for 1 hrs.

Artesian flow

g.p.m.

Start Date

Completed Date

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller

[ ]

[ ] Engineer

[ ] Trainee Name (Print

Signature)

Drilling Company

Brett Uhlenkott Drilling

Address

PO Box 233

City, State, Zip

Cottontwood, ID, 83522

Registration No.

[ ]

Driller or trainee License No.

IF TRAINEE, Driller's License No.

Driller's Signature

# F.A. BRYANT WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 9, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>166520</th>
<th>Elev (ft):</th>
<th>2410 ±10</th>
<th>Depth (ft):</th>
<th>300</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.744704</td>
<td>Longitude:</td>
<td>-117.242408</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| ¼, SW ¼, NW ¼, Sec. 35, T. 15 N, R. 44 E |

**Well Address and (or) Other Location Information:**
23802 U.S. 195, Pullman, Wash., on west side of road, west of existing house (follow lane past the grain bins and sheds for about 0.6 mi, turn north after crossing little bridge, go about 0.1 mi to site).

**Location Method:**
Location is for abandoned farm yard; Whitman County Assessor; Google Earth imagery; topographic map; Pullman quadrangle Well 20 of Bush and Garwood (2005 [2006])

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>0 – 16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>16 – 141</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Shale, black</td>
<td>141 – 165</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, black</td>
<td>165 – 245</td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>245 – 292</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>292 – 300</td>
</tr>
</tbody>
</table>
Comments:

Site might be included in Whitman County Tax Parcel 200004415352900, 23802 SR 195, NW W1/2 & PT E1/2 W OF RD, owner now is OAK CREEK FARMS INC (the Sales History section states that on 06/17/15 the grantor was OAK CREEK FARMS for 11 parcels to MEYER, DOUGLAS/KATHRYN); 139.0 acres; 1½ story residence built in 1920.

Dr. F. A. Bryant, of Colfax, was a county physician for Whitman County in 1918 (The Spokesman-Review, 1918a,b).

The Spokesman-Review (1918a) The Spokesman-Review (1918b)
References Cited:


WELL LOG

Date: June 26, 1951
Record by: Harold Yager
Source: Driller's Record

Location: State of WASHINGTON
County: Whitman
Area:
Map: SW ¼ NW ¼ sec. 35 T. 15 N., R. 14 E.

Drilling Co.: Harold Yager
Address: 118 Kenneth St., Walla Walla, Wa.
Method of Drilling: Drilled
Date: June 26, 1951
Owner: F. A. Bryant
Address: Celfax, Wash.

Land surface, datum: ft. above

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil and clay</td>
<td>16</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Brown rock</td>
<td>22</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Gray rock</td>
<td>103</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td>Black shale</td>
<td>21</td>
<td>165</td>
<td></td>
</tr>
<tr>
<td>Black rock</td>
<td>80</td>
<td>215</td>
<td></td>
</tr>
<tr>
<td>Brown rock</td>
<td>17</td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>Red rock</td>
<td>8</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

Pump Test:
Dim: 300' x 12"
SWL: 86'
Dd: 3/4"
Yield: 500 g.p.m.
Casing: 12" diameter Standard Pipe from 0' to 39'

Turn up Sheet of sheets
**MARK CALHOUN WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, September 3, 2016

Well Log ID: 931039  Elev (ft): 2400 ±10  Depth (ft): 200  Quad: Colfax North

Latitude: 46.931755  Longitude: -117.297956  decimal degrees (WGS84)

NW ¼, NW ¼, NW ¼, Sec. 32, T. 17 N, R. 44 E

**Well Address and (or) Other Location Information:**
128 Rolling Hills Drive, Colfax, Wash., Lot 24, Red Tail Ridge; on northeast side of cul-de-sac

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0 To 16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 16 To 49</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 49 To 139</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>From 139 To 143</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 143 To 169</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 169 To 200</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 101420000240000, 128 ROLLING HILLS DR, RED TAIL RIDGE SUBD, Lot 24, Block 00, owners are CALHOUN SR, MARK/TERI; 1½ story residence, built in 2016; 10.77 acres; grantors were FLEMING, DAN/CINDY, on 10/31/13.

References Cited:
WATER WELL REPORT

Notice of Intent Number: WE14205
Property Owner Last Name: Calhoun
Organization Name:
Well Tag ID Number (e.g., AAA-001): BCP 068
Variance Granted? (Circle One) Yes No
Water Right Permit Required? (Circle One) Yes or No
If Yes, enter Water Right Permit Here (Required)

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Domestic
- Individual Irrigation
- Parks and recreation
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Deepened Well
- New
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Jetted
- Driven
- Hydrofracturing
- Rotary

Drilling Start Date: 9/18/2014
Drilling Completion Date: 9/18/2014

Well Location Only (No Mailing Address, No PO Box, Cross streets are ok)
Well Street Address: Lot 24 Red Tail Ridge
Well City: Colfax
Well County: Whitman
Well Zip Code: 99111

If claiming tax parcel exemption (Circle One)
- Tribal
- Federal Property
- Right of Way
- Railroad Land

Tax Parcel Number: 1042, 0000, 24, 0000

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: 6 ft 10 in, Drilled 18 ft 6 in
Depth of Completed Well: 200 ft 0 in

Casings (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered)
Type (Circle One): Concrete, Plastic, Steel, Other
Diameter: 10 inches
Stickup: 24 inches
Depth: +2 ft 1 in, TO -18 ft 1 in

Liners? Circle One Yes No
Type 1 (Circle One): PVC, Steel, Other
Diameter: 4 1/2 in, From 0 ft 0 in, TO 200 ft 0 in

Perforations? Circle One Yes No
Type of Perforator (Circle One): Drill, Mills Knife, Saw cut, Star, Torch Cut, Other
Perforation size: 1/8 in by 4 in
Total Perforations: 5/ft

Perforation 1 from ft 0 in, TO ft 200 in
Perforation 2 from ft 0 in, TO ft 0 in

Screens? Circle One Yes No
Type 1: Mfr 1, Type, Diam in, Slot Size, From ft 0 in, TO ft 0 in
Type 2: Mfr 2, Type, Diam in, Slot Size, From ft 0 in, TO ft 0 in

The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes [ ] If yes, then complete the below fields that apply

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _____ ft _____ in TO _____ ft _____ in

Packing Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _____ ft _____ in TO _____ ft _____ in

Surface Seal Was there an existing surface seal? Yes or [ ] No Depth of Seal _____ ft _____ in

Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes [ ] If yes, Mfr Name __________ Pump Type __________ HP __________

Static Water Level (Circle One and fill in the blanks if needed)

Measured Level (Below top of well) _____ ft _____ in Date Measured 9/18/14
Flowing Artesian (Circle One) Greater Than or Equal To _____ GPM PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)
Dry Hole

Unusable Water Strata? (Circle One) Yes [ ] If Yes is circled, method of sealing strata off

Strata 1 (Specify Usable Water Type) From _____ ft _____ in TO _____ ft _____ in

Strata 2 (Specify Usable Water Type) From _____ ft _____ in TO _____ ft _____ in

General Well Tests (Circle all that apply and fill in the blanks)

Date of test 9-18-14 Drawdown after____ hrs _____ min

Bauer Test Date of test 9-18-14 Greater Than or Equal To _____ GPM, with _____ Drawdown after____ hrs _____ min

Air Test Date of test 9-18-14 Greater Than or Equal To _____ GPM, with stem set at _____ ft _____ in

Test Duration 1 hrs 0 min

Pump Test Date of test 9-18-14 Test performed by_____________________

Note: Drawdown = the amount the water level is lowered below the static level

Yield _____ gpm, with _____ ft _____ in; Drawdown after____ hrs _____ min Yield _____ gpm, with _____ ft _____ in; Drawdown after____ hrs _____ min

Yield _____ gpm, with _____ ft _____ in; Drawdown after____ hrs _____ min Yield _____ gpm, with _____ ft _____ in; Drawdown after____ hrs _____ min

Note: Recovery = The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording

Time____ hrs _____ min; Water Level _____ ft _____ in Time____ hrs _____ min; Water Level _____ ft _____ in

Time____ hrs _____ min; Water Level _____ ft _____ in Time____ hrs _____ min; Water Level _____ ft _____ in

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td>0</td>
<td>16</td>
<td>Black shale w/bsalt mix</td>
<td>139</td>
<td>143</td>
</tr>
<tr>
<td>Black shale w/bsalt mix</td>
<td>16</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Med black bsalt</td>
<td>49</td>
<td>139</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Med soft black bsalt</td>
<td>143</td>
<td>169</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Med black bsalt</td>
<td>169</td>
<td>200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

Circle One: Driller/Trainee Engineer Name/Print: Brett Unkenko.

Drilling Company: Brett Unkenko Drilling

Address: PO Box 233

City, State, Zip: Cottonwood, ID 83522

Phone Number: 916-2300

If TRAINEE, Mentor Driller License No: __________________________

Mentor Driller Signature: __________________________
RICHARD CALLAHAN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 20, 2016

Well Log ID: NA Elev (ft): 2750 ±10
Depth (ft): 329 Quad: Moscow West

Latitude: 46.719258 Longitude: -117.037563 decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 13, T. 39 N, R. 6 W

Well Address and (or) Other Location Information:
2542 Old Pullman Highway, Moscow, Idaho; on north side of road

Location Method:
Location is for house (Steve Robischon, written commun., February 19, 2016); Latah County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, loess(?)</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill (?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>15</td>
</tr>
<tr>
<td>Gravel</td>
<td>69</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>78</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>122</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>123</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>224</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Shale and clay</td>
<td>249</td>
</tr>
<tr>
<td>Sand, coarse-grained</td>
<td>316</td>
</tr>
</tbody>
</table>
Comments:

Most drillers post-1985 do not report fractures and water occurrences above the bottom of wells. Regulators of non-mixing of aquifer water laws overenforced the rules. Drillers began to find water only at the bottom of wells to avoid trouble. This log is an example of how most water was encountered from the Lolo flow in the Moscow area.

The subdivision of the overburden into soil, loess and sediments of Bovill was just estimated.

Latah County Tax Parcel RP016850000080, 2542 OLD PULLMAN RD, owner is now JOHNSON, KARL W., HILLTOP ACRES, LOT 8.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
   Name: Dr. Callahan
   Address: Moscow
   Owner's Permit No: 87-86-N-5

2. NATURE OF WORK
   □ New well □ Deepened □ Replacement
   □ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
   □ Domestic □ Irrigation □ Test □ Municipal
   □ Industrial □ Stock □ Waste Disposal or Injection □ Other (specify type)

4. METHOD DRILLED
   ☑ Rotary □ Air □ Hydraulic □ Reverse rotary
   □ Cable □ Dug □ Other

5. WELL CONSTRUCTION
   Casing schedule: □ Steel □ Concrete □ Other
   Thickness __________ inches Diameter __________ inches
   From _______ to _______ feet
   __________ inches __________ inches _______ _______ feet
   _______ _______ _______ _______ feet

   Was casing drive shoe used? ☑ Yes □ No
   Was a packer or seal used? ☑ Yes □ No
   Perforated? ☑ Yes □ No
   How perforated? □ Factory □ Knife □ Torch
   Size of perforation _______ inches by _______ inches
   Number of perforations _______ _______ _______ _______ _______ _______
   _______ _______ _______ _______ _______ _______ _______
   _______ _______ _______ _______ _______ _______ _______
   _______ _______ _______ _______ _______ _______ _______

   Well screen installed? ☑ Yes □ No
   Manufacturer's name __________________________

   Type PVC Lining □ Model No. _______ _______ _______ _______ _______ _______ _______
   Diameter __________ Slot size __________ set from _______ feet to _______ feet
   Diameter __________ Slot size __________ set from _______ feet to _______ feet
   Gravel packed? ☑ Yes □ No □ Size of gravel _______ inches
   Placed from _______ feet to _______ feet
   Surface seal depth __________ Material used in seal: □ Cement grout
   □ Bentonite □ Puddling clay □
   Sealing procedure used: □ Slurry pit □ Temp. surface casing
   □ Overbore to seal depth _______ feet
   Method of joining casing: □ Threaded □ Welded □ Solvent Weld □
   □ Cemented between strata

   Describe access port __________________________

6. LOCATION OF WELL
   Sketch map location must agree with written location.
   □ Nubone Sec. 13 Lot No. Block No.
   County Latah

7. WATER LEVEL
   Static water level 194.7 feet below land surface.
   Flowing? ☑ Yes □ No
   G.P.M. __________
   Artesian closed-in pressure _______ p.s.i.
   Controlled by: □ Valve □ Cap □ Plug
   Temperature _______ °F. Quality __________
   Describe artesian or temperature zones below:

8. WELL TEST DATA
   □ Pump □ Baller □ Air □ Other
   Discharge G.P.M. __________ Pumping Level __________ Hours Pumped _______ 100+ _______

9. LITHOLOGIC LOG
   | Bore Depth From To Material Water Yes No |
   |____|____|____|__________|____|____|____|____|____|____|____|____|
   | 10 | 0 | 69 | overburden | 10 | 0 | 69 | overburden |
   | 10 | 69 | 79 | conglomerate | 10 | 69 | 79 | conglomerate |
   | 10 | 79 | 80 | basalt, firm | 10 | 79 | 80 | basalt, firm |
   | 10 | 80 | 81 | basalt, firm | 10 | 80 | 81 | basalt, firm |
   | 10 | 81 | 102 | hard gray basalt | 10 | 81 | 102 | hard gray basalt |
   | 10 | 102 | 105 | basalt, firm | 10 | 102 | 105 | basalt, firm |
   | 10 | 105 | 116 | basalt, firm | 10 | 105 | 116 | basalt, firm |
   | 10 | 116 | 124 | hard gray basalt | 10 | 116 | 124 | hard gray basalt |
   | 10 | 124 | 128 | fractured basalt | 10 | 124 | 128 | fractured basalt |
   | 10 | 128 | 134 | basalt, firm | 10 | 128 | 134 | basalt, firm |
   | 10 | 134 | 138 | basalt, firm | 10 | 134 | 138 | basalt, firm |
   | 10 | 138 | 143 | black shale | 10 | 138 | 143 | black shale |
   | 10 | 143 | 146 | clay | 10 | 143 | 146 | clay |
   | 10 | 146 | 160 | course gray sand | 10 | 146 | 160 | course gray sand |

10. Work started _______ 2/15/86 finished _______ 2/16/86

11. DRILLERS CERTIFICATION
   [Signature]
   [Firm Name] Wittwell Drilling Firm No. 57
   Address Lewiston Idaho Date 2/16/86
   Signed by (Firm Official) Earl L. Witt
   and (Operator) Regan Witt

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

6/25/2014

WATER RIGHT NO. 87-7132

<table>
<thead>
<tr>
<th>Owner Type</th>
<th>Name and Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Owner</td>
<td>KARL JOHNSON</td>
</tr>
<tr>
<td></td>
<td>5051 OLD PULLMAN RD</td>
</tr>
<tr>
<td></td>
<td>MOSCOW, ID 83843</td>
</tr>
<tr>
<td>Original Owner</td>
<td>RICHARD A CALLAHAN</td>
</tr>
<tr>
<td></td>
<td>5051 OLD PULLMAN HWY</td>
</tr>
<tr>
<td></td>
<td>MOSCOW, ID 83843</td>
</tr>
<tr>
<td></td>
<td>(208)822-4236</td>
</tr>
</tbody>
</table>

Priority Date: 05/10/1988
Basis: License
Status: Active

<table>
<thead>
<tr>
<th>Source</th>
<th>Tributary</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUND WATER</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beneficial Use</th>
<th>From</th>
<th>To</th>
<th>Diversion Rate</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRRIGATION</td>
<td>3/15</td>
<td>11/15</td>
<td>0.04 CFS</td>
<td>6 AFA</td>
</tr>
<tr>
<td>DOMESTIC</td>
<td>1/01</td>
<td>12/31</td>
<td>0.04 CFS</td>
<td>1.2 AFA</td>
</tr>
<tr>
<td>Total Diversion</td>
<td></td>
<td></td>
<td>0.04 CFS</td>
<td></td>
</tr>
</tbody>
</table>

Location of Point(s) of Diversion:

206
Licensed Diversion Capacity: 0.04

Place(s) of use:

Place of Use Legal Description: IRRIGATION LATAH County

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Lot</th>
<th>Tract</th>
<th>Acres</th>
<th>Lot</th>
<th>Tract</th>
<th>Acres</th>
<th>Lot</th>
<th>Tract</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>39N</td>
<td>06W</td>
<td>13</td>
<td>NESW</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place of Use Legal Description: DOMESTIC same as IRRIGATION

Total Acres: 2

Conditions of Approval:

1. This right when combined with all other rights shall provide no more than .02 cfs per acre nor more than 3.0 afa per acre for irrigation of the lands above.
2. Domestic use is for 2 homes. Domestic use does not include lawn, garden, landscape, or other types of irrigation.

Dates:
Licensed Date: 08/22/1996
Decreed Date:
Permit Proof Due Date: 12/1/1994
Permit Proof Made Date: 10/31/1994
Permit Approved Date: 11/21/1989
Permit Moratorium Expiration Date:
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date: 05/10/1988
Protest Deadline Date:
Number of Protests: 0
Other Information:
State or Federal:
Owner Name Connector:
Water District Number:
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plaintiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False
JAMEY AND TONYA CALLISON WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 6, 2016; November 9, 2017

Well Log ID: 619759  Elev (ft): 2620 ±10  Depth (ft): 490  7.5’  Quad: Albion

Latitude: 46.754118  Longitude: -117.139375  decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
162 Eagle Lane, Pullman, Wash., on east side of road

Location Method:
Location is for house; Whitman County Tax Assessor; Google Earth imagery, topographic map. PLSS and tax parcel number are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 112</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>112 – 237</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green, wood at top</td>
<td>237 – 267</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>267 – 365</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>365 – 374</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>374 – 383</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>383 – 467</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>467 – 479</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>479 – 490</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515284908, LOT RB-4 CARRIAGE HILL SHPLT DIST B, 4.9 acres, owner is CALLISON TRUST, JAMES/TONYA; grantors were CALLISON, JAMES R/TONYA K on 12/30/14; one story residence built in 2006.

References Cited:
**WATER WELL REPORT**  
Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

**Construction/Decommission ("x" in circle)**
- **Notice of Intent Number**: 359812
- **Proposed Use**: Domestic
- **Type of Work**: Owner’s number of well (if more than one) - New well, Reconditioned
- **Dimensions**: Diameter of well 8 inches, drilled 450 ft.  
  Depth of completed well 450 ft.
- **Constrution Details**
  - **Casing**: Welded 8" Diam. from +1 ft. to 120 ft.
  - **Installed**: Liner installed 8" Diam. from 120 ft. to 450 ft.
  - **Perforations**: Yes
  - **Type of perforator used**: Saw
  - **Size of perfor**: 1/8 in. by 1/2 in. and no. of perfor/120' from 410 ft. to 490 ft.
- **Manufacturer's Name**: ____________
- **Model No.**: ____________
- **Manufacturer's Name**: ____________
- **Location**: ____________
- **Type**: ____________
- **Diam. Slot size**: from ft. to ft.
- **Diam. Slot size**: from ft. to ft.
- **Gravel/Filter packed**: Yes
- **Size of gravel/sand**: ____________
- **Materials placed from**: ft. to ft.
- **Surface Seal**: Yes
- **To what depth?**: 120 ft.
- **Material used in seal**: Bentonite
- **Did any strata contain unusable water?**: Yes
- **Type of water**: ____________
- **Method of sealing strata off**: ____________
- **Pump**: ____________
- **Type**: ____________
- **Water Levels**: Land-surface elevation above mean sea level ____________ ft.
  
  - Static level 412 ft. below top of well Date 4/30/06
  - Artesian pressure ____________ lbs. per square inch Date ____________
  - Artesian water is controlled by ____________
- **Well Tests**: Drawdown is amount water level is lowered below static level
  - **Was a pump test made?**: Yes
  - **Yield**: gal/min with ____________ ft. drawn down after ____________ hrs.
  - **Artifical test**: ____________ gal/min. with ____________ ft. drawn down after ____________ hrs.
  - **Date of test**: ____________
  - **Bailer test**: ____________ gal/min. with ____________ ft. drawn down after ____________ hrs.
  - **Artesian flow**: ____________ g.p.m.
  - **Temperature of water**: ____________

**WELL CONSTRUCTION CERTIFICATION**: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- **Driller**: ____________
- **Engineer**: ____________
- **Trainee**: ____________
- **Name (mn)**: TED WRIGHT

**Drilling Company**: McPherson & Wright Drilling

**Address**: 2246 Burrell

**City, State, Zip**: Lewiston, ID, 83501

**Contractor's Registration No.**: McPHD11351

**Start Date**: 4/20/06  
**Completed Date**: 4/30/06
CAMERON FARMS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: NA Elev (ft): 2690 ±10 Depth (ft): 275 7.5’ Quad: Robinson Lake

Latitude: 46.773534° Longitude: -116.970015° decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1010 Idlers Rest Road, Moscow, Idaho; on north side of Idlers Rest Road (and just east of driveway to 3301 Mountain View Road)

Location Method:
Location is for well, welded shut with a rectangular metal plate, in field just east of driveway (at "junction of Idlers Rest and Mountain View Road" as recorded by driller); Latah County Assessor; Google Earth imagery; topographic map; site visit March 20, 2018

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>

Latah Formation
Sediments of Bovill
- Clay, sandy 0 – 72
- Sand 72 – 76
- Clay, sandy 76 – 134
- Clay and sand 134 – 180

*Idaho Batholith(?)
- Granite, hard 180 – 248
- Granite, gray, soft 248 – 252
- Granite, black and white 252 – 295

*Difficult to pick contact between sediments of Bovill and granite
Comments:

Latah County Tax Parcel RP40N05W288558, owner now is MILLS, JOHN; 1010 IDLERS REST RD (sic); 12.18 AC TAX #7096 SWSE, 28 40 S.

Well is to right (east) of brick entrance gateway to 3301 Mountain View Road and northwest of Idlers Rest Road

Scott Hill once lived at 3301 Mountain View Road, Moscow, Idaho (Spokeo.com, 2018).

References Cited:

1. DRILLING PERMIT NO. 87-95 - 0031-000
2. OWNER: Cameron Farms
   Name:
   Address: 1987 Bruno Court
   City: EL Sobrante State: CA Zip: 94882
3. LOCATION OF WELL by legal description:
   Sketch map location must agree with legal description.

   Twp. 40 N  or South □
   Rge. 5 E  or West □
   Sec. 28 SW 1/4 or SE 1/4
   Govt Lot
   County:
   Address of Well Site:
   Junction of
   (give at least name of road = distance to flood or landfill)
   Lt.  , Blk. , Sub. Name

4. PROPOSED USE:  
   Domestic □ Municipal □ Monitor □ Irrigation □
   Thermal □ Injection □ Other □

5. TYPE OF WORK: New Well □ Modify or Repair □ Replacement □ Abandonment

6. DRILL METHOD:  
   Mud Rotary □ Air Rotary □ Cable □ Other □

7. SEALING PROCEDURES
   SEAL/FILTER PACK   AMOUNT   METHOD
   Bentonite   0 18   200 Top Pour

   Was drive shoe used? Y □ N □
   Shoe Depth(s) 1.35 ft.
   Was drive shoe seal tested? Y □ N □
   How? Air Pressure

8. CASING/LINER:
   Diameter   From To Gauge Material Casing Liner Welded Threaded
   6 12 - 136 Stc\n
   Length of Headpipe
   Length of Tailpipe

9. PERFORATIONS/SCREENS
   Perforations Method
   Screens Screen Type

   From To Slot Size Number Diameter Material Casing Liner

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    21 ft. below ground Artesian pressure lb.
    Depth flow encountered ft. Describe access port or control devices: Top of casing

11. WELL TESTS:

   Yield gal/min. Drawdown Pumping Level Time
   1
   Water Temp.
   Bottom hole temp.
   Water Quality test or comments:

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Bore No.</th>
<th>From To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y 0 12</td>
<td>Sandy Clay</td>
<td></td>
</tr>
<tr>
<td>Y 12 14</td>
<td>Sandy Clay</td>
<td></td>
</tr>
<tr>
<td>Y 14 16</td>
<td>Decomposed Granite</td>
<td></td>
</tr>
<tr>
<td>Y 16 18</td>
<td>Hard Granite</td>
<td></td>
</tr>
<tr>
<td>Y 18 20</td>
<td>White Gray Granite (Silted)</td>
<td></td>
</tr>
<tr>
<td>Y 20 22</td>
<td>Hard Granite</td>
<td></td>
</tr>
</tbody>
</table>

   Cased off the 4 GPM - If well is developed later on it may be perforated 150 ft.

RECEIVED
JUL 03 1995
WATER RESOURCES WESTERN REGION

13. DRILLER'S CERTIFICATION
   We certify that all minimum well construction standards were complied with at the time the rig was removed.

   Firm Name: Uhlenhott Drilling Firm No: 125
   Firm Official: Ray Uhlenhott Date: 7-1-95
   Supervisor or Operator: Amul Uhlenhott Date: 7-1-95

   (Sign here if Firm Official & Operator)

   FORWARD WHITE COPY TO WATER RESOURCES
ALLAN CARSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 26, 2016

Well Log ID: NA Elev (ft): 2609.4 Depth (ft): 120 7.5’ Quad: Viola

Latitude: 46.76720 Longitude: -117.02145 decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 31, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1321 O’Donnell Road, Moscow, Idaho; on southwest side of road

Location Method:
Latitude, longitude, and elevation from Badon (2007, p. 78, 129); Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>*Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>55 – 120</td>
</tr>
</tbody>
</table>

215
Comments:

*Well information dictated by owner, Allan Carson, to Nicole Badon (Badon, 2007, p. 113); driller's report does not exist.

Top of Lolo matches (±10 ft) with two nearby UDC Properties wells.

Latah County Tax Parcel RP40N05W313801, owner is CARSON, ALLAN N, TRUSTEE; 6.4 AC, GOVT LOT 2.

Mr. Carson died in 2016; his wife is MayBelle Carson, daughter is Shaun D. Carson, both at 1321 O'Donnell Road (Moscow-Pullman Daily News, 2016).

References Cited:


Carson Well

Information as dictated by well owner Allan Carson.

0 – 55 feet below ground surface: overburden
55 – 120 feet below ground surface: basalt

The pump is located at approximately 90 feet below ground surface and the well is a gently flowing artesian well.

Figure B3 Carson well
# Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, October 1, 2018

Well Log ID: 369702  
Elev (ft): 2610 ±10  
Depth (ft): 250  
Quad: Pullman

Latitude: 46.707417°  
Longitude: -117.216210°  
decimal degrees (WGS84)

Well Address and (or) Other Location Information:
451 Country Club Road, Pullman, Wash.; on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼-¼ Section

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Saddle Mountains Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td>Basalt</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>128</td>
</tr>
<tr>
<td>Basalt</td>
<td>133</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>220</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>230</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004414123903, 451 COUNTRY CLUB RD, SW1/4 PT E1/2 N OF CO RD 451 COUNTRY CLUB RD(SITE); 3 ADDRESSES AT THIS SITE. 451-453-455 COUNTRY CLUB RD. 451 is on the EAST END (OWNER LIVES HERE) 453 IS IN BACK (RENTAL) 455 IS ON THE WEST END (RENTAL); owner now is JORGENSEN, RANDOLPH A; 12.34 acres; 04/05/12: grantor was CASSIDY, PATRICIA to JORGENSEN, RANDOLPH A.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Pat Cassidy
Address: 451 Country Club Rd. Pullman WA 99163

LOCATION OF WELL: County - Whitman
Street Address of Well (or nearest address): 1/4 mile N. of McGregor Plant - Pullman WA.

PROPOSED USE: Domestic

TYPE OF WORK: Owner's number of well (if more than one)

DIMENSIONS: Diameter of well 6 inches. Drilled 250 ft. Depth of completed well 250 ft.

CONSTRUCTION DETAILS:
Casing installed: 6 ft. diam. from 0 ft. to -10 ft.

Perforations: Yes, No. Type of perforator used: SAW.

Screens: Yes, No. Manufacturer's Name: [Blank].

Gravel packed: Yes, No. Size of gravel: [Blank].


WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of strata and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
Clay 0 16
Gray Basalt 16 127
Sand 40 83
Gray Basalt 127 83
Sand 220 250
Sandstone 230 250

RECEIVED
OCT 14 2003

FISCAL BUDGET

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Name: [Blank] Drilling
Address: [Blank]
License No.: 2692

USE ADDITIONAL SHEETS IF NECESSARY

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
RICK AND KANDY CHERF WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, July 19, 2016; November 9, 2017

Well Log ID: 616641  Elev (ft): 2710 ±10  Depth (ft): 580  7.5’  Quad: Moscow West

Latitude: 46.719445  Longitude: -117.103829  decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 2, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1601 Sunshine Road, Pullman, Wash., on northwest side of road; at top of hill on east side of long lane

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery, topographic map. PLSS subdivision incorrect on driller's report. Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Palouse Formation and Latah Formation (sediments of Bovill), undivided</td>
<td></td>
</tr>
<tr>
<td>*Clay</td>
<td>2–161</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>161–184</td>
</tr>
<tr>
<td>Basalt</td>
<td>184–313</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Shale, black</td>
<td>313–329</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>329–399</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>399–408</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>408–427</td>
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Basalt, red and gray

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<tr>
<td>Basalt</td>
<td>449 – 528</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>528 – 547</td>
</tr>
<tr>
<td>Basalt</td>
<td>547 – 580</td>
</tr>
</tbody>
</table>

Comments:

*The driller reported 161 ft of clay. Intervals of white and yellow clay above the Priest Rapids are reported for a couple of other wells in the Sunshine Road area. Hooper and Webster (1982) and Bush and others (1998) mapped sediments at the surface, so it is suggested here that a portion of the 161 ft of clay belongs to the sediments of Bovill.

Whitman County Tax Parcel 200004514028001, 1601 SUNSHINE RD, QUAIL RUN SHORT PLAT 2 & 11 -14-45 LOT 3A, owners are CHERF, RICKY/KANDY; 9.92 acres; one story residence built 2011.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON
Notice of Intent W166157
UNIQUE WELL I.D. # AHR 709

(1) OWNER: Name RICK & KANDY CHERF
Address PO BOX 563, PULLMAN, WA 99163

(2) LOCATION OF WELL: County WHITMAN
(2a) STREET ADDRESS OF WELL (or nearest address) 1 MILE WEST ON SUNSHINE ROAD

(3) PROPOSED USE: X Domestic     Industrial     Municipal
                                Irrigation     Test Well     Other
                                DeWater

(4) TYPE OF WORK: X New Well
Method: Deepened     Dig     Bored
          Reconditioned     Cable     Driven
          Decommission     X Rotary     Jetted

(5) DIMENSIONS: Diameter of well    8 & 6     inches.
Drilled    580     feet. Depth of completed well    580     ft.

(6) CONSTRUCTION DETAILS:
Casing Installed:
X Welded     8" Diam. from 41 ft. to 171 ft.
X Liner installed     6" Diam. from 50 ft. to 510 ft.
    Threaded
Perforations: Yes
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens:
Manufacturer's Name
Type
Diam.     Slot size
ft. to ft.

Gravel/Filter packed:
X Yes     X No
Size of gravel/sand
Material placed from ft. to ft.

Surface seal:
X Yes     X No
To what depth? 171 ft.

(7) PUMP:
Manufacturer's Name
Type: H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level ft.
Static level 497 ft. below top of well Date 9/8/2004
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (CASP, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? X Yes
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test

Bail test gal./min. with ft. drawdown after hrs.
Arrest 12 gal./min. with diam set at 570 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? X Yes

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL
FROM
TO
SOIL
0 1
CLAY
1 161
BASALT WEATHERED
161 184
BASALT
184 313
BLACK SHALE
313 329
BASALT
329 399
BASALT VASCULAR
399 408
BASALT WEATHERED
408 427
BASALT GRAY RED
427 449
BASALT
449 528
BASALT WEATHERED
528 547
BASALT
547 580

SEP 11 2009
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name TED WRIGHT
(Licensed Driller/Engineer) License No.

Trainee Name
License No.

Drilling Company MCPHERSON & WRIGHT DRILLING
(Signed) License No. 0532

Address 2246 BURRELL LEWISTON IDAHO 83501
Contractor's Registration No. MCPHED1351 Date 12/14/2007

(USE ADDITIONAL SHEETS IF NECESSARY)
Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6606.
LENNARD CHIN WELL 2
(STADIUM DRIVE MOBILE HOME PARK WELL)

[DRILLED IN 1993]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 19, 2016

Well Log ID: NA Elev (ft): 2660 ±2 Depth (ft): 405 7.5′ Quad: Moscow West

Latitude: 46.722073 Longitude: -117.034280 decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 13, T. 39N, R. 6W

Well Address and (or) Other Location Information:
2280 Old Pullman Road, Moscow, Idaho, on northwest side of road; Stadium Drive Mobile Home Park

Location Method:
Well is at north end of park; it is covered with a red roof (April 12, 2016 site visit); Latah County Tax Assessor, Google Earth imagery, topographic map, and Kopp (1994, p. 44). Steve Robischon (written commun., February 19, 2016) included imagery, well driller’s report, and water rights report. PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 108</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken and weathered</td>
<td>108 – 161</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>161 – 306</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>306 – 385</td>
</tr>
<tr>
<td>Sand, white</td>
<td>385 – 405</td>
</tr>
</tbody>
</table>
Comments:

Kopp (1994, p. 44, 47, and 49) referred to two wells on this property: Lennard Chin well 1 (drilled in 1967) and Lennard Chin well 2.

Comparison to University of Idaho well 7 (UI Aquaculture well) 3600 ft to the northeast illustrates a rapid facies change from clay in the uppermost Vantage in the Lennard Chin well to sand and silt in UI well 7.

Latah County Tax Parcel RP39N06W134820, 2280 Old Pullman Road, owner now is APPALOOSA LLC, 11.01 acres, NESW, 13 39 6.

Roderick Olps is the registered agent of Appaloosa LLC (931 Harold Street, Moscow, Idaho) (Idaho Secretary of State, 2016).

References Cited:


WELL DRILLER'S REPORT

1. WELL OWNER
Name: STADIUM DRIVE, MAKEL HOME PARK
Address: Moscow 717 East 8
Drilling Permit No: [redacted]
Water Right Permit No: 70-07058

2. NATURE OF WORK
□ New well □ Deepened □ Replacement
□ Well diameter increase □ Modification
□ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)

3. PROPOSED USE
□ Irrigation □ Monitor □ Industrial
□ Stock □ Waste Disposal or Injection
□ Other [specify type]

4. METHOD DRILLED
□ Rotary □ Air □ Auger □ Reverse rotary
□ Cable □ Mud □ Other (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION
Casing schedule: □ Steel □ Concrete □ Other [specify]
Thickness: [specify]

6. LOCATION OF WELL - S041 Old Pullman Rd
Sketch map location must agree with written location.
Subdivision Name: [specify]
Lot No: [specify] Block No: [specify]
County: [specify]
Address of Well Site: [specify]

7. WATER LEVEL
Static water level 181 feet below land surface.
Flowing: □ Yes □ No G.P.M. flow
Artesian closed-in pressure [p.s.i.]
Controlled by: □ Valve □ Cap □ Plug
Temperature: [specify]
Pressure: [specify]
Quality: [specify]
Describe artesian or temperature zones below

8. WELL TEST DATA
Discharge G.P.M. □ Air □ Other
Pumping Level: [specify]
Hours Pumped: [specify]

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore Diam.</th>
<th>Depth From</th>
<th>To</th>
<th>Material</th>
<th>Water</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.25 x 3.25</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
</tr>
<tr>
<td>3.50 x 3.50</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
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<tr>
<td>4.00 x 4.00</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
<td>[specify]</td>
</tr>
</tbody>
</table>

50 perforations, 3.75 feet to 40.5 feet

60. Work started 8-10-93 finished 8-13-93

11. DRILLER'S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

MORRISON & WRIGHT DRILLING
2246 Burrell
Lowman, Idaho 83635
(208) 729-2289

Signed by: [specify]
(Operator) [specify]
HYDROGEOLOGY OF THE UPPER AQUIFER OF THE PULLMAN-MOSCOW BASIN AT THE UNIVERSITY OF IDAHO AQUACULTURE SITE

A thesis
Presented in Partial Fulfillment of the Requirements for the Degree of Master of Science with a Major in Hydrology in the College of Graduate Studies University of Idaho

by
William Paul Kopp

January 1994

Major Professor: Dale R. Ralston, Ph.D.
A neoprene Figure K packer is in the well at approximately 280 feet to seal the annular space between the screen assembly and 10-inch casing. A sanitary bentonite clay seal fills the annulus between the rock wall of the hole and the casing pipe from surface to a depth of 70 feet. No pump is in the well. The well has not been used during the 1993 season to supply water to the Aquaculture laboratory.

AREA WELLS COMPLETED IN UPPER AQUIFER

Several other wells located within a one-mile radius of the Aquaculture site are completed in the upper aquifer, and were given a cursory review during this study. Included in this list are well UI No. 2, the INEL-D well, the Dr. Callahan well, the Otto Hill well and two wells on the Lennard Chin property. Well logs showing the available geology and well completion data are shown in figures 3.5 through 3.8. No log is available for the Chin No.1 well. The location and collar elevation for the Dr. Callahan and Otto Hill wells as shown in figure 3.8 and in cross-section A-A' in figure 2.4 are only approximate.

The Lennard Chin, Dr. Callahan and Otto Hill wells are located 3600, 4300 and 5000 feet respectively, to the southwest of the Aquaculture site. The same stratigraphic units as those described in the Aquaculture wells are present in these wells. The Lolo basalt ranges in thickness in these
Figure 3.5 Geology and well completion log for wells INEL-D and INEL-S located at the UIGRS.
Figure 3.6 Geology and well completion log for well UI No. 2.
Figure 3.7 Geology and well completion log for Lennard Chin wells.
Figure 3.8 Geology log for Dr. Callahan and Otto Hill wells.
wells between 171 feet (Dr. Callahan well) and 191 feet
(Lennard Chin No. 2 well). The top and bottom of this flow
are at elevations of approximately 2550 feet (AMSL) and 2360
feet (AMSL), respectively, in the Lennard Chin No. 2 well.
These elevations correlate closely with the respective flow
elevations recorded at the Aquaculture site.

The sediment interbed underlying the Lalo basalt is
penetrated in each well. A thin black shale layer from 2 to
9 feet thick was encountered immediately below the basalt. A
thick clay layer, 65 to 70 feet thick, underlies the black
shale. Both the Chin and the Dr. Callahan wells are bottomed
in an unconsolidated sand below the thick clay layer. The
top of this sand layer is located at an elevation of
approximately 2280 feet in the Chin No. 2 well. This
compares with approximate elevations of 2312 to 2350 feet
(AMSL) for the upper sand aquifer and 2270 to 2308 feet (AMSL)
for the lower sand aquifer at the Aquaculture wells. On the
bases of these observations, the sand aquifer in the Lennard
Chin and Dr. Callahan wells is correlative with the lower sand
aquifer at the Aquaculture site.
BILL CHRISTIE WELL
[DRILLED IN 1988; DEEPENED IN 2010]
Geologic Interpretation of Water Well Driller’s Log
By
John H. Bush, March 24, 2016; November 9, 2017


Latitude: 46.806335 Longitude: -117.147614 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1001 Rose Creek Road, Pullman, Wash., on southwest side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 7 of Bush and Garwood (2005 [2006]).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>65</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>77</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostatigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft alternating with hard units</td>
<td>206</td>
</tr>
<tr>
<td>R2 magnetostatigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>308</td>
</tr>
<tr>
<td>Basalt, soft, fractured basalt</td>
<td>320</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515091290, 1001 ROSE CREEK RD, NE PT N W COR, owner is CHRISTIE, WILLIAM D; 4.0 acres; 1 story residence built in 1920.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Bill Cristis
Address: Pullman

(2) LOCATION OF WELL: County: Whitman

(4) TYPE OF WORK: Owner's number of well
(if more than one)...

New well Coaching Method: Dug □ Bored □ Deepened □ Cable □ Driven □ Recommissioned □ Rotary □ Jetted □

(5) DIMENSIONS: Diameter of well: 8" inches.
Drilled: 300 ft. Depth of completed well: 300 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Dia. ft. to 8" ft.
Threaded □ Welded □

Perforations: Yes □ No □ Type of perforator used...

Screens: Yes □ No □

Gravel packed: Yes □ No □ Size of gravel...

Surfaces seal: Yes □ No □ To what depth...

(7) PUMP: Manufacturer's Name...

(8) WATER LEVELS: Land-surface elevation...

Static level: 300 ft. below top of well Date: 9/26/88
Artesian pressure: lbs. per square inch Date
Artesian water is controlled by...

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes □ No □ If yes, by whom...

Yield: gal/min. with ft. drawdown after hrs...

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test...

Date of test...

Artesian flow...

Temperature of water...

Was a chemical analysis made? Yes □ No □

(10) WELL LOG:
Formation: Describe by color, character, texture material and structure, and show thickness of aquifers and strata and nature of the material in each stratum penetrated, with at least one entry for each change of formation...

MATERIAL OF EYARCH PEARK BOREFIELD
FROM TO

MATERIAL OF EYARCH PEARK BOREFIELD
FROM TO

MATERIAL OF EYARCH PEARK BOREFIELD
FROM TO

MATERIAL OF EYARCH PEARK BOREFIELD
FROM TO

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Witt Well Drilling
(Person, firm, or corporation) (Type or print)

Address: 319 Park Lewiston

[Signed] Roger Witt (Well Driller)

License No. 04-23 Date: 10/13/88

(USE ADDITIONAL SHEETS IF NECESSARY)
File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

(1) OWNER: Name Bill Christie
Address 1001 Roserock Rd Pullman WA 99163

(2) LOCATION OF WELL: County Whitman
Location NE 14 Sec 9 T. 15 N R. 4 S WM

(2a) STREET ADDRESS OF WELL (or nearest address) Same

(3) PROPOSED USE: Domestic □ Irrigation □ Industrial □ Municipal □ Recreational □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned □ New well □ Method: Dug □ Cable □ Bored □ Deepened □ Reconditioned □ Rotary □ Jacked □

(5) DIMENSIONS: Diameter of well 17 inches
Depth of completed well 337 feet

(6) CONSTRUCTION DETAILS:
Casing installed: □ Diam. from ______ ft. to ______ ft.
Weidled □ Diam. from ______ ft. to ______ ft.
Threaded □ Diam. from ______ ft. to ______ ft.

Perforations: Yes □ No □
Type of perforator used
SIZE of perforations in. by in.
perforations from ______ ft. to ______ ft.
perforations from ______ ft. to ______ ft.
perforations from ______ ft. to ______ ft.

Screens: Yes □ No □
Manufacturer's Name
Type __________ Model No. __________
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel packed: Yes □ No □
Size of gravel __________
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes □ No □ To what depth? ______ ft.
Material used in seal __________
Did any strata contain unusable water? Yes □ No □
Type of water __________ Depth of strata __________
Method of sealing strata off __________

(7) PUMP: Manufacturer's Name__
Type __________ H.P. ______

(8) WATER LEVELS:
Land-surface elevation ______ ft. above mean sea level
Static level ______ ft. below top of well Date ______
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □
If yes, by whom? __________
Yield: gal./min. with ______ ft. drawdown after ______ hrs.

... ... ...

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

... ... ...

Date of test __________

Boiler test: gal./min. with ______ ft. drawdown after ______ hrs.
Artesian flow ______ gal./min. with stem set at ______ ft. for ______ hrs.
Temperature of water ______ Was a chemical analysis made? Yes □ No □

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO

SOFT PRACT. basalt 320 337

Work Started __________ Completed __________

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME __________
PERSON, FIRM, OR CORPORATION __________ TYPE OR PRINT __________
Address __________
(Signed) __________
WELL DIGGER __________
License No. __________

Contractor's Registration No. __________ Date __________
(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
GERALD CLARK WELL
(WSU PLANT PATHOLOGY FARM WELL)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 25, 2016


Latitude: 46.778327  Longitude: -117.095903  decimal degrees (WGS84)

W ¼, W ¼, W ¼, Sec. 24, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
4001 Whelan Road, Pullman, Wash., on south side of road; about 0.3 mi west of intersection with Gray Road. PLSS on original driller’s report is incorrect

Location Method:
Well is at northwest corner of big shed at WSU Plant Pathology Farm (April 20, 2016 site visit); Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 –</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>To 1</td>
</tr>
<tr>
<td>Clay, light brown</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating weathered and hard</td>
<td>37 – 158</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515242290, 4001 WHELAN RD, EXEMPT FULL YEAR, NW1/4 PT NW1/4; owner now is WASHINGTON STATE UNIVERST; 8.4 acres.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Notices of Intent Number

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other ☐

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned ☐ Method: ☐ Drilled ☐ Bored ☐ Driven ☐ Deepened ☐ Cable ☐ Rotary ☐ Jettied

DIMENSIONS: Diameter of well 8 inches, drilled 158 ft to 158 ft.

Depth of completed well 158 ft.

CONSTRUCTION DETAILS

Casing ☐ Welded 8" Diam. from 1 ft. to 43 ft.

Installed: ☐ Liner installed 8" Diam. from 18 ft. to 158 ft.

☐ Threaded: 8" Diam. From ft. to ft.

Perforations: ☐ Yes ☐ No

Type of perforator used: SAW

SIZE of perfor: 156 from 12 in. and no. of perfor 90 from 98 ft. to 158 ft.

Screens: ☐ Yes ☐ No ☐ K-Flex Location

Manufacturer's Name

Type: Model No.

Diam. Slot size from ft. to ft. Diam. Slot size from ft. to ft.

Gravel/Filler packed: ☐ Yes ☐ No Size of gravel/size

Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 43 ft.

Material used in seal: BENTONITE

Did any stratas contain usable water? ☐ Yes ☐ No

Type of water: ☐ None Depth of strata

Method of sealing stratas off

PUMP: Manufacturer's Name

Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.

Static level 56 ft below top of well Date 3/17/04

Artesian pressure lbs per square inch Date

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal/min. with ft. drawdown after hrs.

Yield: gal/min. with ft. drawdown after hrs.

Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Basalt test gal/min. with ft. drawdown after hrs.

Artiest 80 gal/min. with stem set at 150 ft. for hrs.

Artesian flow p.m. Date

Temperature of water 55° Was a chemical analysis made? ☐ Yes ☐ No

Start Date 3/12/04 Completed Date 3/17/04

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainer Name (one) TED WRIGHT

Driller/Engineer/Trainer Signature

Driller or trainer's License No.

IF TRAINEE: Driller's License No:

Driller's Signature: TED WRIGHT

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**Well Report Change Form**

**Instructions:** Record any changes made to the well report record on this form. Append this form to the well report image and file with the original well report.

Please print legibly and use ink pen only. **Fields marked with an asterisk (*) are required.** Processing this form may be delayed if fields marked with an asterisk are not filled in completely.

* This Well Report has been changed on: **02** / **26** / **14**

* ☑ Not in Notice of Intent System (NITS)  * ☑ Notice of Intent System (NITS) Log ID: 357951

*Regional Office: ☑ CRO  ☑ ERRO  ☑ NWRO  ☑ SWRO

Well Type: ☑ Water Well  ☑ Resource Protection Well

Notice of Intent Number: **W164155**  Unique Ecology Well ID Tag Number: **A172705**

Original Property Owner Name: **Gerald Clark**

Well Site Street Address: **4 mi East on Whelan Rd**  City: **Pullman**  County: **Whitman**  Zip:

**Well Location**

<table>
<thead>
<tr>
<th>Tax parcel number</th>
<th>½ - ⅔ (within 40 acres)</th>
<th>⅔ (within 40 acres)</th>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>EWM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-000-45-15-248700</td>
<td>46.7783</td>
<td>46.7783</td>
<td>24</td>
<td>15 N</td>
<td>45 E</td>
<td>□</td>
</tr>
</tbody>
</table>

Latitude Degrees: **46.7783**  Latitude Time: **Horizontal Collection Method**

Longitude Degrees: **-117.0959**  Longitude Time: **Other**

**Type of Work**

<table>
<thead>
<tr>
<th>New Well</th>
<th>Reconditioned</th>
<th>Deepened</th>
</tr>
</thead>
</table>

Well Report Received Date: **9/11/2009**  Well Completed Date: **3/17/2004**

Well Diameter (inches): **6**  Well Depth (feet): **158**  Other: **Other**

Driller License Number: **0532**  Trainee License Number: **0**

Other (specify):

* Person Requesting Change: **Marty O'Malley, WSU**

* Reason For Change: **Tax parcel, Section, Township & Range**

* Tracker Signature: **Signature**
Waterman, Anita (ECY)

From: O'Malley, Marty [martyo@wsu.edu]
Sent: Friday, February 21, 2014 11:10 AM
To: Waterman, Anita (ECY)
Subject: RE: Dept of Ecology's Well Log Web Site

I corrected my input on the long and lat. Sorry for the confusion.

Marty

From: Waterman, Anita (ECY) [mailto:AWAT461@ecy.wa.gov]
Sent: Friday, February 21, 2014 10:51 AM
To: O'Malley, Marty
Cc: Cummings, Evelyn (ECY)
Subject: RE: Dept of Ecology's Well Log Web Site

Hi Marty,

I am getting ready to write up a correction but must have the exact section, township, range. Is this in Section 24, Township 15N, and Range 45E. Yes. You sent me the longitude and latitude but the longitude was missing a digit (see highlighted number below) and we deduced that it was -117.0959W and latitude was 46.7783N. These are correct.

Thanks.
Anita

From: O'Malley, Marty [mailto:martyo@wsu.edu]
Sent: Monday, January 27, 2014 10:02 AM
To: Waterman, Anita (ECY)
Cc: Russell, Danielle (DOH); Ader, Mark J. (ECY)
Subject: RE: Dept of Ecology's Well Log Web Site

Anita,

Sorry, this has kind of fallen through the cracks since Whitman County has agreed that the Plant Path Farm does not meet the new definition for a Group B system. See responses to your questions below. Hope this helps and have a good week,

Marty

From: Waterman, Anita (ECY) [mailto:AWAT461@ecy.wa.gov]
Sent: Monday, December 23, 2013 1:15 PM
To: O'Malley, Marty
Cc: Russell, Danielle (DOH); Ader, Mark J. (ECY)
Subject: RE: Dept of Ecology's Well Log Web Site

Happy Holidays Marty.

I have a few questions regarding the Gerald Clark well.

Does the Gerald Clark well site have the tag listed on the well log? No and there is no tag that I can find on the well.
August 21, 2013

McPherson and Wright Drilling
2246 Burrell Ave.
Lewiston, Idaho 83501

Re: Well Log for WSU Whelan Road Property

Dear McPherson and Wright Drilling:

WSU has been trying to find the well log for a piece of property just north of Pullman, WA, and we were hoping that McPherson and Wright Drilling could assist us in this matter. A letter was sent previously (Attachment 1) but we did not receive a response.

To reiterate a parcel of land on Whelan Road north of Pullman was deeded to Washington State University from Clark Farms Inc. (or Rose Creek Limited Partnership). The address on one of the documents is 4001 Whelan Road, Pullman. According to the 2004 records McPherson and Wright Drilling installed a well on this property in conjunction with a metal building constructed by R. B. Olson Construction, LLC. The WA Department of Ecology well log (Attachment 2) for the now Washington State University property at 4001 Whelan Road appears to be the correct well log. The "well street address" matches the location of the property at "4 MI EAST ON WHELAN RD." but the Section, Township and Range (15N, 44E, section 12) are not correct. This Section, Township and Range is about a mile northeast of Albion so it is not near Whelan Road. A similar error occurred with the Section, Township and Range on the Whitman County Individual On-site Sewage Disposal Permit for the property. Due to this error the well log from 2004 may also contain erroneous information regarding the Section, Township and Range.

Therefore WSU is requesting that McPherson and Wright Drilling review the attached well log to determine if the log is for the WSU property on Whelan Road. WSU appreciates your time and consideration in this matter.

Marty O'Malley
Environmental Health and Safety
Washington State University
PO Box 641172
Pullman, WA 99164-1172
JIM CLARK WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 18, 2018

Well Log ID: 406987  Elev (ft): 2610 ±10  Depth (ft): 303  7.5’ Quad: Pullman

Latitude: 46.705341°  Longitude: -117.220059°  decimal degrees (WGS84)

| ¼, SE ¼, SW ¼, Sec. 12, T. 14 N, R. 44 E |

Well Address and (or) Other Location Information:
861 Country Club Road, Pullman, Wash.; on north side of road

Location Method:
Location is for well, northwest of residence based on photo by Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>No description</td>
</tr>
<tr>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>27</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>41</td>
</tr>
<tr>
<td>Basalt</td>
<td>51</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>75</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>109</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>273</td>
</tr>
</tbody>
</table>

*The lack of rock chip chemistry in this area means that the interpreted sequence may not be correct.
Comments:

Whitman County Tax Parcel 200004414123792, 861 COUNTRY CLUB RD, SW 1/4 12-14-44 LOT 1 JIM CLARK SHPLT, owners now are TORREY, MARCUS/RELFE; 5.14 acres; 04/01/07: grantor was CLARK, JAMES to TORREY, MARCUS; 09/09/13: grantor was TORREY, MARCUS to TORREY, MARCUS/RELFE; building permit: 1/12/2016 for NEW 1200SF MASTER BEDROOM/BATH AND DAYLIGHT BASEMENT ADD.

Above left, original home 2006; right, with addition in 2017 (note well in left foreground).

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
○ Construction
○ Decommission

PROPERTY OWNER

JIM CLARK

WELL STREET ADDRESS
861 Country Club Rd.

CITY
Pullman

COUNTY
Whitman

LOCATION
S.E. 1/4-1/4, Sec. 12, Twp 14, R 44 E, 1/2 WWM circle

WELL DEPTH
303 ft.

CONSTRUCTION DETAILS

Casing: Yes
Type of perforator used: Not applicable

Gravel/Filter packed: No

WELL TESTS

Drawdown is amount water level is lowered below static level.

WELL CONSTRUCTION CERTIFICATION

I, the undersigned, have constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller: Yes
Driller/Engineer/Trainee Name (Print)

Driller/Engineer/Trainee License No.

If trainee, licensed driller's
Signature

Drilling Company
Witt Well Drilling

Address
201 South Grade Rd.

City, State, Zip
Julietta, Pal. 83535

Contractor's Registration No.
wiw003683

Date 1/5/04

Ecology is an Equal Opportunity Employer. EEC 050-1-20 (Rev 4/01)
MARSHALL CLARK WELL

[DRILLED IN 2013]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 3, 2017

Well Log ID: 883109  Elev (ft): 2530 ±10  Depth (ft): 305  Quad: Moscow West

Latitude: 46.737735  Longitude: -117.063058  decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 31, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
8681 WA 270, Pullman, Wash., on south side of highway; Spectrum (formerly Time Warner Cable); well is near southwest corner of building and is surrounded by large concrete block barriers.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions and tax parcel are incorrect on driller's report. Site visit (April 12, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Broken basalt and clay</td>
<td>0 – 18</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>18 – 119</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green and blue</td>
<td>119 – 167</td>
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<tr>
<td>Clay, brown and white</td>
<td>167 – 218</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>*R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
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<tr>
<td>Basalt, hard</td>
<td>218 – 284</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>284 – 303</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>303 – 305</td>
</tr>
</tbody>
</table>
Comments:

*The identification of the specific Grande Ronde flow is just a suggestion. Thickness changes of the Vantage between this well and the DOE Pullman Observation and Test Well to the west and the nearby Pac West Pre-Mix Well show rapid changes in this area. The N2 flows are thinning out and the upper R2 flows are also thinning, so unit determinations are difficult.

Whitman County Tax Parcel 200004615314791, 8681 SR 270, Pullman, LOT 2 TIME WARNER SHORT PLAT 719637, LOT 2 TIME WARNER SHORT PLAT; owner is now PULLMAN ENTERPRISES LLC; grantors were DELAY ENTERPRISES LLC on 07/19/16; and previously JAMES AUTO LLC on 08/26/2013. Commercial office building, built 2014, Time Warner Building.

Photo at right, well is surrounded by large concrete block barriers at rear of building.

References Cited:
**WATER WELL REPORT**

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

**Construction/Decommission** ("x" in circle)
- [x] Decommission
- [ ] Original Installation

**Notice of Intent Number W364065**

**Current**
- Notice of Intent No. W364065
- Unique Ecology Well ID Tag No. AHR792
- Water Right Permit No.
- Property Owner Name: MARSHALL CLARK
- Well Street Address: 8863 STATE RT. 270
- City: PULLMAN
- County: WHITMAN

**Location**
- Section: SE1/4-1/4
- Township: SW1/4
- Range: Sec 31
- Twp: 15N
- R: 46
- (s, t, r Still REQUIRED)

**Lat/Long**
- Lat Deg ______ Lat Min/Sec ______
- Long Deg ______ Long Min/Sec ______
- Tax Parcel No. (Required): 200004615314790

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

Form: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASALT BROKEN</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>BASALT HARD</td>
<td>18</td>
<td>119</td>
</tr>
<tr>
<td>CLAY GREEN</td>
<td>119</td>
<td>143</td>
</tr>
<tr>
<td>CLAY BLUE</td>
<td>143</td>
<td>167</td>
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<tr>
<td>CLAY BROWN</td>
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<td>194</td>
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<tr>
<td>CLAY WHITE</td>
<td>194</td>
<td>218</td>
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<tr>
<td>BASALT HARD BLACK</td>
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<tr>
<td>BASALT WEATHERED</td>
<td>284</td>
<td>303</td>
</tr>
<tr>
<td>BASALT HARD BLACK</td>
<td>303</td>
<td>305</td>
</tr>
</tbody>
</table>

**WELL LEVELS**

- Land-surface elevation: ______ ft.
- Mean sea level: ______ ft below top of well: Date: 10/2/13
- Artesian pressure: ______ lbs. per square inch: Date: ______
- Artesian water controlled by ______

**WELL TESTS**

- Drawdown: amount water level is lowered below static level
- Yield: gal/min. with ______ ft. drawdown after ______ hrs.
- Recovery rate: time taken as zero when pump turned off (water level measured from well top to water level)

**WELL CONSTRUCTION CERTIFICATION**

1. Constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.
2. Materials used and the information reported above are true to my best knowledge and belief.

- Driller 
- Engineer
- Trainee

**Driller/Engineer/Trainee Signature**: 

**Drilling Company**: MCPPHERSON & WRIGHT DRILLING
- Address: 2246 BURRELL
- City, State, Zip: LEWISTON, ID, 83501
- Contractor’s Registration No.: mcppwell135n

**Date**: 10/15/13
STEVE CLARK WELL 1

[DRILLED IN 1992]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, March 25, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 159116</th>
<th>Elev (ft): 2470</th>
<th>Depth (ft): 305</th>
<th>7.5’ Quad: Albion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude_1: 46.827091</td>
<td>Longitude_1: -117.140061</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
<tr>
<td>______ ¼, ______ ¼, _____ SE ¼, Sec. 33, T. 16 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
1422 Palouse-Albion Road, Pullman, Wash., on east side of road

Location Method:
Location is for house; Albion quadrangle Well 1 of Bush and Garwood (2005 [2006]); Whitman County Assessor; Google Earth imagery, topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 13</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>13 – 157</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>157 – 173</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>173 – 270</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member (?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>270 – 284</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>284 – 305</td>
</tr>
</tbody>
</table>
Comments:

Contacts are only suggested, in part, because no interbeds were noted in driller's report.

Whitman County Tax Parcel 200004516334590, 1422 PALOUSE-ALBION RD, SE1/4 PT E1/2 STEVE CLARK PALOUSE-ALBION RD SHPLT; owner now is HALDORSON, GARY J; grantors were CLARK, STEVE/DONNA on 07/01/07; 8.0 acres.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(2) LOCATION OF WELL: County: Whitman
(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
DeWater [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New well [ ] Dug [ ] Bored [ ]
Reconditioned [ ] Driven [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well: 8 1/2" inches.
Depth of completed well: 37" ft.

(6) CONSTRUCTION DETAILS:
Casing installed: B * Diam. from + 1 ft. to 20 ft.
Weled [ ] Diam. from ft. to ft.
Liner installed: Diam. from ft. to ft.
Threaded [ ] Diam. from ft. to ft.

Perforations: Yes [ ] No [ ]
Type of perforator used
SIZE of perforations

Screens: Yes [ ] No [ ]
Manufacturer's Name
Type of well screen
Diam. [ ] Slot size from ft. to ft.
Diam. [ ] Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ] Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ] To what depth?
Cement
Material used in seal
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water?
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type:
H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level
Static level: 133 ft. below top of well Date: 3-31-92
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by
(Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawn after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test:

Boiler test: gal./min. with ft. drawn after hrs.
Airtest: gal./min. with stem set at ft. for hrs.
Artesian flow: g.p.m. Date
Temperature of water [ ] Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
Steel - Pvc - Teflon 13 157
Basalt - Pvc - Teflon 157 173
Basalt - Teflon - Weathered 173 270
Basalt - Teflon - Mil 287 384

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson & Wright Drilling
240 Durrell
Lewiston, Idaho 83501

(Signed) Joe Wright
License No. 0520

(USE ADDITIONAL SHEETS IF NECESSARY)
STEVE CLARK WELL 2

[DRILLED IN 1995]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 5, 2016

Well Log ID: NA Elev (ft): 2710 ±10 Depth (ft): 482 7.5'
Quad: Viola

Latitude: 46.77853 Longitude: -117.00047 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
4475 US 95 N, Moscow, Idaho, on west side of US 95; just north of Estes Road; also accessible via J.L. Naylor Lane.

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile, "McGraw" well); Latah County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller's report. Neighbor (Mr. Ahles) confirmed that well used to belong to Steve Clark, site visit (November 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden and Palouse Formation</td>
<td>From</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>27</td>
</tr>
<tr>
<td>Gravel, granules of quartz</td>
<td>72</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>125</td>
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<tr>
<td>Clay and sand</td>
<td>163</td>
</tr>
<tr>
<td>Gravel, granules of quartz</td>
<td>165</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>182</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>367</td>
</tr>
</tbody>
</table>
Comments:

1 Driller recorded as medium soft granite.

2 Driller recorded as diorite.

3 Driller recorded as decomposed granite (very soft).

Note that the coarse-grained sediments of both the sediments of Bovill and Vantage Member correlate to the conglomerates and sands reported for the Ralph Naylor Farms well (Grader, 2011) located about 1 mi to the east.

Latah County Tax Parcel RP40N05W295609; 4475 HWY 95 N; owner now is Brian Q. McGraw; 2.29 AC, NWSW, 29 40 5.

References Cited:

1. DRILLING PERMIT NO. 87-94-N-36-000

2. OWNER:
   Name: Steve Clark
   Address: Box 16
   City: Weippe
   State: ID
   Zip: 83872

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.
   Address of Well Site: Alice Hill
   Near Indian Estates, City: Moscow
   [Give at least name of road + Distance to Road or Landmark]

4. PROPOSED USE:
   Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐
   Thermal ☐ Injection ☐ Other ☐

5. TYPE OF WORK:
   ☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD:
   ☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:
   SEAL/FILTER PACK | AMOUNT | METHOD
   Bentonite 0 27 500 Top Pour

8. CASING/LINER:
   Diameter From To Gauge Material Casing Liner Welded Threaded
   4" 160 - 360 160 Steel ☐ ☐ ☐ ☐
   4 1/2 - 180 300 Steel ☐ ☐ ☐ ☐

9. PERFORATIONS/SCREENS:
   ☐ Perforations Method: 5 Aw
   ☐ Screens Screen Type
   From To Stat Size Number Diameter Material Casing Liner
   360 - 360 3/4" 41 4" Fls/Steel

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    160 ft. below ground Artesian pressure – 0 lb.
    Depth flow encountered – 0 ft. Describe access port or control devices: Top of casing

11. WELL TESTS:
    Yield gal/min. Drawdown Pumping Level Time
    30                   1 75
    Water Temp. Bottom hole temp.
    Water Quality test or comments: 0 1k

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water
    Bore Da. From To Remarks: Lithology, Water Quality & Temperature Y N
    5 07-07 Brown Clay
    6 07-72 White Stk/Sch Clay
    6 72-77 Quartz Grndes 1
    6 77-125 " "
    6 87-163 Clay x Sand
    6 163-165 Med Soft Granite
    6 165-182 Source Quartz Grndes
    6 37-367 Diortite
    6 367-385 Gray Clay
    6 385-422 Brown Decom. Grndes 30
    (Very Soft)

13. DRILLER'S CERTIFICATION:
    I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Firm Name: Uhlenkott Drilling
    Firm No: 125
    Firm Officials: Ray Mankin Date: 3-11-95
    and
    Supervisor or Operator: Air Uhlenkott Date: 3-11-95
    (Sign only if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES
STEVE CLARK WELL 3
[DRILLED SEPTEMBER 4, 2001]
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 31, 2018

Well Log ID: 318111  Elev (ft): 2450 ±10  Depth (ft): 155  Quad: Albion

Latitude: 46.841267°  Longitude: -117.126961°  decimal degrees (WGS84)

____ ¼,  NW ¼,  SE ¼,  Sec. 27,  T. 16 N,  R. 45 E

Well Address and (or) Other Location Information:
111 Palouse-Albion Road, Palouse, Wash.; on north side of road

Location Method:
Assumed location is for large steel shed (Quonset hut) by grain bins, which appear to be at address recorded by driller; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼ -¼ Section; site visit March 27, 2018 — well not observed

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>5 – 97</td>
</tr>
<tr>
<td>*Shale, black</td>
<td>97 – 118</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>118 – 155</td>
</tr>
</tbody>
</table>

*Driller recorded as shale; I interpreted as platy basalt, base of flow
Comments:
Whitman County Tax Parcel 200004516274690; 111 PALOUSE-ALBION RD; SE PT N 1/2; in 2017, owners were CLARK, STEVEN/DONNA; 20.0 acres; 05/31/18: grantor was CLARK, STEVEN ESTATE to STEVEN DONN CLARK TEST TRUST.

Steven D. Clark died December 23, 2016 (Moscow-Pullman Daily News, 2016).

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

Owner: Name STEVE CLARK
Address 1103 PALOUSE ALBION RD, PALOUSE, WA 99161
TAX PARCEL NO.

(2) LOCATION OF WELL: County WHITMAN
Street Address of Well (or nearest address) 153 PALOUSE ALBION RD. PALOUSE WA 99161

(3) PROPOSED USE: □ Domestic □ Industrial □ Municipal
□ Irrigation □ Test Well □ Other
□ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one)
□ New Well Method:
□ Deepened □ Dug □ Bored
□ Reconditioned □ Cable □ Driven
□ Decommission □ Rotary □ Jetted

(5) DIMENSIONS:
Drilled 155 feet. Depth of completed well 155 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: □ Welded □ Liner installed □ Threaded
Diam. from ft. to ft.

Perforations: □ Yes □ No
Type of perforator used
□ Yes □ No
Diam. from ft. to ft.

Material placed from ft. to ft.

Screen: □ Yes □ No
□ Manufacturer's Name
Type:
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel/Filter packed: □ Yes □ No □ Size of gravel/sand
□ Yes □ No

Surface seal: □ Yes □ No
□ BENTONITE
□ Yes □ No
To what depth? ft.

Material used in seal
□ Yes □ No

Did any strata contain unusable water? □ Yes □ No
□ Type of water?
□ Depth of strata

Method of sealing strata off

(7) PUMP:
Manufacturer's Name
Type:
H.P.

(8) WATER LEVELS:
Static level 49 ft. below top of well Date 9/5/2001
Artesian pressure lbs. per square inch Date
Artesian water is controlled by
(Cap, valve, etc.)

(9) WELL TESTS:
Was a pump test made? □ Yes □ No
□ Yield: gal./min. with ft. drawdown after hrs.
□ Yield: gal./min. with ft. drawdown after hrs.
□ Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Airtest 50 gal./min. with stem set at 80 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 54

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL FROM TO
CLAY BROWN 0 5
BASALT MEDIUM GRAY 5 97
SHALE BLACK 97 118
SAND 118 155


WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name TED WRIGHT
License No. 0532
(Licensed Driller/Engineer)

Trainee Name GARY WRIGHT
License No. 2596T

Drilling Company MCPHERSON & WRIGHT DRILLING
(Signed) TED WRIGHT
(Licensed Driller/Engineer)

Address 2246 BURRELL, LEWISTON ID,83501
Contractor's Registration No. MCPHEWD135N1 Date 1/11/02, 19

(USE ADDITIONAL SHEETS IF NECESSARY)
Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6606.
ROBERT AND MAUREEN CLAUSEN WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, November 2, 2016; November 9, 2017

Well Log ID: 172210 Elev (ft): 2380 ±10 Depth (ft): 384 7.5’ Quad: Colfax South

Latitude: 46.799226 Longitude: -117.299192 decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 8, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
751 Albion Road, Pullman, Wash., on south side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Drove by mailbox for 751 Albion Road, but didn’t stop to look for well (September 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>40</td>
</tr>
<tr>
<td>Basalt</td>
<td>61</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>99</td>
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<tr>
<td>Basalt</td>
<td>107</td>
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<td>Roza Member</td>
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<tr>
<td>Basalt, porous</td>
<td>178</td>
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<tr>
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<td>202</td>
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<tr>
<td>Basalt, porous(?)</td>
<td>207</td>
</tr>
<tr>
<td>Basalt</td>
<td>297</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>301</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>304</td>
</tr>
<tr>
<td>Basalt</td>
<td>306</td>
</tr>
<tr>
<td>Clay</td>
<td>321</td>
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</tbody>
</table>
Grande Ronde Basalt
N2 magnetostratigraphic unit
Sentinel Bluffs Member

<p>| | | |</p>
<table>
<thead>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>327</td>
<td>–</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>361</td>
<td>–</td>
</tr>
<tr>
<td>Basalt</td>
<td>378</td>
<td>–</td>
</tr>
</tbody>
</table>

Comments:

Whitman County Tax Parcel 200004415083190, 751 ALBION RD, SW1/4 PT N1/2 S OF RD, CLAUSEN, MAUREEN C; 13.0 acres; 1½ story residence built in 1917.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**Owner:** Robert & Maureen Clausen, RTI, Box 227, Pullman, WA

**Location:** County: Whitman  NE  3/4 SE  4 Sec 8 T 15 N., R. 54 E. M.

**Proposed Use:**
- Domestic
- Irrigation
- Industrial
- Municipal
- DeWater
- Test Well
- Other

**Type of Work:**
- Abandoned
- New well
- Method: Dig
- Deepened
- Drilled
- Reconditioned
- Rotary
- Jetted

**Dimensions:**
- Diameter of Well: 8 inches
- Drilled: 384 feet
- Depth of completed well: 384 feet

**Construction Details:**
- Casing Installed: 8" Diam. from 1 ft. to 35 ft.
- Welded
- Liner Installed: 8" Diam. from 24 ft. to 384 ft.
- Threaded
- Perforations: Yes (SKILL SAW)
- Type of perforator used
- Size of perforations: 180 ft. to 300 ft.
- 20 perforations from 180 ft. to 300 ft.
- 60 perforations from 344 ft. to 384 ft.
- Screens: Yes
- Manufacturer's Name
- Type: Diam.
- Slot size: from ft. to ft.
- Model No.
- Gravel placed from ft. to ft.
- Surface seal: Yes
- Material used in seal
- Did any strata contain unusable water?: No
- Method of sealing strata off

**Pump:**
- Manufacturer's Name: H.P.

**Water Levels:**
- Land-surface elevation: 290 ft.
- Static level: 82/94 ft.
- Artesian pressure: 5 lbs. per square inch
- Artesian water is controlled by

**Well Tests:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made?: Yes ☑ No ☐
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery: gal./min. with ft. drawdown after hrs.

**Well Constructor Certification:**
- I, [Name], [Address] (WELL DRILLER), License No. 0094, hereby acknowledge receipt of the above report and hereby certify that it is complete and accurate to the best of my knowledge and belief.

**Burns Well Drilling**
- RT 2, Box 618
- Grangeville, Idaho 83530

**Date:** Sept 28, 1994

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**Additional Notes:**
- WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

**MATERIAL**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

**Formation:**
- Describe by color, character, size of material, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

---

**Received:**
- SEP 30, 1994

**Department of Ecology:**
- EASTERN REGIONAL OFFICE
FARRELL COCHRAN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 3, 2016

Well Log ID: 162036  Elev (ft): 2320 ±10  Depth (ft): 325  Quad: Colfax North

Latitude: 46.970085  Longitude: -117.305965  decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 18, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
9701 Dry Creek Road, Colfax, Wash., north side of road

Location Method:
Located at house; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 15 of Bush and others (2005 [2006]). PLSS subdivision incorrect on driller’s report. Site visit (September 14, 2016).

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<td>0 – 10</td>
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<td>Priest Rapids Member</td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>10 – 50</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>50 – 55</td>
</tr>
<tr>
<td>Basalt</td>
<td>55 – 165</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>165 – 180</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>180 – 313</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>313 – 323</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>323 – 325</td>
</tr>
</tbody>
</table>
Mr. Farrell Cochran died in 1995 (The Spokesman Review, 1995).

References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

START CARD No. M081614
Unique Well I.D. # ACM695
Water Right Permit No.

[Address Information]

(2) LOCATION OF WELL: County WHATCOM
(3) LOCATION OF WELL (or nearest address):

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK:
Owner's Number of well
(If more than one) 1

NEW WELL
Method: ROTARY

(5) DIMENSIONS:
Diameter of well 6 inches
Drilled 325 ft.
Depth of completed well 325 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 * Dia. from +1 ft. to 19 ft.
* Dia. from +5 ft. to 325 ft.
WELDED 4

Perforations: YES
Type of perforator used SKILL saw
SIZE OF perforations 1/8 in. by 5 in.
50 perforations from 285 ft. to 325 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: NO
Manufacturer's Name
Model No.

Gravel packed: NO
Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? YES
Type of water? SURFACE WATER Depth of strata 50 ft.
Method of sealing strata off PACKER

(7) PUMP: Manufacturer's Name

(8) WATER LEVELS:
Land-surface elevation above mean sea level . . ft.
Static level 100 ft. below top of well Date 10/23/96
Artesian Pressure lbs. per square inch Date
Artesian water controlled by CAP

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.

Was a pump test made? YES If yes, by whom?
Yield: gal./min with ft. drawdown after hrs.

Date of test

Bailer test gal/min. ft. drawdown after hrs.
Air test 25 gal/min. w/ stem set at 325 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? NO

WELL CONSTRUCTOR CERTIFICATION:
I, constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME POOLE PUMP & SUPPLY, INC.
(Person, firm, or corporation) (Type or print)

License No. 1287
Contractor's Registration No. 18000809514

Address 316 W 5TH

[Signature]

[License No.]

Date 11/20/96
GARY COCHRAN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 8, 2016

Well Log ID: 254167  Elev (ft): 2290 ±10  Depth (ft): 80  Quad: Colfax South

Latitude: 46.824755  Longitude: -117.282098 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
2201 Shawnee Road, Colfax, Wash., on south side of road

Location Method:
Location is for presumed well area by faucet to right front of house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS incorrect on driller’s report. Site visit (September 13, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 11</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>11 – 69</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>69 – 80</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415042900, 2201 SHAWNEE RD, NW LTS 3 4 & S 1/2 EXCEPT COCHRAN SHAWNEE SHORT PLAT, owner is now COCHRAN LAND CORP, 215.92 acres; 1½ story residence built in 1933.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Gary Oelmann
Address: 2111 Sherman Rd Pullman WA 99163
County: Whitman

LOCATION OF WELL: County
STREET ADDRESS OF WELL (or nearest address): Same

PROPOSED USE: Domestic

TYPE OF WORK: New well
Method: Drilled

DIMENSIONS: Diameter of well 8.6 inches
Depth of completed well 80 ft.

CONSTRUCTION DETAILS:
Casing Installed: 8 ft. Diam. from +1 ft. to 28 ft.
Welded
Threaded

Perforations: Yes
Type of perforator used Saw
Size of perforations 1/8 in. by 1/2 in.
60 perforations from 40 ft. to 80 ft.

Screens: Yes

Manufacturer's Name
Type
Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel packed: Yes
Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes
Material used in seal
To what depth 28 ft.

Did any strata contain unusable water? Yes
Type of water?
Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name
Type

WATER LEVELS:
Land-surface elevation above mean sea level 9 ft.
Static level 9 ft. below top of well Date 6-14-98
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cz, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME
McPherson & Wright Drilling
Address

Contractor's Registration No.

License No.

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
TERRY COCHRAN WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 25, 2016

Well Log ID: 161009 Elev (ft): 2340 ±10 Depth (ft): 120 7.5’ Quad: Colfax North

Latitude: 46.936559 Longitude: -117.330713 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
111 Crumbaker Road, Colfax, Wash., on south side of road; well is in field in front of house, on west side of driveway.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden</strong></td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 30</td>
</tr>
<tr>
<td>Gravel</td>
<td>30 – 35</td>
</tr>
<tr>
<td><strong>Wanapum Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>38 – 45</td>
</tr>
<tr>
<td>Basalt, broken, brown</td>
<td>45 – 50</td>
</tr>
<tr>
<td>Basalt, soft, red</td>
<td>50 – 60</td>
</tr>
<tr>
<td>Basalt, broken, brown</td>
<td>60 – 70</td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>70 – 100</td>
</tr>
<tr>
<td>Basalt, broken, red</td>
<td>100 – 120</td>
</tr>
</tbody>
</table>

Comments:
*Unusual to have a thick section of reds and browns; may be highly weathered or indication of recharge from overlying modern gravels. Lower part could be near Roza contact.*
Whitman County Tax Parcel 200004317258690, 111 CRUMBAKER RD, S1/2 S OF CO RD SHORTPLAT COCHRAN, TERRY/NANCY, owners are COCHRAN, TERRY/NANCY, 3.0 acres, 1 story residence, built in 1995.

Above, view looking south; well is at lower center (in field, to right of white shed).

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Name: Terry Cochran  
Address: Rt. 1, Box 132-1 Colfax, WA. 99111

**(2) LOCATION OF WELL:** County: Whitman

**(2a) STREET ADDRESS OF WELL (or nearest address):**

**(3) PROPOSED USE:**  
- Domestic
- Irrigation
- Industrial
- Municipal
- Water

**(4) TYPE OF WORK:**  
- Owner's number of well: [Blank]
- New well
- Deepened
- Drilled
- Bored
- Abandoned
- Other

**(5) DIMENSIONS:**  
- Diameter of well: 6 inches
- Drilled: 120 feet
- Depth of completed well: 120 ft.

**(6) CONSTRUCTION DETAILS:**  
- Casing installed: 6'4" Dia. from 1 ft. to 39 ft.
- Welded: 4' Dia. from -20 ft. to 100 ft.
- Liner installed: 4' Dia. from ft. to ft.
- Threaded: No

**Perforations:**  
- Yes ☑️ No ☐
- Type of perforator used: skill saw
- Size of perforations: 1/4 in. by 6 in.
- Perforations from 100 ft. to 120 ft.
- Perforations from ft. to ft.
- Perforations from ft. to ft.
- Screens: Yes ☑️ No ☐
- Manufacturer's Name: [Blank]
- Model No: [Blank]
- Diameter: [Blank]
- Slot size: [Blank]
- Diameter: [Blank]
- Slot size: [Blank]
- Gravel packed: Yes ☑️ No ☐
- Size of gravel: [Blank]
- Gravel placed from ft. to ft.
- Surface seal: Yes ☑️ No ☐
- Depth to seal: 20 ft.
- Material used in seal: bentonite
- Did any strata contain unusable water: Yes ☑️ No ☐
- Type of water: [Blank]
- Depth of strata: [Blank]
- Method of sealing strata off: [Blank]

**(7) PUMP:**  
- Manufacturer's Name: [Blank]
- H.P.: [Blank]

**(8) WATER LEVELS:**  
- Land surface elevation: above mean sea level
- Static level: 10 ft. below top of well
- Artesian pressure: lbs. per square inch
- Artesian water is controlled by (Cap, valve, etc.)

**(9) WELL TESTS:**  
- Drawdown is amount water level is lowered below static level
- Was a pump test made: Yes ☑️ No ☐
- If yes, by whom: [Blank]
- Yield: gal./min. with ft. drawdown after hrs.

**Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):**

**Date of test:**

**Bailier test**  
- gal./min. with ft. drawdown after hrs.

**Arttest**  
- 20+ gal./min. with stem set at 100 ft. for 1 hrs.

**Artesian flow**  
- g.p.m. Date

**Temperature of water**  
- Was a chemical analysis made: Yes ☑️ No ☐

---

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** FOGLE PUMP & SUPPLY, INC.  
(PERSON, FIRM, OR CORPORATION)  
(TYPE OR PRINT)

**Address:** 316 W. 5th Colville, Wa. 99114

(Signed) [Signature]  
(WELL DRILLER) [License No. 2109]

**Contractor's Registration No.:** FOGLEPS09514  
(Date 12/16/94)  
(USE ADDITIONAL SHEETS IF NECESSARY)

---

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6000. The TDD number is (206) 407-6006.
Cochran Partnership Well
Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, September 3, 2016; November 9, 2017

Well Log ID: 164771  Elev (ft): 2450 ±10   Depth (ft): 305  7.5’ Quad: Albion

Latitude: 46.760783  Longitude: -117.165266 decimal degrees (WGS84)

¾, NW ¾, NE ¾, Sec. 29, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
202 Whelan Road, Pullman, Wash., on north side of road

Location Method:
Location is for large industrial building at quarry, based upon photos for most likely tax parcel; Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 12 of Bush and others (2005 [2006]) was incorrectly (?) plotted to the east.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>0 – 107</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>107 – 134</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>134 – 215</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>215 – 245</td>
</tr>
<tr>
<td>Basalt, soft, red</td>
<td>245 – 261</td>
</tr>
<tr>
<td>Basalt</td>
<td>261 – 305</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515291590, 202 WHELAN RD, PULLMAN, NE1/4 PT N OF CO RD AND E OF HWY, owner is COCHRAN PARTNERSHIP (mailing address is 2201 SHAWNEE RD, PULLMAN); 32 acres (see two photos below).

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Cochran Partnership
Address: NE 1/4 Sec. 39 T 15 N., R. 45 W.M.

LOCATION OF WELL: Whitman

STREET ADDRESS OF WELL (or nearest address):

PROPOSED USE: Domestic

TYPE OF WORK: Owner's number of well

Abandoned □ New well ☑ Method: Dug □ Drilled ☑ Borehole □ Reconditioned □ Rotary □ Jetted □

DIMENSIONS: Diameter of well 8-6 inches.

Construction Details:

Casing installed: 8 □ Diam. from ft. to 24 ft.

Weled □ Diam. from ft. to 144 ft.

Liner installed: 8 □ Diam. from ft. to ft.

Perforations: Yes □ No ☑ Type of perforator used

SIZE of perforations in. by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

Screens: Yes □ No ☑

Manufacturer's Name

Type Model No.

Diam. Slot size. from ft. to ft.

Diam. Slot size. from ft. to ft.

Gravel packed: Yes □ No ☑ Size of gravel

Gravel placed from ft. to ft.

Surface seal: Yes □ No ☑ To what depth? 24 ft.

Material used in seal

Did any strata contain unsuitable water? Yes □ No ☑

Type of water?

Depth of strata?

Method of sealing strata off

PUMP: Manufacturer's Name

WATER LEVELS: Land-surface elevation above mean sea level 145 ft.

Static level 8-25 ft. below top of well Date

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (Glo, valve, etc.)

WELL TESTS: Drawdown in amount water level is lowered below static level

Was a pump test made? Yes □ No ☑ If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date test:

Bailier test gal./min. with ft. drawdown after hrs.

Arief 30 gal./min. with stem set at 285 ft. for 1 hrs.

Arteian flow g.p.m. Date

Temperature of water Was a chemical analysis made? Yes □ No ☑
### ARTHUR COHEN WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, July 20, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2374</th>
<th>Depth (ft):</th>
<th>180</th>
<th>7.5’</th>
<th>Quad: Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.749850</td>
<td>Longitude:</td>
<td>-117.205070</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>¼, ¼, SE ¼, Sec. 25, T. 15 N, R. 44 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
2202 Brayton Road, Pullman, Wash., north side of road, at west end of short extension off driveway

**Location Method:**
Latitude, longitude, and elevation from Moxley (2012, p. 73); note that house is in Albion quadrangle.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Modern sediments</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>3</td>
</tr>
<tr>
<td>Gravel</td>
<td>8</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>10</td>
</tr>
<tr>
<td>Basalt</td>
<td>27</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>48</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>62</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>97</td>
</tr>
<tr>
<td>Basalt</td>
<td>99</td>
</tr>
</tbody>
</table>
R2 magnetostratigraphic unit(?)
Meyer Ridge Member
Basalt, broken

Comments:
Whitman County Tax Parcel 200004415254490, 2202 BRAYTON RD, SE S 391' N OF RD IN SE 1/4, now owned by NABITY, PAUL; 4.0 acres; 1 story residence, built in 1958; grantor was COHEN, JULIA ETAL, on 06/02/15.

References Cited:
### WELL LOG

**DEPTH AND STRATA**

<table>
<thead>
<tr>
<th>Depth</th>
<th>Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'</td>
<td>Silt</td>
</tr>
<tr>
<td>9'</td>
<td>Clay</td>
</tr>
<tr>
<td>12'</td>
<td>Boulders</td>
</tr>
<tr>
<td>27'</td>
<td>Soft Basalt</td>
</tr>
<tr>
<td>48'</td>
<td>Med. Hard Basalt</td>
</tr>
<tr>
<td>62'</td>
<td>Clay</td>
</tr>
<tr>
<td>77'</td>
<td>Hard Basalt</td>
</tr>
<tr>
<td>91'</td>
<td>Fractured Basalt</td>
</tr>
<tr>
<td>125'</td>
<td>Med. Hard Basalt</td>
</tr>
<tr>
<td>130'</td>
<td>Basalt</td>
</tr>
</tbody>
</table>

**LOCATION OF WELL**
- Pullman

**NEAREST POST OFFICE**
- Pullman

**STATE**
- Washington

**COUNTY**
- Lewis

**DRILLING BEGUN**
- 9-22-82

**WELL FINISHED**
- 9-23-82

### WELL RECORD

- **Casing Size**: 8" x 6"  
- **Casing Depth**: 65'
- **Hole Size**: 8" x 6"  
- **Hole Depth**: 180'
- **Capacity of Well**: 50 G.P.M. Airst
- **Pump Settings**: 160'
- **Casing Perforations**: None

### INVOICE

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>31' of 8&quot; Casing</td>
<td>7.50</td>
<td>232.50</td>
</tr>
<tr>
<td>65' of 8&quot; Hole</td>
<td>15.00</td>
<td>975.00</td>
</tr>
<tr>
<td>40' of 6&quot; Casing</td>
<td>14.50</td>
<td>580.00</td>
</tr>
<tr>
<td>115' of 6&quot; Hole</td>
<td>12.00</td>
<td>1380.00</td>
</tr>
</tbody>
</table>

**TOTAL AMOUNT DUE**: $2933.05

**MEMO**:
- 9-28-82
- 11-6-82
- 4-18-83 Balance Due $150.00
- 12-19-82
- 6-15-83
- 8-9-83
- 10-12-83
- 12-12-83
- 3-7-83
- 7-5-83
- 8-4-83
- 1-19-83
CLINT COLE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 25, 2016; November 9, 2017

Well Log ID: 1021432  Elev (ft): 2600 ±5  Depth (ft): 450  7.5’ Quad: Pullman

Latitude: 46.723267  Longitude: -117.192167  decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 6, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
655 SW James Place, Pullman, Wash.

Location Method:
Latitude and longitude from driller’s report; well plots on north side of road, just west of pump house for city water storage tank (April 19, 2016 site visit to tank and pump house); Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Fill</td>
<td>0</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Saddle Mountains Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt of Tenmile Creek(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken with clay</td>
<td>13</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>17</td>
</tr>
<tr>
<td>Clay, sandy, brown</td>
<td>42</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
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<tr>
<td>Priest Rapids Member</td>
<td></td>
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<tr>
<td>Basalt of Lolo</td>
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<tr>
<td>Basalt, broken, with clay</td>
<td>70</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>80</td>
</tr>
<tr>
<td>Basalt</td>
<td>95</td>
</tr>
</tbody>
</table>
Basalt
Grande Ronde Basalt
  N2 magnetostratigraphic unit
    Sentinel Bluffs Member
      Basalt, soft
      Basalt
      258 – 270
      270 – 410
R2 magnetostratigraphic unit(?)
  Meyer Ridge Member
    Basalt, broken
    Basalt
    410 – 432
    432 – 450

Comments:
An interbed was not reported where the Vantage was expected, so the pick between Grande Ronde and Wanapum units was based on hardness only.

Whitman County Tax Parcel 200004514063149, 655 SW JAMES PL, SW-SE CORNER NE1/4 1 AC, owners are COLE, CLINT S/FIONA J.

References Cited:
Washington DEPARTMENT OF ECOLOGY
WATER WELL REPORT

X Construction
De-commission Notice of Intent # AAU287

Proposed Use: Domestic [ ] Industrial [X]

Type of Work:
X New Well [ ] Reconditioned [ ] Deepened [ ]

Dimensions: DIAMETER: 6 IN DEPTH: 450 FEET

Construction Details
Casing: X Welded 5" Diameter +2 to 119 ft.
Installed: X Liner 4" Diameter -10 to 450 ft.
Perforations: X Yes [ ] No [ ]
Type of perforator used: 1/2" Drilled holes
Size of perfs: 1/2 in. by 1/2 in. 96 from 430 to 390 ft.

Screens:
Manufacturer's Name: [ ]
X No [ ] X-pac Location no

Material used in well: Bentonite
Did any strata contain usable water? Yes [X] No [ ]
Type of water: clear [ ] Strata depth:

Water Levels:
Land-surface elevation above mean sea level: ft.
Static Level: 270 ft. below top of well Date: 2/18/15
Artesian pressure: lbs./sq.inch Date: [ ]
Artesian water is controlled by: cap (cap, valve, etc.)

Well Tests:
Drawdown is amount water level is lowered below static
Pump test: X Yes [ ] No [ ] By none
Yield: ft. drawdown after hrs.
Yield: ft. drawdown after hrs.
Yield: ft. drawdown after hrs.
Recovery data (time taken as zero when pump turned off)
(water level measured from well top to water level)

Time: Water Level Time: Water Level

Date of test: 2/18/15 Bailer test: gal/min. ft. drawn. Atm. hrs.
Airtest: gal/min. ft. drawn. Atm. hrs.
Artesian flow: NA g.p.m. Date:
Water temp: 50 Chemical analysis: X No [X] Yes

WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller: Stanley K. Wolfe
Driller Signature: [Signature]
Driller License #: 2108

CURRENT Notice of Intent No. W350601
Unique Ecology Well ID Tag No. AAU287
Water Right Permit No.
Property Owner: Clint Cole
Well Street address: 655 James Place
City: Pullman County: Whitman
Location: S/W 1/4, S/W 1/4 Section 6

Tax Parcel #: 200004514063149

CONSTRUCTION OR DECOMMISSION PROCEDURE

<table>
<thead>
<tr>
<th>Bone-Diam.</th>
<th>Material</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
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<tr>
<td>10 in.</td>
<td>Basalt gravel</td>
<td>0</td>
<td>2 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>brown clay</td>
<td>2</td>
<td>13 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>broken basalt &amp; clay</td>
<td>13</td>
<td>17 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>hard pan brown clay</td>
<td>17</td>
<td>42 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>hard, sandy brown clay</td>
<td>42</td>
<td>70 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>broken basalt &amp; clay</td>
<td>70</td>
<td>80 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>broken basalt</td>
<td>80</td>
<td>95 ft.</td>
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<tr>
<td>in.</td>
<td>medium hard black basalt</td>
<td>95</td>
<td>110 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>hard black basalt</td>
<td>110</td>
<td>160 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>medium hard black basalt</td>
<td>160</td>
<td>182 ft.</td>
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<tr>
<td>in.</td>
<td>hard black basalt</td>
<td>182</td>
<td>258 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>soft black basalt</td>
<td>258</td>
<td>270 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>Medium hard gray/ black basalt</td>
<td>270</td>
<td>298 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>hard black basalt</td>
<td>298</td>
<td>360 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>medium hard basalt</td>
<td>360</td>
<td>410 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>broken basalt</td>
<td>410</td>
<td>432 ft.</td>
</tr>
<tr>
<td>in.</td>
<td>hard black sand</td>
<td>432</td>
<td>450 ft.</td>
</tr>
</tbody>
</table>

Start Date: 2/12/15 Completed Date: 2/18/2015

All-Ways Drilling, Inc.
100 Endove Lane, St. Maries, Idaho 83861 MAR 09 21/15
Registration #: ALLWADIO77JG

Department of Ecology
Eastern Washington Office
279
**COLFAK CITY WELL 2**

*(CLAY STREET WELL)*

*[DRILLED IN 1949]*

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 17, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>150640</th>
<th>Elev (ft):</th>
<th>1970</th>
<th>Depth (ft):</th>
<th>600</th>
<th>7.5’</th>
<th>Quad:</th>
</tr>
</thead>
</table>

Lat: 46.894263
Long: -117.357148
decimal degrees (WGS84)

|   | ¼, SW ¼, NE ¼, Sec. 11, T. 16 N, R. 43 E |

**Well Address and (or) Other Location Information:**
502 Clay Street, Colfax, Wash., located at northernmost extension of N Clay Street

**Location Method:**
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); elevation from Walters and Glancy (1969, p. 71). Google Earth imagery; topographic map; Colfax North quadrangle Well 18 of Bush, Garwood, and Oakley (2005 [2006])

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th></th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Gravel</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, broken</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
<td>29</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Unnamed interbed</td>
<td>Clay</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td>Basalt, fractured</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>89</td>
</tr>
</tbody>
</table>
### Basalt, vesicular, brown
- 91 – 96

### Basalt, alternating hard, soft, and fractured
- 96 – 137

**Latah Formation**

**Unnamed interbed**
- Clay, yellow
- 137 – 146

**Grande Ronde Basalt**

**R2 magnetostratigraphic unit(?)**
- Basalt, a variety of colors and hardness
- 146 – 241
- Basalt, red and black, cinders(?)
- 241 – 273

**Latah Formation**

**Unnamed interbed**
- Conglomerates (gravel)
- 273 – 310

**Grande Ronde Basalt**

**N1–R2 magnetostratigraphic units(?)**
- Basalt, hard, with fractures
- 310 – 600

**Comments:**

*The uppermost flow is probably N2 since the lowermost outcrops in Colfax are N2. The other stratigraphic picks shown are just estimations without any concrete data.*
References Cited:


WELL LOG

Date: November 3, 1949
Record by: Paul A. Durand
Source: Driller's Record

Location: State of Washington
County: Whitman

Tr. B, City of Colfax
Sec. 14, T. 16 N., R. 43 E

Drilling Co.: A. A. Durand & Son
Address: F. O. Box 437, Walla Walla

Method of Drilling: Date Nov. 6-7, 1949

Owner: City of Colfax
Address: Colfax, Wash.

Land surface, datum... ft. above

<table>
<thead>
<tr>
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<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
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<td>Clay</td>
<td>5</td>
<td>5</td>
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<tr>
<td></td>
<td>Coarse gravel</td>
<td>3</td>
<td>6</td>
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<tr>
<td></td>
<td>Cemented gravel</td>
<td>17</td>
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<td></td>
<td>Broken basalt</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
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<td>57</td>
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<td></td>
<td>Clay</td>
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<tr>
<td></td>
<td>Fractured basalt</td>
<td>26</td>
<td>89</td>
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<tr>
<td></td>
<td>Hard basalt</td>
<td>2</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Honeycomb basalt</td>
<td>5</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td>Hard basalt</td>
<td>4</td>
<td>100</td>
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<tr>
<td></td>
<td>Softer basalt</td>
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<td>102</td>
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<tr>
<td></td>
<td>Hard basalt</td>
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<tr>
<td></td>
<td>Fractured basalt with clay seams</td>
<td>2</td>
<td>111</td>
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<tr>
<td></td>
<td>Hard basalt</td>
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<td>Broken basalt with clay</td>
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<tr>
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<td>Honeycomb basalt</td>
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Tape up (over) Sheet of sheets
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<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
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<tbody>
<tr>
<td></td>
<td>Depth forward</td>
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<tr>
<td></td>
<td>Yellow clay</td>
<td>9</td>
<td>146</td>
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<tr>
<td></td>
<td>Fractured basalt</td>
<td>6</td>
<td>152</td>
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<tr>
<td></td>
<td>Hard basalt</td>
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<tr>
<td></td>
<td>Honeycomb basalt</td>
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<td>158</td>
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<td></td>
<td>Hard basalt</td>
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<td>Fractured basalt</td>
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<td>175</td>
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<tr>
<td></td>
<td>Medium soft basalt</td>
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<td>Dense basalt with crevices</td>
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<td>197</td>
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<tr>
<td></td>
<td>Dense black basalt</td>
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<tr>
<td></td>
<td>Black basalt sand (some water)</td>
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<td>238</td>
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<tr>
<td></td>
<td>Black basalt</td>
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<td>241</td>
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<tr>
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<td>Red cinder basalt (some water)</td>
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<td></td>
<td>Broken red basalt</td>
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<td>Black cinder basalt</td>
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<td>265</td>
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<td></td>
<td>Fractured black basalt</td>
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<td>273</td>
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<td>Conglomerates, caving badly</td>
<td>37</td>
<td>310</td>
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<td></td>
<td>Black basalt, hard</td>
<td>19</td>
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<td></td>
<td>Porous black basalt</td>
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<td>376</td>
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<td>Very hard-gray</td>
<td>22</td>
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<td>Fractured basalt with blue clay</td>
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<td>384</td>
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<td></td>
<td>Very hard gray basalt</td>
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<tr>
<td></td>
<td>Fractured basalt with blue clay</td>
<td>10</td>
<td>394</td>
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<tr>
<td></td>
<td>Very hard gray basalt</td>
<td>29</td>
<td>495</td>
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<td>Sandy basalt (water-bearing)</td>
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<td></td>
<td>Fractured black basalt, caving</td>
<td>30</td>
<td>555</td>
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<tr>
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<td>Very hard basalt</td>
<td>55</td>
<td>600</td>
</tr>
</tbody>
</table>

**Pump Test:**
- Dim: 595' x 20x16 Drilled
- SWL: 180'
- DB: 0
- Yield: 711 g.p.m.
- Casing: 16 O.D. dia. Ex. Hwy. Std. Well
  - Casing from 0 to 174' & 121/2 I.D. dia.
  - Ex. Hwy. Std. Well Casing from 0 to 30

**Perforations:**
- None
COLFAK CITY WELL 3
(FAIRVIEW STREET WELL)
[DRILLED IN 1955]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 17, 2016

Well Log ID: 150639  Elev (ft): 2115  Depth (ft): 723  7.5’ Quad: Colfax South

Latitude: 46.872142  Longitude: -117.368901  decimal degrees (WGS84)

SW ¼, SW ¼, SW ¼, Sec. 14, T. 16 N, R. 43 W

Well Address and (or) Other Location Information:
503 Fairview Street, Colfax, Wash., south side of street, west of South Middle Street

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); elevation from Walters and Glancy (1969, p. 71); Google Earth imagery; topographic map; Colfax North quadrangle Well 19 of Bush, Garwood, and Oakley (2005 [2006])

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay and broken basalt</td>
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<tr>
<td>Grande Ronde Basalt</td>
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</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>28</td>
</tr>
<tr>
<td>Basalt</td>
<td>46</td>
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<tr>
<td>Latah Formation(?)</td>
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</tr>
<tr>
<td>Unnamed interbed</td>
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<tr>
<td>Basalt, broken, and gravel</td>
<td>103</td>
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<tr>
<td>Basalt and clay</td>
<td>145</td>
</tr>
<tr>
<td>Clay, yellow and blue (?) (gray)</td>
<td>156</td>
</tr>
</tbody>
</table>

*Grande Ronde Basalt
R2 magnetostratigraphic unit(?)
Basalt 

Latah Formation
- Basalt, broken, and clay 

Grande Ronde Basalt
- N1–R2 magnetostratigraphic units (?)
- Basalt, no noted breaks or interbeds 

Comments:

*Stratigraphic boundaries are just estimates, because the only geochemical data are from the uppermost exposures of N2 in downtown Colfax (about 1.3 mi to the north).

References Cited:


WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
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<tbody>
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<td>28</td>
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<td>Broken basalt</td>
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<td>Gray basalt</td>
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<td>Dark gray basalt</td>
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<td>Gray basalt</td>
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<tr>
<td>Broken basalt and gravel</td>
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<td>145</td>
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<tr>
<td>Broken dark basalt some clay</td>
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<td>Yellow and blue clay</td>
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<td>Broken basalt-blue clay</td>
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<tr>
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<td>567</td>
<td>723</td>
</tr>
</tbody>
</table>

CONSTRUCTION DETAILS:

Casing installed: 16" Diam. from 0 ft. to 205 ft.
Threaded 12" Diam. from 205 ft. to 508 ft.
Welded 10" Diam. from 508 ft. to 723 ft.

Perforations: Yes □ No □
Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes □ No □
Manufacturer's Name
Type
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes □ No □ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes □ No □ To what depth?
Material used in seal:
Did any strata contain unusable water? Yes □ No □
Type of water?
Method of sealing strata off.

PUMP: Manufacturer's Name Johnson
type: vent. turbine
HP 300

WATER LEVELS:

Static level 90 ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS:

Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom A. A. Durand
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test 1955
Bailer test gal./min. with ft. drawdown after hrs.

THIS REPORT COMPILED FROM AVAILABLE DATA BY CITY SUPERVISOR ART ANDERSON (USE ADDITIONAL SHEETS IF NECESSARY)

Signed

DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

APR 15 1975

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME A. A. Durand & Son
(Person, firm, or corporation) (Type or print)
Address 115 Rees Ave., Walla Walla, WA

[Signature]
(Well Driller)

License No. Date 19--

287
BONNIE COLLINS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 15, 2016; November 9, 2017

Well Log ID: 163862 Elev (ft): 2370 ± 10 Depth (ft): 230 7.5’ Quad: Albion

Latitude: 46.820867 Longitude: -117.204128 decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 1, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
1651 Collins Road, Pullman, Wash.; on northwest side of road; well is east of entrance to driveway

Location Method:
Location is for well, as identified by neighbor, Mrs. Asa Clark; Whitman County Assessor; Google Earth imagery; topographic map. Well is listed in Heinemann (1994, p. 57); Albion quadrangle Well 18 of Bush and Garwood (2005 [2006]). Site visit (April 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil and clay</td>
<td>0 — 6</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, weathered 6 — 14</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>unnamed interbed</td>
<td>Clay, gray 14 — 53</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Roza Member</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>53 — 67</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>67 — 155</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
</tbody>
</table>
Basalt, red, porous

Latah Formation
unnamed interbed

Clay, gray

Comments:
The drill log was difficult to interpret. The clay-basalt contacts are similar to the Grande Ronde, Vantage, Roza, Lolo sequence in the area, but if any of the basalt was invasive the interpretation could be wrong.

Whitman County Tax Parcel 200004415011190, 1651 COLLINS RD, 11-93/37582 564448 NE1/4 PT NE1/4 COR NW OF RD 8-93/37033 561896 SHRT PLT #557076 2-93; owner now is TRAVIS, CARMEL L; 3.0 acres; one story residence built in 1978.

References Cited:


**WATER WELL REPORT**

**STATE OF WASHINGTON**

(1) **OWNER:** Name: BONNIE COLLINS

(2a) **LOCATION OF WELL:** County: WHITMAN

(2a) **STREET ADDRESS OF WELL** (or nearest address): 4 Mile Rd.

(3) **PROPOSED USE:**
- Domestic [✓]
- Irrigation [ ]
- Industrial [ ]
- Municipal [ ]
- DeWater [ ]
- Test Well [ ]
- Other [ ]

(4) **TYPE OF WORK:**
- Owner's number of well [ ]
- New well [✓]
- Abandoned [ ]
- Reconditioned [ ]
- Method: Dug [✓]
- Cable Drilled [ ]
- Rotary [✓]
- Jetted [ ]

(5) **DIMENSIONS:**
- Diameter of well: 8 1/4 inches
- Drilled: 230 feet
- Depth of completed well: 230 ft.

(6) **CONSTRUCTION DETAILS:**
- Liner installed: Diam. from 50 ft. to 330 ft.
- Welded: 8 ft. Diam. from 50 ft. to 330 ft.
- Perforations: Yes [✓]
- Type of perforator used: No [ ]
- SIZE of perforations: 4 1/4 in. by 18 in.
  - perforations from 190 ft. to 205 ft.
- Screens: Yes [ ]
- Manufacturer's Name:
- Type:
- Model No.
- Diam. Slot size:
- ft. to ft.
- ft. to ft.
- Gravel packed: No [ ]
- Size of gravel:
- Gravel placed from ft. to ft.
- Surface seal: Yes [✓]
- Material used in seal:
- Bentonite [ ]
- To what depth? 60 ft.
- Did any strata contain unusable water? Yes [✓]
- No [ ]
- Type of water:
- Depth of strata:
- Method of sealing strata off:

(7) **PUMP:**
- Manufacturer's Name:
- Type:
- Model No.
- H.P.

(8) **WATER LEVELS:**
- Land-surface elevation:
- above mean sea level:
- Static level: 87 ft. below top of well
- Date: 8-25-83
- Artesian pressure:
- lbs. per square inch
- Date: 8-25-83
- Artesian water is controlled by:

(9) **WELL TESTS:**
- Drawdown: amount water level is lowered below static level
- Was a pump test made? Yes [ ]
- No [ ]
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- 
- 
- 
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

**FORMATION:**
- Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Clay - Black Weathered</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Clay - Grey</td>
<td>14</td>
<td>54</td>
</tr>
<tr>
<td>Clay - Grey - Soft</td>
<td>53</td>
<td>67</td>
</tr>
<tr>
<td>Clay - Blue</td>
<td>16</td>
<td>55</td>
</tr>
<tr>
<td>Clay - Red - Porous</td>
<td>55</td>
<td>220</td>
</tr>
<tr>
<td>Clay - Grey</td>
<td>226</td>
<td>230</td>
</tr>
</tbody>
</table>

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**McPherson & Wright Drilling**

**2246 Burrell**

**Address:** Lewiston, Idaho 83501

**License No.: 376**

**Contractor:**

**DATE:** 9-10, 93

**USE ADDITIONAL SHEETS IF NECESSARY**
MARY COLLINS WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 24, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 1556442</th>
<th>Elev (ft): 2490 ±10</th>
<th>Depth (ft): 280</th>
<th>7.5’</th>
<th>Quad: Albion</th>
</tr>
</thead>
</table>

Latitude: 46.822661, Longitude: -117.194650 decimal degrees (WGS84)

| ¼, SE ¼, SW ¼, Sec. 31, T. 16 N, R. 45 E |

Well Address and (or) Other Location Information:
1104 Collins Road, Pullman, Wash., on southeast side of road; well is located near garden and chicken coop by "Honeymoon Cottage."

Location Method:
Site visit (May 24, 2016); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overburden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Palouse Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td>Basalt, weathered(?) at basal 1 ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latah Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unnamed interbed</td>
</tr>
<tr>
<td>Clay</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roza Member</td>
</tr>
<tr>
<td>Basalt, weathered</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latah Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vantage Member</td>
</tr>
<tr>
<td>Clay</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grande Ronde Basalt</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
</tr>
<tr>
<td>Basalt, with clay</td>
</tr>
</tbody>
</table>
Comments:

Difficult to interpret, but elevation selected for the top of the Grande Ronde in this well is close to that picked for the Bonnie Collins Well.

Whitman County Tax Parcel 200004516313349, 1104 COLLINS RD, LOT 2 B & B COLLINS S.PLT SW 1/4, owner is COLLINS, MARY B; 5.0 acres.

Above photos, well is near gate to garden and chicken coop; "Honeymoon Cottage" at rear.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

Start Card No. W25322
Water Right Permit No. 626

(1) OWNER: Name **Mary Collins**

(2) LOCATION OF WELL: County **Whitman**

(2a) STREET ADDRESS OF WELL: (or nearest address)

(3) PROPOSED USE: [ ] Domestic [ ] Irrigation [ ] Industrial [ ] Municipal [ ] Test Well [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one)

- Abandoned [ ] New well [ ] Deepened [ ] Reconditioned
- Method [ ] Cable [ ] Bored [ ] Drilled [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well: 84 inches.

- Drilled: 280 feet. Depth of completed well: 280 ft.

(6) CONSTRUCTION DETAILS:

- Casing installed: 8 ft. + 1 ft. to 35 ft.
- Welded: Diam. from ft. to ft.
- Liner installed: Diam. from ft. to ft.
- Threaded: Diam. from ft. to ft.

- Perforations: Yes [ ] No [ ]

Type of perforator used

- SIZE of perforations: in. by in.
  - perforations from ft. to ft.
  - perforations from ft. to ft.
  - perforations from ft. to ft.

- Screens: Yes [ ] No [ ]

Manufacturer's Name:

- Type:
- Model No.:

- Diam.:
- Slot size:

- Diam.:
- Slot size:

Gravel packed: Yes [ ] No [ ] Size of gravel

- Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ] To what depth: 35 ft.

- Material used in seal:
- Did any strata contain unusable water? Yes [ ] No [ ]

Type of water: Depth of strata:

- Method of sealing strata off:

(7) PUMP: Manufacturer's Name:

H.P.:

(8) WATER LEVELS:

- Land-surface elevation above mean sea level: 224 ft.
- ft. below top of well: Date: 4-29-94
- Artesian pressure: lbs. per square inch: Date:

Artesian water is controlled by

(Cap, valve, etc.)

(9) WELL TESTS:

- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes [ ] No [ ]
- If yes, by whom?

- Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

- Time Water Level Time Water Level Time Water Level Time Water Level

Date of test:

- Bailer test: gal./min. with ft. drawdown after hrs.
- Airtest: gal./min. with stem set at hrs.

- Artesian flow: g.p.m. Date:

- Temperature of water: Was a chemical analysis made? Yes [ ] No [ ]

---

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**McPherson & Wright Drilling**

2246 Burrell
Lewiston, Idaho 83501

(208) 743-7295

(Signed) **Fred Wright** License No. 0523

Contractor's Registration: **MDW1351** Date 4-30-94

---

(USE ADDITIONAL SHEETS IF NECESSARY)
**DENNIS COLSON WELL**

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, April 30, 2018

<table>
<thead>
<tr>
<th>Well Log ID: NA</th>
<th>Elev (ft): 2750 ±10</th>
<th>Depth (ft): 179</th>
<th>Quad: Robinson Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.837434°</td>
<td>Longitude: -116.999068°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Well Address and (or) Other Location Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1295 Saddle Ridge Road, Viola, Idaho; on west side of road and south side of Four Mile Road, at corner</td>
</tr>
</tbody>
</table>

**Location Method:**

Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>No description</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td>Sediments of Bovill(?)</td>
</tr>
<tr>
<td>Gravel, quartz</td>
<td>15</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>Granite</td>
</tr>
</tbody>
</table>

\(^1\)Could be modern gravels
Comments:

Latah County Tax Parcel RP40N05W055555, owner is COLSON, DENNIS C; 1295 SADDLE RIDGE RD, 9.38 AC NWSW, 5 40 5.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL OWNER

Name: Dennis Colson
Address: Viola
Owner's Permit No.: 87-74-N-20

2. NATURE OF WORK

- New well
- Deepened
- Replacement
- Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

- Domestic
- Irrigation
- Test
- Municipal
- Industrial
- Stock
- Waste Disposal or Injection
- Other (specify type)

4. METHOD DRILLED

- Rotary
- Air
- Hydraulic
- Reverse rotary
- Cable
- Dug
- Other

5. WELL CONSTRUCTION

Casing schedule:
- Steel
- Concrete
- Other

Thickness:
- 250 inches
- 8 inches
- 1 foot
- 23 feet

Diameter:
- From
- To

Was casing drive shoe used?  Yes
Was a packer or seal used?  Yes
Perforated?  Yes
How perforated?  Factory
Size of perforation:
- inches

Number of perforations:
- From
- To

Well screen installed?  Yes
Manufacturer's name:

Type:
- Model No.: __________

Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet

Gravel packed?  Yes
- No
- Size of gravel

Placed from feet to feet

Surface seal depth:
- 0.5

Material used in seal:
- Bentonite
- Pudding clay

Sealing procedure used:
- Slurry pit
- Temp. surface casing
- Overbore to seal depth

Method of joining casing:
- Threaded
- Welded

Describe access port:
- Cemented between strata

6. LOCATION OF WELL

Sketch map location must agree with written location.

7. WATER LEVEL

Static water level: 10 feet below land surface.
Flowing?  Yes  No
G.P.M. flow
Artesian closed-in pressure: p.s.i.
Controlled by:
- Valve
- Cap
- Plug
Temperature: 0°F
Quality:

Describe artesian or temperature zones below:

8. WELL TEST DATA

Discharge G.P.M.: Pumping Level Hours Pumped
- approx. 35

9. LITHOLOGIC LOG

| Bore | Depth | Material | Water
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0-15</td>
<td>overlain</td>
<td>Yes No</td>
</tr>
<tr>
<td>10</td>
<td>15-25</td>
<td>loose Quat</td>
<td>Yes No</td>
</tr>
<tr>
<td>16</td>
<td>25-35</td>
<td>sand, silt</td>
<td>Yes No</td>
</tr>
<tr>
<td>8</td>
<td>35-45</td>
<td>sand, silt</td>
<td>Yes No</td>
</tr>
<tr>
<td>8</td>
<td>45-55</td>
<td>hard</td>
<td>Yes No</td>
</tr>
<tr>
<td>8</td>
<td>55-65</td>
<td>soft sand, silt</td>
<td>Yes No</td>
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<tr>
<td>8</td>
<td>65-75</td>
<td>firm</td>
<td>Yes No</td>
</tr>
<tr>
<td>8</td>
<td>75-85</td>
<td>firm, firm</td>
<td>Yes No</td>
</tr>
<tr>
<td>8</td>
<td>85-95</td>
<td>firm, firm</td>
<td>Yes No</td>
</tr>
<tr>
<td>8</td>
<td>95-105</td>
<td>firm, firm</td>
<td>Yes No</td>
</tr>
</tbody>
</table>

10. Work started: Jun 1, 1989
    Finished: Jun 1, 1989

11. DRILLERS CERTIFICATION

We certify that all minimum well construction standards were complied with at the time this drill was removed.

Firm Name: Whitwell Drilling
Firm No. 58
Address: 202 S. First St., Date: 11/20/89

Signed by (Firm Official) Earl Whitwell
and (Operator) Roger Whitwell
**COlTON TOWN WELL 4**

[Drilled in 2002]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October/November 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>340062</th>
<th>Elev (ft):</th>
<th>2570 ±10</th>
<th>Depth (ft):</th>
<th>290</th>
<th>7.5’</th>
<th>Quad: Colton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.567336</td>
<td>Longitude:</td>
<td>-117.128088</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼, SE ¼, NE ¼, Sec. 34, T. 13 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
301 Steptoe Street, Colton, Wash., on east side of street; well house is on alley east off Steptoe Street, between Broadway and Fountain Streets

**Location Method:**
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 10, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, brown</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown and tan</td>
<td>3 – 17</td>
</tr>
<tr>
<td>Basalt, clay, cobbles</td>
<td>17 – 22</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Asotin Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>22 – 76</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>76 – 85</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>85 – 91</td>
</tr>
</tbody>
</table>

*Wanapum Basalt
**Priest Rapids Member
**Basalt of Lolo
| Basalt, broken, with clay seams | 91 – 100 |
| Basalt, hard                    | 100 – 118 |
| Basalt, honeycomb, brown        | 118 – 122 |
| Basalt, hard                    | 122 – 276 |
| Basalt, fractured, soft         | 276 – 282 |
Basalt, broken, with clay seams 282 – 286

Latah Formation
Vantage Member
Clay, dark brown 286 – 290

Comments:

*It was difficult to pick the Saddle Mountains-Wanapum contact; it could be lower at 118 ft in depth.

We assigned this well to be Colton Town well 4 as there were three previous wells noted in the literature or online database; Colton Town well 1 was drilled in 1908, well 2 in 1956, and well 3 in 1963.

References Cited:

State of Washington 19165 Water Well Report
Washington Water Right Permit No 094954

Notice of Intent ACW-695
WE00579

(1) Owner TOWN OF COLTON
Address P O BOX 157
COLTON WA

(2) Location of Well County WHITMAN

(2a) Street Address of Well

(3) Proposed Use MUNICIPAL

(4) Type of Work NEW WELL
Owner's number of well (if more than one)

Drilling Method ROTARY

(5) Dimensions Diameter of well 12 inches
Drilled 290 feet Depth of completed well 290

(6) Construction Details

Casing Installed Diameter From To
WELDED 12 +2 105

Perforations Screens
Type of Perforator Used

Screen Type K Pac Location

Gravel/Filter packed
Size of gravel/sand

Material placed from ft to ft

Surface seal used To what depth

Did any strata contain unusable water?

Type of water SURFACE Depth of strata 23
Method of sealing strata off CASED & CEMENTED

(7) Pump Pump Manufacturer

Pump Type HP

(8) Water Levels

Land surface elevation above mean sea level ft

Static level Date 8/21/02
Artesian Pressure Date
Artesian water is controlled by

(9) Well Tests Drawdown is amount water level is lowered below static
Was a pump Test performed?

Yield Drawdown Pumping Level Hours

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Level Time Level Time Level

Bailer Test gal per min drawdown after

Arttest gal/min 200+ gal per min

Artesian flow gpm

☐ Chemical test

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION

Formation Describe by color character size of material and structure and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information indicate all water encountered

☐ Construction
☐ Decommission

From To Remarks Lithology Water Quality, Temperature

0 0 3 Brown Top Soil
17 22 Basalt w/Clay & Cobble Apx 3 gpm
22 76 Hard Dark Gray Basalt
76 85 Fractured Basalt w/apx 35-40 gpm
85 91 Hard Dark Gray Basalt
91 100 Broken Basalt w/ Clay Seams
100 118 Hard Basalt
118 122 Honeycomb Brown Broken Basalt 100 gpm
122 183 Hard Dark Gray Basalt
183 276 Dark Gray Basalt
276 282 Med Soft Fractured Basalt w/ 50gpm
282 286 Broken Basalt w/Clay Seams w/apx 100gpm
286 290 Dark Brown Hard Clay

Start Date 8/21/02 Completed 8/27/02

Well Construction Certification
I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name Louise Hanner License No 1472

Trainee

Drilling Company H20 Well Service, Inc
(Licensed Driller/Engineer)

Address 582 W Hayden Ave, Hayden Lake, ID 83835

Contractor's Registration No H20WESI101DW Date 8/28/02

299
BRUCE COMSTOCK WELL 2

[DRILLED IN 2012]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D0060914    Elev (ft): 2570 ±10    Depth (ft): 225    7.5’    Quad: Potlatch

Latitude: 46.938520°    Longitude: -116.961306°    decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 33, T. 42 N, R. 5 W

Well Address and (or) Other Location Information:
1125 Kennedy Ford Road, Potlatch, Idaho; on northwest side of road and west of intersection with Comstock Road

Location Method:
Location is for well, southeast of white propane tank by pine tree at southeast corner of house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 23, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess, clay, brown</td>
<td></td>
<td>0</td>
<td>65</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td>65</td>
<td>203</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td></td>
<td>203</td>
<td>225</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP42N05W332243, owner now is WILLEY, DALLAS L; 1125 KENNEDY FORD RD, 7.38 AC TAX #7442 SENE & NESE, 33 42 5.

Well is to right of white propane tank, between gray house and driveway.

Mr. Darrell 'Bruce' Comstock died in 2017 (Moscow-Pullman Daily News, 2017).

References Cited:

1. WELL TAG NO. D 860-917
Drilling Permit No. 860-917
Water right or Injection well #

2. OWNER: Bruce Comstock
Name: Bruce Comstock
Address: 1125 Kennedy St., Post Falls, ID 83854

3. WELL LOCATION:
Twp. 4N 1/2 Sec. 33 NE 1/4
Gov't Lot: 3
Lat: 47° 30' 35.5" (Deg. and Decimal minutes)
Long: 117° 5' 47.7" (Deg. and Decimal minutes)
Address of Well Site: 1125 Kennedy St., Post Falls, ID 83854

4. USE: Domestic

5. TYPE OF WORK:
New well
Modify existing well

6. DRILL METHOD:
Air Rotary

7. SEALING PROCEDURES:

8. CASING/LINER:

9. PERFORATIONS/SCREENS:

10. FILTER PACK:

11. FLOWING ARTESIAN:
Flowing Artesian? Y
Artesian Pressure (PSIG)

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft): 20
Static water level (ft): 23
Water temp. (°F): 50
Bottom hole temp. (°F):

Well test:

<table>
<thead>
<tr>
<th>Drawdown (feet)</th>
<th>Discharge or yield (gpm)</th>
<th>Test duration (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>225</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Test method:

Water quality test or comments:
good

13. LITHOLOGIC LOG and/or repairs or abandonment:

<table>
<thead>
<tr>
<th>Bore Dims. (in)</th>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Remarks, Lithology or description of repairs or abandonment, water temp.</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>10&quot; 0.38</td>
<td>38</td>
<td>38</td>
<td>Brown Clay</td>
<td>Y</td>
</tr>
<tr>
<td>6&quot; 38 65</td>
<td>65</td>
<td>65</td>
<td>Brown Clay</td>
<td>N</td>
</tr>
<tr>
<td>6&quot; 65 187</td>
<td>187</td>
<td>187</td>
<td>Black basalt</td>
<td>Y</td>
</tr>
<tr>
<td>6&quot; 187 203</td>
<td>203</td>
<td>203</td>
<td>Black basalt</td>
<td>Y</td>
</tr>
<tr>
<td>6&quot; 203 285</td>
<td>285</td>
<td>285</td>
<td>Black, basalt</td>
<td>N</td>
</tr>
</tbody>
</table>

Completed Depth (Measurable): 235

Date Started: 7-18-2012
Date Completed: 7-19-2012

14. DRILLER'S CERTIFICATION:
We certify that all minimum well construction standards were complied with at the time the rig was removed.
Company Name: Brett Unlenkottt Drilling Co. No. 709

*Principal Driller*

*Driller*

*Operator I*

Signature of Principal Driller and rig operator are required.
DEREK AND AUBREY COMSTOCK WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D0061731  Elev (ft): 2540 ±10  Depth (ft): 140  Quad: Potlatch
Latitude: 46.91177°  Longitude: -116.950533°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
5364 U.S. Highway 95, Potlatch, Idaho; on east side of highway

Location Method:
Location is for well (latitude and longitude from driller’s report); Latah County Assessor; Google Earth imagery; topographic map; driller recorded given names as "Derrik and Aubrie"

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Loess, clay</td>
<td>From 0 – To 38</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 38 – To 140</td>
</tr>
</tbody>
</table>

...
Comments:

Latah County Tax Parcel RP41N05W104250, owner is now GEO LAND LLC, 5364 HWY 95 N, 27.90 AC SENW, 10 41 5, MH.

Derek Comstock lives at 5372 Highway 95, Potlatch, Idaho, and Aubrey Comstock at 5354 Highway 95 (Nuwber.com, 2018a, b)

References Cited:


IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D0061731
Drilling Permit No. 871153
Water right or injection well #

2. OWNER: Derrik & Aubrie Comstock
Name: Derrik & Aubrie Comstock
Address: 5304 Hwy 95
City: Potlatch
State: ID Zip: 83855

3. WELL LOCATION:
Twp. 41 SE 1/4, Sec. 7, NW 1/4
Gov't Lot __ Law __
County: Latah
Lat. 46° 54.703 (Deg. and Decimal minutes)
Long. 116° 57.032 (Deg. and Decimal minutes)
Address of Well Site: 5304 Hwy 95
City: Potlatch

4. ADDRESS OF WELL SITE
Give at least name of road + distance to Road or Landmark

5. USE:
Domestic □ Municipal □ Monitor □ Irrigation □ Thermal □ Injection
Other □

6. TYPE OF WORK:
New well □ Replacement well □ Modify existing well
Abandonment □ Other □

7. DRILL METHOD:
Air Rotary □ Mud Rotary □ Cable □ Other □

8. SEALING PROCEDURES:
Seal material: From (ft) To (ft) Quantity (lbs or ft)
Placement method/procedure

9. Casing/Liner:

10. FILTER PACK:
Filter Material: From (ft) To (ft) Quantity (lbs or ft)
Placement method

11. FLOWING ARTESIAN:
Flowing Artesian? □ Y □ Artesian Pressure (PSIG)

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 90
Static water level (ft) 40
Water temp. (°F) 51°
Bottom hole temp. (°F)

13. LITHOLOGIC LOG and/or repairs or abandonment:

14. DRILLER'S CERTIFICATION:
I/We certify that all minimum well construction standards were complied with at
the time the rig was removed.

Company Name: Brett Huenkett Drilling No. 709
*Principal Driller: Date 3-4-14
*Driller: Date
*Operator II: Date
Operator I: Date 3-4-14
* Signature of Principal Driller and rig operator are required.
**MARK COMSTOCK WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 7, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2590 ±10</th>
<th>Depth (ft):</th>
<th>307</th>
<th>7.5’ Quad:</th>
<th>Potlatch</th>
</tr>
</thead>
</table>

Latitude: 46.927328°  
Longitude: -116.951582°  
decimal degrees (WGS84)

\[ \text{\( \frac{1}{4} \), SE \( \frac{1}{4} \), NW \( \frac{1}{4} \), Sec. 3 , T. 41 N , R. 5 W} \]

**Well Address and (or) Other Location Information:**
Meckel Lane, Potlatch, Idaho; at west end of road

**Location Method:**
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; driller recorded incorrect \( \frac{1}{4} \)-\( \frac{1}{4} \) section

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From 0 – 23</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>*Basalt</td>
<td>23 – 292</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>292 – 307</td>
</tr>
</tbody>
</table>

*This thickness is excessive for the basalt of Lolo and possibly this well also penetrated the Onaway Basalt.
Comments:
Latah County Tax Parcel RP41N05W030743, owner now is COMSTOCK, DON LEE; 40.05 AC GOVT LOT 2; 40.12 AC GOVT LOT 3; SENW, 3  41  5.

References Cited:
1. WELL OWNER
Name: Mark Comestock
Address: P.O. Box 1207
Owner's Permit No.: 87-83-N-7

2. NATURE OF WORK
New well ☑ Deepened ☐ Replacement ☐
Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log) ☐

3. PROPOSED USE
☐ Domestic ☑ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary ☑ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☑ Steel ☑ Concrete ☐ Other
Thickness: 600 inches
Diameter: 8 inches + 1 feet 29 feet

Was casing drive shoe used? ☐ Yes ☑ No
Was a packer or seal used? ☐ Yes ☑ No
Perforated? ☑ Yes ☐ No

How perforated? ☐ Factory ☑ Knife ☐ Torch
Size of perforation: inches by inches

Number of perforations: From To

Manufacturer's name:
Type: Model No.:
Diameter: Slot size: Set from feet to feet
Diameter: Slot size: Set from feet to feet
Gravel packed? ☐ Yes ☑ No ☐ Size of gravel
Placed from feet to feet
Surface seal depth: Material used in seal: ☐ Cement grout
Bentonite ☐ Puddling clay ☐
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
Overbore to seal depth
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld
☐ Cemented between strata

6. LOCATION OF WELL
Sketch map location must agree with written location.

N
W
S
County: Latah

7. WATER LEVEL
Static water level: 43 feet below sea level
Flowing? ☑ Yes ☐ No G.P.M. flow
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature: °F. Quality
Describe artesian or temperature zones below:

8. WELL TEST DATA
☐ Pump ☐ Bailer ☐ Air ☐ Other
Discharge G.P.M.: Pumping Level: Hours Pumped: 1 7

9. LITHOLOGIC LOG

| Bore | Depth | Material | Water
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>23</td>
<td>sand and gravel</td>
<td>Yes No</td>
</tr>
<tr>
<td>23</td>
<td>35</td>
<td>grey gravelly sand</td>
<td>Yes No</td>
</tr>
<tr>
<td>35</td>
<td>50</td>
<td>hard greyish sand</td>
<td>Yes No</td>
</tr>
<tr>
<td>50</td>
<td>57</td>
<td>shale and clay</td>
<td>Yes No</td>
</tr>
</tbody>
</table>


11. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: 
Address:
Date: 1/24/83
Signed by (Firm Official) 
and (Operator) 

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
MAGGIE COOKE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 8, 2018

Well Log ID: 1576379  Elev (ft): 2540 ±10  Depth (ft): 440  7.5’  Quad: Albion

Latitude: 46.754779°  Longitude: -117.134871°  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 27, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
122 Osprey Lane, Pullman, Wash.; on east side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; incorrect ¼-¼ section on driller’s report; site visit March 27, 2018 — well not observed

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>0 – 49</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>49 – 165</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown and blue</td>
<td></td>
</tr>
<tr>
<td>165 – 194</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
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<td>NZ magnetostratigraphic unit</td>
<td></td>
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<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
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<tr>
<td>Basalt</td>
<td>194 – 207</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>207 – 213</td>
</tr>
<tr>
<td>Basalt</td>
<td>213 – 298</td>
</tr>
<tr>
<td>Shale(?), black</td>
<td>298 – 311</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>311 – 321</td>
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<tr>
<td>Basalt</td>
<td>321 – 396</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>396 – 423</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515273794, 122 OSPREY LANE, SW1/4 MCKEE SHPLT #2 CLUSTER A LOT A-4, owners now are PAN, WEI-JIAN/MARGARET; 3.87 acres; 07/21/11: grantors were BRYAN, JEFFREY/MARGARET to PAN, WEI-JIAN/MARGARET.

References Cited:
WATER WELL REPORT

Department of Ecology, State of Washington

Construction/Decommission ("x" in circle)

Construction ☐ Decommission ☐ ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ Other
☐ Irrigation ☐ Test Well

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 12 inches, depth of completed well 440 ft.

CONSTRUCTION DETAILS

Casing: ☐ Welded ☐ Seamless
Installed: ☐ Laser installed ☐ Diam. from 12.2 ft. to 58 ft.
□ Threaded

Perforations: □ Yes ☐ No

Type of perforator used: □ Saw Cut

SIZE of perfor: □ 3 in. by 4 in. and no. of perf: 528

Screens: □ Yes ☐ No □ K-Floc

Manufacturer's Name

Type: ☐ H.P.

WATER LEVELS: Land-surface elevation above mean sea level 712.6 ft.

Static level: ☐ A. below top of well Date
Artesian pressure: lbs. per square inch Date
Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? □ Yes ☐ No If yes, by whom?________________________

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level

Date of test: ______________

Bailer test: gal./min. with ft. drawdown after hrs.

Airest: ___________ gal./min. with stem set at 440 ft. for hrs.

Artesian flow: g.p.m. Date

Temperature of water: ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (Print) ☐

Driller or trainee License No.: ______________

Driller's Signature:

RECEIVED

Department of Ecology
Eastern Regional Office

AUG 05 2016

Drilling Company: Bisch Unyen Kent Drilling
Address: PO Box 253
City, State, Zip: Comox, B.C. 65322
Contractor’s Registration No.: 0000451984
Driller or trainee License No.: 201122
Driller’s Signature: ______________

By request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

ECY 050-1-20 (Rev 02-2010)
Geologic Interpretation of Water Well Driller’s Log
By
John H. Bush, March 30, 2016; November 9, 2017

Well Log ID: 172844  Elev (ft): 2455  Depth (ft): 250  7.5’ Quad: Pullman

Latitude: 46.691766  Longitude: -117.14156  decimal degrees (WGS84)

§ ¼,  SE ¼,  SE ¼,  Sec. 16 ,  T. 14 N ,  R. 45 E

Well Address and (or) Other Location Information:
452 Sand Road, Pullman, Wash., on north side of road

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller’s report. Well reconditioned in 1997 (but not deepened).

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<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>1 – 120</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>120 – 122</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
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<td></td>
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<td>Basalt</td>
<td>122 – 202</td>
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<tr>
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<td>Meyer Ridge Member(?)</td>
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<td>Basalt, weathered</td>
<td>202 – 243</td>
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<tr>
<td>Basalt</td>
<td>243 – 250</td>
</tr>
</tbody>
</table>
Comments:

Grande Ronde units were interpreted by elevation and thickness comparisons to Pullman city and WSU wells. Numerous logs in the area show a weathered basalt unit about 100 ft below the Vantage which has been interpreted to be the top of the Meyer Ridge Member.

Whitman County Tax Parcel 121900003000000, MENNET ACRES SUBN W 50' LT2 & LT3 1.493 AC, owners are CORNELIUS, S/JOHNSON D.

References Cited:
(1) OWNER: Name Scott Cornelius

(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: Domestic [] Irrigation [] Industrial [] Municipal []
DeWater []

(4) TYPE OF WORK: Owner's number of well (more than one)
Abandoned [] New well [] Deepened [] Reconditioned []
Method: Dug [] Cable [] Bored [] Driven [] Jetted []


(6) CONSTRUCTION DETAILS:
Casing Installed: 
Diam. from ft. to ft. 
Welded: 
Diam. from ft. to ft. 
Liner installed: 
Diam. from ft. to ft. 
Threaded: 
Diam. from ft. to ft. 
Perforations: Yes [ ] No [ ]
Type of perforator used: 
SIZE of perforations: in. by in. 
perforations from ft. to ft. 
perforations from ft. to ft. 
perforations from ft. to ft. 

Screens: Yes [ ] No [ ]
Manufacturer's Name: 
Type: 
Model No.: 
Diam.: ft. Slot size: ft. to ft.
Diam.: ft. Slot size: ft. to ft.
Gravel packed: Yes [ ] No [ ] Size of gravel: 
Gravel placed from ft. to ft.
Surface seal: Yes [ ] No [ ] To what depth? ft.
Material used in seal: 
Did any strata contain unsuitable water? Yes [ ] No [ ]
Depth of strata: 
Type of water: 
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:

H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level:
Static level: ft. below top of well Date: 8-5-93 ft.
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " " " " " " " " " " " " " " 
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):
Time Water Level Time Water Level Time Water Level

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material, and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silt</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Basalt - Gley - Hard</td>
<td>120</td>
<td>130</td>
</tr>
<tr>
<td>Clay - Gley - Med</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Basalt - Black - Weathered</td>
<td>200</td>
<td>214</td>
</tr>
<tr>
<td>Basalt - Gley - Med</td>
<td>300</td>
<td>314</td>
</tr>
</tbody>
</table>

RECEIVED
NOV-2 1993

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

MCMHORSON & WRIGHT DRILLING
NAME: 2246 Burrell
Address: Leavenworth, Idaho 83501
(208) 743-7295

Contractor's License No.: OS-23
Contractor's Number: LDS N-1
Date: 9-10, 1993

(USE ADDITIONAL SHEETS IF NECESSARY)
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Name: Scotty Cornelius  
Address: 452 Sand Rd, Pullman, WA 99163

**LOCATION OF WELL:**  
County: SE 1/4 SE 1/4 Sec 14 T 14 N R 15 WM

**STREET ADDRESS OF WELL (or nearest address):**  
452 Sand Rd, Pullman, WA 99163

**PROPOSED USE:** Domestic  
Industrial  
Municipal  
DeWater

**TYPE OF WORK:**  
Owner's number of well (if more than one)  
Abandoned  
New well  
Method: Dug  
Bored  
Deepened  
Cable Driven  
Reconditioned  
Rotary  
Jetted

**DIMENSIONS:**  
Diameter of well  
8" inches

Drilled  
245’ feet  
Depth of completed well  
245’ ft.

**CONSTRUCTION DETAILS:**  
Casing installed:  
9’ Diam. from +2’ ft. to +78’ ft.

Welded  
6’ Diam. from –5’ ft. to +245’ ft.

Threaded  
Perforations: Yes  
No

Type of perforator used  
Steel Saw

Size of perforations  
600 perforations from  
205’ ft. to  
245’ ft.

Perforations from  
Perforations from

Screens: Yes  
No

Manufacturer’s Name

Type  
Model No.

Diam. Slot size from ft. to ft.

Diam. Slot size from ft. to ft.

Gravel packed: Yes  
No

Size of gravel

Gravel placed from ft. to ft.

Surface seal: Yes  
No

To what depth? 78’ ft.

Material used in seal  
 Bentonite

Did any strata contain unusable water? Yes  
No

Type of water?  
Depth of strata

Method of sealing strata off

**PUMP:**  
Manufacturer’s Name

Type

H.P.

**WATER LEVELS:**  
Land-surface elevation above mean sea level

Static level  
82” ft. below top of well  
Date 9-18-97

Artesian pressure  
lbs. per square inch  
Date

Artesian water is controlled by (Cap, valve, etc.)

**WELL TESTS:**  
Drawdown is amount water level is lowered below static level

Was a pump test made? Yes  
No

If yes, by whom?

Yield: gal./min. with  
ft. drawdown after  
hrs.

"  "  "  "  "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time  
Water Level  
Time  
Water Level  
Time  
Water Level

Date of test

Bailor test  
gal./min. with  
ft. drawdown after  
hrs.

Arttest  
gal./min. with stem set at ft. for hrs.

Artesian flow  
g.p.m. Date

Temperature of water  
Was a chemical analysis made? Yes  
No

---

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** Bear Well Drilling

(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address: 4248 NE 145th St, Bellevue, WA 98004

(Signed)  
Bear Well Drilling

License No. 00-7

Contractor's Registration No. 06-03575

Date 5-23-97

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
JIM CRATHORNE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 29, 2016

Well Log ID: D0039836   Elev (ft): 2620 ±5   Depth (ft): 264   7.5’   Quad: Moscow East

Latitude: 46.720403   Longitude: -116.960721   decimal degrees (WGS84)

'Neill Sec. ¼, NE ¼, SE ¼, Sec. 16, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
3325 Schaper Road, Moscow, Idaho; on south side of road

Location Method:
Location is for house; Google Earth imagery; topographic map; IDWR correction to PLSS is incorrect.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>

Latah Formation
Sediments of Bovill
Sand and clay
Clay

Wanapum Basalt
Priest Rapids Member
Basalt of Lolo
Basalt, hard

316
Comments:

Latah County Tax Parcel RP01840001005A, 3325 SCHAPER RD, owner is CRATHORNE, JAMES R; SCHAPER SUBD OF LOTS 48 & 33, LOTS 5 & 6 NESE, 16 39 5.

References Cited:
1. WELL TAG NO. D 00398316
DRILLING PERMIT NO. 830583
Water Right or Injection Well No. 

2. OWNER:
Name Jim CraTharme
Address 3335 Schaper Rd.
City Moscow
State ID, Zip 83843

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply
☐ New Well ☐ Modify ☐ Abandonment ☐ Other
☐ Replacement etc.

6. DRILL METHOD:
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>Seal Material</th>
<th>From</th>
<th>To</th>
<th>Weight / Volume</th>
<th>Seal Placement Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>0</td>
<td>45</td>
<td>400 lb.</td>
<td>Dry</td>
</tr>
</tbody>
</table>

Was drive shoe used? ☐ N Shoe Depth(s) 110
Was drive shoe tested? ☐ Y How?

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'</td>
<td>+1</td>
<td>110</td>
<td>250</td>
<td>Steel</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method
Screen Type & Method of Installation

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
</table>

10. FILTER PACK

<table>
<thead>
<tr>
<th>Filter Material</th>
<th>From</th>
<th>To</th>
<th>Weight / Volume</th>
<th>Placement Method</th>
</tr>
</thead>
</table>

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

130 ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices:

12. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx 30</td>
<td>260</td>
<td>1 HR.</td>
<td></td>
</tr>
</tbody>
</table>

Water Temp. Bottom hole temp.
Water Quality test or comments:

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Date</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/04/16</td>
<td>45 overburden sands/clay</td>
<td>☑</td>
<td></td>
</tr>
<tr>
<td>8/10/16</td>
<td>264 Gray basalt</td>
<td></td>
<td>☑</td>
</tr>
</tbody>
</table>

RECEIVED
JUN 08 2005
IDWR/North

14. DRILLER'S CERTIFICATION
I certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Witt Well Drilling Firm No. 58
Principal Driller Roger Witt Date 3/7/16
Driller or Operator II Date
Operator I Date
Principal Driller and Rig Operator Required
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
E.J. CURTIS WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 26, 2016

Well Log ID: 152101 Elevation (ft): 2370 ±10 Depth (ft): 115 7.5’  Quad: Colfax North

Latitude: 46.971834 Longitude: -117.274328 decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 16, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
8002 Dry Creek Road, Garfield, Wash., on east side of road; Broken Bridge Ranch Longhorns

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 17 of Bush and others (2005 [2006]). Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, black</td>
<td>0 – 10</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>10 – 16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>*Basalt</td>
<td>16 – 115</td>
</tr>
</tbody>
</table>
Comments:

*Driller’s report uses a variety of general terms; all interpreted as basalt.

Whitman County Tax Parcel 200004417162790, 8002 DRY CREEK RD, NW1/4 PT E OF CO RD, now owned by FARNSWORTH, KELLY D/RAELYN K, GARFIELD WA; 1 story residence built in 1950, 56.0 acres.

References Cited:

WELL LOG

Date: May 1, 1950
Record by: John W. Davisson
Source: Driller record

Location: State of WASHINGTON
County: Whitman
Area:

Map: SW¼ NW¼ sec. 16 T. 17N., R. 44 E.

Drilling Co.: Davisson & Dreyer
Address: Ritzville, Wash.

Method of Drilling: Date May 18, 1949
Owner: E. J. Curtis
Address: Route 2, Garfield, Wash.

Land surface, datum: ft. above

<table>
<thead>
<tr>
<th>CORRELATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil black</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Clay yellow</td>
<td>6</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Shaley rock</td>
<td>2</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Rock hard</td>
<td>8</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Rock medium</td>
<td>4</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Black sand</td>
<td>8</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Shaley rock</td>
<td>9</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Rock black medium</td>
<td>25</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Rock black soft</td>
<td>8</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Rock blue hard</td>
<td>8</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Rock black soft</td>
<td>15</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Rock blue hard</td>
<td>12</td>
<td>115</td>
<td></td>
</tr>
</tbody>
</table>

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

Turn up

Sheet of sheets
**WELL LOG—Continued**

<table>
<thead>
<tr>
<th>Coarse Layer</th>
<th>Material</th>
<th>Thickness (ft)</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Pump test:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dim:</strong> 115' x 8''</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>SML:</strong> 16'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>D.D.</strong> 44'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Yield:</strong> 350 g.p.d.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Casing:</strong> 8'' dia. from 0 to 42'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Perforations:</strong> none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**DENNEY DAHL WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 29, 2016

Well Log ID: NA Elev (ft): 2630 ± 10 Depth (ft): 303 Quad: Moscow East

Latitude: 46.722781 Longitude: -116.960721 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 16, T. 39 N, R. 5 W

**Well Address and (or) Other Location Information:**
1380 Lundquist Lane, on east side of road; well is in west end of garden east of red metal shed.

**Location Method:**
Location is for well; Latah County Tax Assessor’s plat map; Google Earth imagery; topographic map; Street number incorrect on driller's report, but lot number is correct. Site visit (September 20, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 30</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>30 – 40</td>
</tr>
<tr>
<td>Clay, white</td>
<td>40 – 71</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>71 – 81</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>81 – 100</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>100 – 115</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>115 – 303</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N05W167220, 1380 LUNDQUIST LN; owner is DAHL, DENIS RAY; 1.16 acre; Lot 33.

Well is between left two rows of sunflowers, in garden to right (east) of red metal shed (above).

References Cited:
1. WELL OWNER
Name: Denney Dahl
Address: Moscow 3187 Lindquist Ln
Drilling Permit No: 82-93-N-47-000
Water Right Permit No:

2. NATURE OF WORK
- New well
- Deepened
- Replacement
- Well diameter increase
- Modification
- Abandoned

3. PROPOSED USE
- Domestic
- Irrigation
- Monitor
- Industrial
- Stock
- Waste Disposal or Injection
- Other

4. METHOD DRILLED
- Rotary
- Air
- Auger
- Reverse rotary
- Cable
- Mud
- Other

5. WELL CONSTRUCTION
Casing Schedule:
- Steel
- Concrete
- Other

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level 103 feet below land surface.
Flowing?: Yes
G.P.M.
Artesian closed-in pressure 900 p.s.i.
Controlled by: Valve
Temperature: 50°F

8. WELL TEST DATA
- Pump
- Bailer
- Air
- Other

9. LITHOLOGIC LOG
Bore Diameter
Depth
Material
Water

10. LOCATION OF WELL
Sketch map location must agree with written location.

11. DRILLER'S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.
Firm Name: Additional Drilling Firm No.
Address: Additional Location and Date
Signed by Drilling Supervisor:

Operator:
ROBERT DAILY WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

<table>
<thead>
<tr>
<th>Well Log ID: NA</th>
<th>Elev (ft): 2540 ±10</th>
<th>Depth (ft): 40</th>
<th>7.5’ Quad: Potlatch</th>
</tr>
</thead>
</table>

Latitude: 46.924692° Longitude: -116.979715° decimal degrees (WGS84)

½, SW ¼, NW ¼, Sec. 4, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1300 State Highway 6, Potlatch, Idaho; on north side of highway

Location Method:
Location is for well, in yard, east of driveway and north of windmill; Latah County Assessor; Google Earth imagery; topographic map; site visit March 23, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Modern sediments(?) or Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Modern sediments(?) or Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>3 – 19</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>19 – 24</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>24 – 28</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>28 – 38</td>
</tr>
<tr>
<td>*Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Vantage Member(?)</td>
<td></td>
</tr>
<tr>
<td>Gravel</td>
<td>38 – 40</td>
</tr>
</tbody>
</table>

*Could be an incorporated layer of sediment picked up by a basalt flow
Comments:

Latah County Tax Parcel RP41N05W041254, owner now is DONNA HARVILL TESTAMENTARY TST, 1300 HWY 6, SWNW; 20.60 AC SENW LYING W, RIVER RD; 7.63 AC NESW LYING, W RIVER RD & N OF HWY, 441 5.

Well is in yard to right of driveway, between white barn and windmill.


References Cited:

State of Idaho  
Department of Water Administration

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Administration, within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name: Robert Daily
Address: Route 1 Box 67 Palouse, Wn 99161
Owner's Permit No: 87-77-N-8

2. NATURE OF WORK
[ ] New well  [ ] Deepened  [ ] Replacement
[ ] Abandoned (describe method of abandoning)

3. PROPOSED USE
[ ] Domestic  [ ] Irrigation  [ ] Test  [ ] Other (specify type)
[ ] Municipal  [ ] Industrial  [ ] Stock  [ ] Waste Disposal or Injection

4. METHOD DRILLED
[ ] Cable  [ ] Rotory  [ ] Dug  [ ] Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches  Total depth: 40 feet
Casing schedule: [ ] Steel  [ ] Concrete
Thickness: 250 inches  Diameter: 8 inches

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 25 feet below land surface
Flowing? [ ] Yes  [x] No  G.P.M. flow:
Temperature: 58 °F  Quality:
Artesian closed in pressure: 10 p.s.i.
Controlled by: [ ] Valve  [ ] Cap  [ ] Plug

8. WELL TEST DATA
Discharge G.P.M.:
Draw Down:
Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diam.</th>
<th>From</th>
<th>To</th>
<th>Depth</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>3</td>
<td>Black dirt</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td></td>
<td>Blue clay</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>24</td>
<td></td>
<td>Sand, gravel</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>28</td>
<td></td>
<td>Yellow clay, sand</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>32</td>
<td></td>
<td>Basalt, shale</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>33</td>
<td></td>
<td>Soft basalt</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>37</td>
<td></td>
<td>Hard basalt</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>38</td>
<td></td>
<td>Soft basalt</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>40</td>
<td></td>
<td>Coarse gravel</td>
<td></td>
</tr>
</tbody>
</table>


11. DRILLERS CERTIFICATION
Firm Name: Don Town Well Drilling  Firm No: 155
Address: 4 Bx 429 Moscow, Id 83843  5-12-77
Operator: [Signature]
**TIM DANAHER WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, September 3, 2016

Well Log ID: 455939  
Elev (ft): 2220 ±10  
Depth (ft): 80  
Quad: Colfax North

Latitude: 46.969706  
Longitude: -117.359154  
decimal degrees (WGS84)

⅛, SW ⅛, NW ⅛, Sec. 14, T. 17 N, R. 43 E

Well Address and (or) Other Location Information:  
1401 Danaher Road, Colfax, Wash., on west side of road; well is by northwest corner of garage (and south of freestanding basketball hoop).

**Location Method:**  
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 16, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>12 – 65</td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td>65 – 72</td>
</tr>
<tr>
<td>Basalt</td>
<td>72 – 80</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004317142901, 1401 DANAHER RD, LOT 1 DANAHER SHPLT #2 (NW 1/4 14-17-44), owners are DANAHER, TIMOTHY/HEIDI S; 2.0 acres, 1 story residence, built in 1998.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Name TIM DANBER
Address 504 PAULIN ROAD

LOCATION OF WELL: County CHEMUKAN

STREET ADDRESS OF WELL (or nearest address) 1455 DANBER ROAD

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ Irrigation ☐ DeWater ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ☐ Method: Dug ☐ Bored ☐ Driven
Deepened ☐ Relcurred ☐ rotary ☐ Jetted

DIMENSIONS: Diameter of well 8 1/2 inches.
Drilled 89 feet. Depth of completed well 80 ft.

CONSTRUCTION DETAILS:
Casing installed: 8 1/2 in. Diam. from +1 ft to 21 ft.
Welded ☐ Threaded ☐
Liner installed ☐
Perforations: Yes ☐ No ☐
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☐
Manufacturer's Name
Type ☐ Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☐
Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☐
Material used in seal
did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name
Type ☐ H.P.

WATER LEVELS: Land surface elevation above mean sea level
Static level 47 ft. below top of well Date 7-26-98
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Capping, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Date of test
Bailier test gal./min. with ft. drawdown after hrs.
Artesian test 15 gal./min. with stem set at 65 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 55 Was a chemical analysis made? Yes ☐ No ☐

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DEPARTMENT OF ECOLGY

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
SOIL 0 12
CUMET BLACK MED 12 65
CUMET WEATHERED (BROWN) SOFT 65 72
CUMET BLACK SAND 72 90

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson J. WRIGHT DRILLING

Address

Contractor's Registration No. KCHWD 13SN1 Date 8 20 9000

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
WAYNE DARBY WELL 2

[Drilled in 1986]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 9, 2018

Well Log ID: NA Elev (ft): 2680 ±10 Depth (ft): 70 7.5’ Quad: Moscow East

Latitude: 46.748026° Longitude: -116.956558° decimal degrees (WGS84)

¼, ¼, SW ¼, Sec. 3 , T. 39 N , R. 5 W

Well Address and (or) Other Location Information:
3201 (formerly 2082) Darby Road, Moscow, Idaho; on south side of road

Location Method:
Assumed location is for house at 3201 Darby Road; Latah County Assessor; Google Earth imagery; topographic map; driller recorded Section 5 (which is west of Darby Road).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>From 0 – 1</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>From 1 – 22</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>From 22 – 32</td>
</tr>
<tr>
<td>Sand</td>
<td>From 32 – 60</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>From 60 – 70</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N05W036002, owner is DARBY, WAYNE L; 3201 DARBY RD, SWSW, 3 39 5.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
State law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name          Wayne Darby
Address       2082 Darby Road Moscow, Idaho 83843
Owner's Permit No. 87-36-N-1

2. NATURE OF WORK
□ New well       □ Deepened       □ Replacement
□ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
□ Domestic □ Irrigation □ Test □ Municipal
□ Industrial □ Stock □ Waste Disposal or Injection
□ Other (specify type)

4. METHOD DRILLED
□ Rotary □ Cable □ Air □ Hydrualic □ Reverse rotary

5. WELL CONSTRUCTION
Casing schedule: □ Steel □ Concrete □ Other
Thickness 250 inches Diameter 10 inches
8 inches 12 inches 68 feet 68 feet
6 inches 9 inches 68 feet 68 feet
Was casing drive shoe used? □ Yes □ No
Was a packer or seal used? □ Yes □ No
Perforated? □ Yes □ No
How perforated? □ Factory □ Knife □ Torch
Size of perforation 1/8 inches by 1/8 inches
1/8 inches 4 sides From feet To feet
48 feet 68 feet perforations 68 feet perforations
68 feet 68 feet perforations
Well screen installed? □ Yes □ No
Manufacturer's name
Type □ Steel □ Concrete □ Other
Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet
Gravel packed? □ Yes □ No □ Size of gravel
Placed from feet to feet
Surface seal depth 20 feet Material used in seal: □ Cement grout
□ Bentonite □ Puddling clay
Sealing procedure used: □ Slurry pit □ Temp. surface casing
□ Overbore to seal depth
Method of joining casing: □ threaded □ welded □ Solvent weld
□ Cemented between strata
Describe access port

6. LOCATION OF WELL
Sketch map location must agree with written location.

N
35° 35' 35'' 29' 39'' 5" N 5' 39'' W 39''
\nSubdivision Name
E
Lot No. Block No.

7. WATER LEVEL
Static water level 30 feet below land surface.
Flowing? □ Yes □ No G.P.M. flow
Artesian closed in pressure in p.s.i.
Controlled by: □ Valve □ Cap □ Plug
Temperature °F. Quality
Describe artesian or temperature zones below.

8. WELL TEST DATA
□ Pump □ Bailer □ Air □ Other
Discharge G.P.M. Pumping Level Hours Pumped

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>1</td>
<td>Black dirt x</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>22</td>
<td>Brown clay  x</td>
</tr>
<tr>
<td>11</td>
<td>22</td>
<td>32</td>
<td>Lt. brown clay  x</td>
</tr>
<tr>
<td>32</td>
<td>60</td>
<td>60</td>
<td>Sand, decomposed granite  x</td>
</tr>
<tr>
<td>60</td>
<td>70</td>
<td>70</td>
<td>Sand, gravel  x</td>
</tr>
</tbody>
</table>

11. DRILLERS CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Don Town Welldrilling Firm No. 155
Address: 2380 Moscow Mtn. Rd. Date: 6-11-86
Moscow, Idaho 83843

Signed by (Firm Official) Don Town
and (Operator)
M.E. DAVIS WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 1, 2016

Well Log ID: NA Elev (ft): 2660 ±10 Depth (ft): 324 7.5’ Quad: Viola

Latitude: 46.776666 Longitude: -117.023877 decimal degrees (WGS84)

SE ¼, NE ¼, SE ¼, Sec. 25, T. 40 N, R. 6 W

Well Address and (or) Other Location Information:
1049 John Ruby Road, Moscow, Idaho, on west side of road

Location Method:
Location is for the only house in sec. 25; Latah County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller's report. Site visit (November 18, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>57</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured from 141–291 ft</td>
<td>82</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green, gray</td>
<td>291</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W253005, 1049 John Ruby Road, NESW; N 1/2 SE, 25  40  6; owner now is OLSON, WAYNE LOUIS; 129.53 acres.

The Carl Louis Olson family lived on a farm on Estes Road prior to moving to Harrison, Idaho, in 1966; Wayne Louis Olson is his only son (Moscow-Pullman Daily News, 2013).

Maybe M.E. Davis owned the property in the time between 1966 and the time Wayne Olson purchased the property? Or, maybe M.E. Davis owned this parcel which was nearby to the old Carl Olson farm?

References Cited:

1. WELL OWNER
Name: M.E. DAVIS
Address: MOSCOW IDAHO
Owner's Permit No.: 87-73-N-21

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Other (specify type)
☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection

4. METHOD DRILLED
☐ Cable  ☑ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 6 inches  Total depth: 324 feet
Casing schedule: ☑ Steel  ☐ Concrete
Thickness: 2 1/2 inches  Diameter: 6 inches
From: 8 feet  To: 324 feet
Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No
How perforated?  ☐ Factory  ☐ Knife  ☐ Torch
Number of perforations: ___________________ inches by ___________________ inches
Well screen installed?  ☐ Yes  ☐ No
Manufacturer's name
Type: ___________________ Model No.: ___________________
Diameter: ___________________ Slot size: ___________________
Set from: ___________________ feet to: ___________________
Gravel packed?  ☐ Yes  ☐ No  Size of gravel: ___________________
Placed from: ___________________ feet to: ___________________
Surface seal depth: 86 feet
Material used in seal:  ☐ Cement grout  ☐ Well cuttings
Sealing procedure used:  ☐ Stirred mix  ☐ Temporary surface coming
□ Overbore to seal depth

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 35 feet below land surface
Flowing?  ☐ Yes  ☐ No  G.P.M. flow: __________
Temperature: 64°F  Quality: Good
Artesian closed-in pressure: __________ p.s.i.
Controlled by:  ☐ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA
Air test: 7.5 gal. per min.
Discharge G.P.M.  Draw Down  Hours Pumped
☐ Pump  ☐ Bailer  ☐ Other

9. LITHOLOGIC LOG
Hole Diameter  From  To  Depth  Material  Water
5 6 57 1. DECOMPOSED GRANITE  X
9 57 53 2. BASALT  HIGHLY  FRACURED  FROM
144 - 291 3. WATER  GEARS IN THIS
241 3 24 4. CLAY - GREEN GRAY


11. DRILLERS CERTIFICATION
Firm Name: BURNSY WITT  Firm No.: 58
Address: 2101 Powers  Date: 09/29/73
Signed by (Firm Official)  O.R. Burns  and
Operator: ___________________

USE ADDITIONAL SHEETS IF NECESSARY  FORWARD THE WHITE COPY TO THE DEPARTMENT
Well Log ID: 149707  Elev (ft): 2530 ±10  Depth (ft): 103  Quad: Palouse

Latitude: 46.916390  Longitude: -117.116160  decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 2, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
72 Olson Road, Palouse, Wash., east side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>1 – 21</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>31 – 36</td>
</tr>
<tr>
<td>*Clay, gray</td>
<td>36 – 91</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>91 – 103</td>
</tr>
</tbody>
</table>
Comments:
*A thick interbed at this position does not fit the pattern of nearby wells. It is suggested that the clay represents weathered basalt(?).

Whitman County Tax Parcel 200004516022290, 72 OLSON RD, NW1/4 PT NW1/4, owner is DAWDY, WILLIAM, 16 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name: **Bill Dawdy**

LOCATION OF WELL: County: **WATMAN**

STREET ADDRESS OF WELL (or nearest address):

PROPOSED USE: [ ] Domestic [ ] Irrigation [ ] Industrial [ ] Municipal [ ] DeWater [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)

- Abandoned [ ] New well [ ] Deepened [ ] Reconditioned [ ]
- Method: Dug [ ] Bored [ ] Driven [ ] Drilled [ ]


CONSTRUCTION DETAILS:

- Casing Installed: 9 Diam. from 1 ft to 28 ft.
- Welded: 30 Diam. from 29 ft to 103 ft.
- Liner installed: 9 Diam. from 29 ft to 103 ft.
- Threaded: 0 Diam. from 0 ft to 0 ft.

Perforations: Yes [ ] No [ ]

- Type of perforator used
- Size of perforations

Screens: Yes [ ] No [ ]

- Type of screen

PUMP: Manufacturer's Name

WATER LEVELS:

- Land-surface elevation above mean sea level: 37 ft.
- Static level: 12-5-93 ft. below top of well
- Artesian pressure: 0 lbs. per square inch
- Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS:

- Drawdown is amount water level is lowered below static level Was a pump test made? Yes [ ] No [ ] If yes, by whom?
- Yield: 80 gal. /min. with ft. drawdown after hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level) Time: Water Level: Time: Water Level: Time: Water Level:

- Date of test

WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Basalt</td>
<td>121</td>
<td>24</td>
</tr>
<tr>
<td>Clay</td>
<td>36</td>
<td>91</td>
</tr>
<tr>
<td>Basalt</td>
<td>91</td>
<td>103</td>
</tr>
</tbody>
</table>

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DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**McPherson & Wright Drilling**
2246 Burrell

**NAME**

**ADDRESS**

**(TYPE OR PRINT)**

(208) 743-7295

**License No:** 0523

**WELL DRILLER**

**Contractor's**

**No. 155 N-1**

**Date:** 1-4-91

**USE ADDITIONAL SHEETS IF NECESSARY**
JON DECKER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 3, 2017

Well Log ID:  169014   Elev (ft):  2535 ±10   Depth (ft):  400   7.5’ Quad:  Moscow West

Latitude:  46.738528   Longitude:  -117.052481   decimal degrees (WGS84)

¼, ¼, SW ¼, Sec. 32, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
5952 Pullman Airport Road, Pullman, Wash., on east side of road, north of WA 270; well (with red cap) is at northeast corner of greenhouse.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Owner’s first name misspelled on driller’s report. Site visit (March 13, 2017).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Loose material(?)</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>4 – 132</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>132 – 191</td>
</tr>
<tr>
<td>Grande Ronde Basalt(?)</td>
<td></td>
</tr>
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<td>Meyer Ridge Member(?)</td>
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<tr>
<td>Clay and basalt, mixed</td>
<td>191 – 348</td>
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<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
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<tr>
<td>Clay</td>
<td>348 – 374</td>
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341
Comments:

Whitman County Tax Parcel 200004615323790, 5952 AIRPORT RD, SW1/4 PT SW1/4 N OF HWY; owners are DECKER, JON/LEIGH ANN; 8.14 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: John Becker
Address: 897 Great E St Moscow-83893

(2a) STREET ADDRESS OF WELL (or nearest address) 5952 Airport Rd Pullman-99163

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] DeWater [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] Now well [ ] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6" inches.
Drilled 40.3 feet. Depth of completed well 411.0 ft.

(6) CONSTRUCTION DETAILS:
Casing installed:
Welded [ ] Threaded [ ]
Diam. from ft. to ft. 6". Diam. from ft. to ft. 2 3/8"

Perforations:
Yes [ ] No [ ]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.

Screens:
Yes [ ] No [ ]
Manufacturer's Name
Type [ ] Model No. [ ]
Diam. ft. from ft. to ft. 6". Slot size ft. to ft.

Gab Vital packed:
Yes [ ] No [ ]
Size of gravel
Gravel placed from ft. to ft.

Surface seal:
Yes [ ] No [ ] To what depth? 50 ft.
Material used in seal
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water?
Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type
H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level

Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailey test gal./min. with ft. drawdown after hrs.
Artes test gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date

Temperature of water Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

```
MATERIAL

         FROM TO


         0 1

dirt

sand, rock & clay 1 4

gravel and hard loam 4 20

 mud and hard loam 20 15,2

cherty shale, hard loam 13,2 191

shale, slate and shale 191 213

shale, slate and shale 213 348

clay, gravel, shale, sand 348 374

374 420

```

FEB 27 1966

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE


WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME
Wm. W. Cowman, Drilling

Address 815 W 7th St. Moscow-83843

(Signed) Wm. W. Cowman (WELL DRILLER) License No. 1470 (Well Driller)

(1740)

Contractor's Registration No.
Ray V. Gro (USE ADDITIONAL SHEETS IF NECESSARY)
DOE BANNER ROAD WELL
Geologic Interpretation of Water Well Driller’s Log

Well Log ID: 864016  Elev (ft): 2439.40  Depth (ft): 430  Quad: Albion

Latitude: 46.773583  Longitude: -117.199479  decimal degrees (WGS84)

SW ¼, NW ¼, Sec. 19, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
Banner Road, Pullman, Wash., on west side of road

Location Method:
Latitude, longitude and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013) and visually adjusted to well head as shown on Google Earth imagery of 6/30/2015. PLSS on driller’s report is incorrect. Site visit (September 1, 2015).

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<td>From</td>
<td>To</td>
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<tr>
<td>Weissenfels Ridge Member</td>
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<td>Basalt of Tenmile Creek</td>
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<td>7</td>
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<td>Latah Formation</td>
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<td>Sediments of Bovill</td>
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<td>Silt and clay, brown</td>
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<td>Clay, gray</td>
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<td>Wanapum Basalt</td>
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<td>Priest Rapids Member</td>
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<tr>
<td>Basalt of Lolo</td>
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<td>Vantage Member</td>
<td></td>
</tr>
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<td>Clay, black, with occasional pieces of gravel</td>
<td>240</td>
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<td>Grande Ronde Basalt</td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
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</table>
Sentinel Bluffs Member
Basalt of Spokane Falls
- Basalt, vesicular: 242 – 262
- Basalt, fine-grained: 262 – 320

R2 magnetostratigraphic unit
Meyer Ridge Member
- Basalt, fine-grained, weathered, light red at top, with two vesicular zones: 320 – 430

Comments:
The data presented here, including stratigraphic selections, are from Conrey and others (2013) and the driller's log/geologist's log in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services (2013).

References Cited:

RESOURCES PROTECTION WELL REPORT
(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)
- Construction
- Decommission

ORIGINAL INSTALLATION Notice of Intent Number:

Consulting Firm
Unique Ecology Well ID Tag No. BBH-472

WELL CONSTRUCTION CERTIFICATION: I, [Name], declare that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

Driller: [Name] McLeslie, Jim
Driller or Trainee License No. 2371

If trainee, licensed driller’s Signature and License Number:

<table>
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<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
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<tbody>
<tr>
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<td>3/8 Hole plug Grout</td>
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</tr>
<tr>
<td>6&quot; Steel casing</td>
<td>10/20 Silica Sand</td>
<td>3 - 8' Tan Clay</td>
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<td>3/8 Hole plug</td>
<td>2&quot; Sch 80 PVC Blank</td>
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</tr>
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<td>2&quot; Sch 80 .10 Slot Screen</td>
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<td>Aqua Guard Grout</td>
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<tr>
<td>8' Borehole</td>
<td>2&quot; Centralizers (11) every 40'</td>
<td>198 - 200' Fract Basalt w/10 gpm</td>
</tr>
<tr>
<td>100' 1/2 .10 Slot PVC Screen</td>
<td>200 - 210' Med. Basalt</td>
<td></td>
</tr>
<tr>
<td>End Cap</td>
<td>40'</td>
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<td></td>
<td>220 - 242' Black Med. Basalt</td>
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<td></td>
<td></td>
<td>242 - 255' Soft Basalt w/ 50 gpm</td>
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<td></td>
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<td>255 - 262' Broken Basalt 3/4 to 1&quot;</td>
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<td>262 - 285' Broken Basalt 1 - 2&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 gpm</td>
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<td></td>
<td>285 - 300' Soft to Med. Black Basalt</td>
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<td>390 - 418' Black Med. Basalt</td>
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<td>418 - 425' Fract. Basalt w/ water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>425 - 430' Black Med. Basalt</td>
</tr>
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</table>

SCALE: 1" = _____ PAGE ____ OF _____

ECY 050-12 (Rev. 7/06)

Ecology is an Equal Opportunity Employer
Section 6.0 Banner Road Well

6.1 Well Construction

The Banner Road Well is located within the west side of the Banner Road right-of-way about 2,000 feet north of the intersection with Pullman-Albion Road. The well location is shown on Figure 2-1. Figure 6-1 is a photo of the drilling operation at the Banner Road Well site and Figure 6-2 shows the completed well. Banner Road has a maintained gravel surface and is open year around.

The bid documents included the following prediction of the geologic sequence that would be penetrated by the Banner Road Well site: 1) about 35 feet of sediment, 2) about 135 feet of basalt, 3) about 50 feet of sediment, and 4) about 100 feet of basalt for a total depth of about 320 feet. This information was developed from geologic cross sections and logs from existing nearby wells and was used for planning purposes.

The Banner Road Well was drilled to a depth of 430 feet through mostly basalt. Figure 6-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-8 feet: Topsoil: light brown silty soil with small basalt gravel.
- 8-15 feet: Basalt.
- 15-60 feet: Silt and clay: light brown to dark brown; some occasional light gray clay nodules.
- 60-80 feet: Clay: dark gray with some silt and a few pieces of small basalt gravel.
- 80-240 feet: Basalt with dark gray silt and clay mixture; basalt is fine to medium grained; some olivine and plagioclase phenocrysts visible; chips are dark gray to black; flow breaks (vesicles) (80 to 85 feet, 100 to 105 feet, 140 to 145 feet, and 180 to 185 feet); some small rounded basalt pebbles intermittently; water at 200 feet (approximately 10 gpm).
- 240-245 feet: Interbed: black shale and rounded basalt pebble mixture.
- 245-280 feet: Basalt: gray; medium grained to porphyritic; olivine and some pyroxene phenocrysts; subangular chips; evidence of brown/green weathering; abundant vesicles; water at 260 feet (approximately 100 gpm).
- 280-320 feet: Basalt: black; fine grained; no distinguishable minerals; got some large green chunks of shale around 310 feet; no other real evidence of interbeds.
- 320-370 feet: Basalt: flow top; highly weathered; mostly vesicular; some light red near top; darker with depth to black; some rounded clasts.
- 370-430 feet: Basalt: gray to dark gray; fine grained; some rare dark green weathering; mostly angular chips; water at 418 feet; end of hole at 430 feet.
Figure 6-1 Photo of the Drilling Operation at the Banner Road Well Site
Figure 6-2 Photo of the Banner Road Well Site After Completion
### Figure 6-3 Driller Data for the Banner Road Well from Resource Protection Well Report

<table>
<thead>
<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
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<td>6&quot; Locking Well Cap</td>
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<td>8 - 10' Basalt</td>
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<tr>
<td></td>
<td>Grout</td>
<td>10 - 80' Tan Clay</td>
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<tr>
<td></td>
<td>2&quot; Sch 80 Pvc Blank</td>
<td>198 - 200' Fract Basalt w/10 gpm</td>
</tr>
<tr>
<td></td>
<td>2&quot; Sch 80 .20Slot Screen</td>
<td>200 - 210' Med. Basalt</td>
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<td></td>
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<td>255 - 262' Broken Basalt 3/4 to 1''</td>
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<td></td>
<td></td>
<td>100 gpm</td>
</tr>
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<td>390 - 418' Black Med. Basalt</td>
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<tr>
<td></td>
<td></td>
<td>418 - 425' Fract. Basalt w/ water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>425 - 430' Black Med. Basalt</td>
</tr>
</tbody>
</table>
There is a difference in the field geologist’s log and the driller’s log in the interval from 80 to 200 feet. The geologist’s log indicates the presence of a series of very thin basalt flows, given the vesicular zones at 80 to 85 feet, 100 to 105 feet, 140 to 145 feet, and 180 to 185 feet. Alternatively, these may be vesicular zones within one or two flows. The driller logged this portion of the borehole as “black medium basalt.” The only water-producing zone in this interval was about 10 gpm at a depth of about 200 feet. The geologist’s log shows an interbed at 240 to 245 feet which was logged as basalt by the driller. The driller describes the interval from 285 to 390 feet as “soft to medium black basalt.”

The following is a summary of the drilling methods used at different depth intervals.

- 0-8 feet: Tri-cone bit through surficial sedimentary layer; 8-inch diameter casing driven to 78 feet.
- 8-430 feet: 8-inch open hole drilling using a hammer bit; approximately 40 feet/hour or faster; encountered some sedimentary units but hole stayed open.

The borehole did not produce substantial water until around 260 feet. Discerning whether or not more water was being produced around the 400 foot depth was difficult because there was already so much water being produced. The discharge from the borehole appeared to increase at a depth of about 418 feet. Dale Ralston of RHS made the decision to drill to 430 and place the middle of the screen opposite the producing zone at a depth of 418 feet.

The well was completed as follows:

- The borehole was backfilled with silica sand from 428 to 430 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 423 to 428 feet, slotted screen from 413-423 feet and blank casing from land surface to 413 feet. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 408 to 428 feet. The sand pack extends from 5 feet above the screen to 7 feet below the screen.
- The borehole surrounding the PVC casing was backfilled via a tremie pipe with bentonite slurry from 406 to 408 feet.
- The borehole was backfilled with both the bentonite slurry and holeplug in the depth range of 180 to 406 feet in an attempt to minimize loss of the slurry into the fractured rock.
- The borehole was backfilled with the bentonite slurry from 125 to 180 feet.
- The remaining portion of the borehole from land surface to 125 feet was backfilled with holeplug bentonite chips.
• The temporary 8-inch diameter casing was removed during the last part of the seal installation process.

• A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad around the casing was poured. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 6-2 is a photo of the completed well.

6.2 Hydrogeologic Analysis

The hydrogeologic analysis of the Banner Road Well is based on analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well construction. The information gained from well construction is different than the initial conceptual geologic model. First, sediment at land surface is 85 feet thick rather than 35 feet. Second, the projected 30-foot thick interbed between basalt formations is 5 feet thick or less.

Cutting samples from selected depth intervals from the Banner Road Well were taken to the GeoAnalytical Laboratory at WSU for chemical analysis. Cutting samples from the following depth intervals were selected for analysis by Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory): 10-15 feet, 85-90 feet, 230-235 feet, 245-250 feet, 290-295 feet, 315-320 feet, 340-345 feet, 370-375 feet, and 425-430 feet.

The rock chemistry analysis of the rock chips indicates the following basalt stratigraphy (also shown on Figure 6-4). The samples from 85 to 90 feet and 230 to 235 feet are from the Priest Rapids Member of the Wanapum Formation. The samples from 245 to 250 feet, 290 to 295 feet, and 315 to 320 feet are from the N2 member of the Grande Ronde Formation. All of the deeper cutting samples starting at 370 feet are from the R2 member of the Grande Ronde Formation. The results of the rock chemistry analysis indicate that contact between the Wanapum Formation and the Grande Ronde Formation is at a depth of about 240 feet (see Figure 6-4). Interestingly, the sample from 10-15 feet was determined to be from the Saddle Mountains Formation. This is the only location where this unit was penetrated during this well construction project.

Two major water-producing zones were penetrated in the Grande Ronde Formation at 260 feet in the N2 member and 418 feet in the R2 member. The well could have been completed opposite the water-producing zone at about 270 feet. In the absence of rock chemistry data, Dale Ralston (RHS) decided to extend the well to the next major water-producing zone to ensure screening opposite the lower aquifer in the Grande Ronde Formation.

Water-level measurements taken during drilling have little value since the well—with the exception of the surface casing—was drilled open hole. The depth-to-water measurement in the completed well was about 192 feet.
Figure 6-4 Hydrogeologic Log for the Banner Road Well
Showing Rock Sample Depths and Well Construction Details
(w = water-producing zones)
An aquifer test was conducted in a nearby domestic/stock well as a favor to the landowner who provided access to the land adjacent to the Banner Road Well. The private well is located about 1,200 feet south-southeast of the monitoring well at about the same land elevation. A well driller’s report is not available for this well. The landowner did not know the depth of the well but thought that the pump had been set at a depth of 260 feet. The static depth-to-water was measured to be about 31 feet on October 6, 2012. The domestic well likely is completed at a shallower depth than the monitoring well and has a higher water level. This indicates that there is a downward hydraulic gradient in the vicinity of the Banner Road Well.

The surveyed elevation of the top of the steel casing at the Banner Road well is 2,439.24 feet. The depth to water in the Banner Road Well was 192.67 feet when the data logger was installed on October 8, 2012 (Gregory, personal communication, 2012). This gives a water-level elevation of 2,246.6 feet for the aquifer in the Grande Ronde Formation at the Banner Road Well. The contact between the Wanapum and Grande Ronde Formations is at a depth of about 240 feet in the Banner Road Well or at an elevation of about 2,197 feet.

In summary, the hydrogeologic conditions found in the Banner Road Well are different than what was anticipated based on data from wells (TerraGraphics and RHS, 2012). The surface sedimentary unit was thicker at this location than anticipated and the anticipated 30-foot thick interbed between formations was much thinner. The downward vertical hydraulic gradient present between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation) that is typical of the Pullman-Moscow portion of the Palouse Basin is present at the Banner Road Well. The water-level elevation in the Banner Road Well is consistent with water-level elevation data from nearby wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in Section 9.0 of the report.

Section 7.0 Landfill Well

7.1 Well Construction

The Landfill Well is located near Carothers Road south of Highway 195 along the east side of property owned by Whitman County. The western portion of the property is used for the transfer station and the construction material landfill. The well location is shown on Figure 2-1. Figure 7-1 is a photo of the drilling operation at the Landfill site and Figure 7-2 shows the completed well. Access to the well is via a gravel extension off the south side of the road leading from Carothers Road to the facilities at the landfill.

The available information indicates that the Landfill monitoring well would be constructed through the following sequence of material: 1) 50 feet of sediment, 2) 150 feet of basalt, 3) 30 feet of sediment, and 4) 100 feet of basalt for a total depth of 330 feet. This information was developed from geologic cross sections and logs from existing wells and was used for planning purposes.
DOE BUTTE GAP WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 17, 2016

Well Log ID: 843634  Elev (ft): 2514.86  Depth (ft): 485  Quad: Viola

Latitude: 46.858663  Longitude: -117.106044  decimal degrees (WGS84)

NW ¼, NW ¼, SE ¼, Sec. 23, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
L West Road, Pullman, Wash., between the road and the railroad tracks at a bend in the road.

Location Method:
Latitude, longitude, and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013); Google Earth imagery; topographic map. Well is near center of sec. 23. Site visit (August 31, 2015).

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Grande Ronde Basalt

R2 magnetostratigraphic unit

Meyer Ridge Member

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Grouse Creek member

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</table>

Comments:

The log is a brief summary of driller’s log, graphic and descriptive log by Conrey and others (2013), and Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services (2013). Not all contacts are in agreement but the chemical determinations by Conrey and others (2013) accurately identified specific stratigraphic units. Additional information is provided by Conrey and others (2013) and Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services (2013).
Photo, above, well at time of site visit, August 31, 2015.

References Cited:


RESOURCE PROTECTION WELL REPORT

Please print, sign and return to the Department of Ecology

CURRENT Notice of Intent No. RE07436

Type of Well ("x in box)

- Resource Protection
- Geotech Soil Boring

Property Owner: City of Pullman

Site Address: Rt. of Way of L. West Road

City: Pullman

County: Whitman

Location: NW 1/4-1/4 NW 1/4 Sec 23 Twn 16N R 45E

EWM ☑ or WWM ☐

Lat/Long (s, t, r still REQUIRED)

Lat Deg Min Sec

Long Deg Min Sec

Tax Parcel No. N/A in Right of way

Butte Gap

Cased or Uncased Diameter 8"

Static Level 40'

Work/Decommission Start Date: 10/9/12

Work/Decommission Completed Date: 10/24/12

Consulting Firm

Unique Ecology Well ID Tag No. BBH-473

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☑ Engineer ☐ Trainee

Name (Print Last, First Name) McLeslie, Jim

Driller/Engineer/Trainee Signature: Jim McLeslie

Driller or Trainee License No. 287

If trainee, licensed driller's Signature and License Number:

Well Data

<table>
<thead>
<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; Steel casing w/ locking cap +2 -3</td>
<td>0 - 3 Top Soil</td>
<td></td>
</tr>
<tr>
<td>Cement Cap -0 - 3</td>
<td>3 - 7 Tan Clay</td>
<td></td>
</tr>
<tr>
<td>2&quot; PVC Sch. 80 +2 - 482'</td>
<td>7 - 12 Black Clay</td>
<td></td>
</tr>
<tr>
<td>Centralizers every (12) 40'</td>
<td>12 - 25 Tan Clay</td>
<td></td>
</tr>
<tr>
<td>10' 20 slot PVC Screen 267' - 277'</td>
<td>25 - 35 Broken Basalt</td>
<td></td>
</tr>
<tr>
<td>10/20 Silica Sand 260' - 284'</td>
<td>35 - 37 Basalt</td>
<td></td>
</tr>
<tr>
<td>AquaGuard Grout -40' - 260'</td>
<td>37 - 40 Fract. Basalt w/ 50+gpm</td>
<td></td>
</tr>
<tr>
<td>with Holeplug 0' - 40'</td>
<td>40 - 157 Black Basalt</td>
<td></td>
</tr>
<tr>
<td>Holeplug</td>
<td>157 - 210 Basalt w/ gray color</td>
<td></td>
</tr>
<tr>
<td></td>
<td>210 - 214 Multi Color Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>214 - 230 Tan Sand w/ water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>230 - 250 Tan Clay w/ Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250 - 257 Gray Clay w/ Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>257 - 265 Grn/Gry Clay w/ Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>265 - 310 Gry/Wht Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>310 - 323 Brown Clay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>323 - 382 Black Basalt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>382 - 385 Broken Red Basalt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>385 - 461 Black Basalt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>461 - 485 Fract. Basalt with water</td>
<td></td>
</tr>
</tbody>
</table>

Scale: 1" = ___ PAGE ___ OF ___

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

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DEC 07 2012

ECY 050-12 (Rev. 7/06)

Ecology is an Equal Opportunity Employer
In summary, the hydrogeologic conditions found in the Flat Road Well site are considerably different than what was anticipated based on data from wells mostly located to the north and northeast as described in TerraGraphics and RHS (2012). The sedimentary unit believed equivalent to the Vantage unit is much thinner (5 feet or less) than was postulated (about 80 feet). The downward vertical hydraulic gradient present between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation) that is typical of the Pullman-Moscow portion of the Palouse Basin is present at the Flat Road Well. The water-level elevation in the Flat Road Well is consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. It is interesting that the water-level elevation in the Flat Road Well is several feet lower than the water-level elevation in the Grange Well. This topic is addressed in more detail in Section 9.0 of the report.

Section 5.0  Butte Gap Well

5.1 Well Construction

The Butte Gap Well is located along the west side of the railroad right-of-way and also adjacent to L. West Road. Figure 2-1 shows the well location. Figure 5-1 is a photo of the drilling operation at the Butte Gap Well site and Figure 5-2 shows the completed well. L. West Road does not have a maintained gravel surface and is closed during winter and spring months.

The bid documents included the following prediction of the geologic sequence that would be penetrated by the Butte Gap Well: 1) about 20 feet of sediment, 2) about 150 feet of basalt, 3) about 250 feet of sediment including sand, and 4) about 100 feet of basalt for a total depth of about 520 feet. This information was developed from geologic cross sections, logs from existing nearby wells, and a surface geophysical analysis and was used for planning purposes.

The Butte Gap Well was drilled to a depth of 485 feet through surface sediments, an upper basalt unit, a thick sedimentary interbed, and into a lower basalt unit. Figure 5-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-5 feet: Topsoil: dark brown to black silt and clay.
- 5-20 feet: Loess: brown silt and clay.
- 20-40 feet: Clay and gravel mix: clay is light brown; gravel is weathered basalt; small amount of sand.
- 40-60 feet: Basalt: highly weathered (red/green/brown); rounded fragments.
- 60-140 feet: Basalt: coarse grained; dark gray to black; large visible plagioclase crystals; some brown/green weathering throughout; vesicles in top 10 feet; chips are angular to subangular.
Figure 5-1 Photo of the Drilling Operation at the Butte Gap Well Site
Figure 5-2 Photo of the Butte Gap Well Site After Completion
**Figure 5-3 Driller Data for Butte Gap Well from Resource Protection Well Report**

<table>
<thead>
<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; well casing</td>
<td>6&quot; Steel casing w/ locking cap</td>
<td>0 - 3 Top Soil</td>
</tr>
<tr>
<td>cement</td>
<td>-2 - 3</td>
<td>3 - 7 Tan Clay</td>
</tr>
<tr>
<td>hole plug</td>
<td>2&quot; PVC Sch. 80</td>
<td>7 - 12 Black Clay</td>
</tr>
<tr>
<td>Centralizers every (12)</td>
<td>40'</td>
<td>12 - 25 Tan Clay</td>
</tr>
<tr>
<td>10' .20 slot PVC Screen</td>
<td>467' - 477'</td>
<td>25 - 35 Broken Basalt</td>
</tr>
<tr>
<td>10/20 Silica Sand</td>
<td>460' - 484'</td>
<td>35 - 37 Basalt</td>
</tr>
<tr>
<td>AquaGuard Grout with Holeplug</td>
<td>-40' - 460'</td>
<td>37 - 40 Fract. Basalt w/ 50+gpm</td>
</tr>
<tr>
<td>Holeplug</td>
<td>0' - 40'</td>
<td>40 - 157 Black Basalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>157 - 210 Basalt w/ gray color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>210 - 214 Multi Color Sand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>214 - 230 Tan Sand w/ water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>230 - 250 Tan Clay w/ Sand</td>
</tr>
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<td>250 - 257 Gray Clay w/ Sand</td>
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<td>257 - 265 Grn/Gry Clay w/ Sand</td>
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<td>265 - 310 Gry/Wht Sand</td>
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<td>310 - 323 Brown Clay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>323 - 382 Black Basalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>382 - 385 Broken Red Basalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30+gpm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>385 - 461 Black Basalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>461 - 485 Fract. Basalt with water</td>
</tr>
</tbody>
</table>
140-205 feet: Basalt: gray to dark gray; medium grained; olivine and plagioclase crystals visible with 10X hand lens; chips are mostly angular.

205-300 feet: Sand: mostly quartz sand; some lithics in upper approximate 15 feet; coarse grained (approximately 3 mm and up); well rounded; sampling is incomplete due to difficulty in sampling from the discharge hose; intervals of very white sand with a lot of muscovite; 280- to 300-foot interval is almost pure quartz sand (smoky quartz); some areas with light green sand and clay.

300-320 feet: Sand and Silt: rounded quartz sand with dark brown silty mud.

320-345 feet: Sand and Gravel: sand is rounded coarse quartz sand; gravel is rounded basalt clasts; mostly sand near top changing gradually to mostly gravel in the bottom; started getting some angular basalt chips in bottom 5 feet.

345-380 feet: Basalt: fine grained; light gray; mostly subangular with sparse quartz sand grains (thin interbeds?).

380-420 feet: Basalt: medium grained; gray to black, olivine phenocrysts; plagioclase microphenocrysts; vesicles from 380-415 feet with secondary mineral fill in top 15 feet; chips mostly angular.

420-460 feet: Basalt: medium grained; dark gray; large plagioclase crystals; vesicles in upper 10 feet; subangular chips.

460-480 feet: Basalt: fine to medium grained; black; some visible plagioclase; abundant vesicles with secondary mineral fill from 460 to 465 feet; water at 460 feet; end of hole at 485 feet.

Note: Sampling was very difficult through most of the sand layer from about 205 to 320 feet. Casing was being driven and the water and cuttings were being discharged via a discharge hose from the top-head casing driver. The height of the hose above the ground varied based on the height of the top of the casing that was being driven. At times, the hose whipped around violently making it impossible to continuously collect samples.

The field geologist’s log shows the top of the upper basalt was at a depth of 60 feet whereas the driller’s geologic log shows the top of the basalt at a depth of 35 feet. Similarly, the field geologist’s log shows the top of the lower basalt at a depth of 360 feet whereas the driller’s log at 323 feet. The intervals in question (35 to 60 feet and 323 to 360 feet) likely are composed of highly weathered basalt.

The following is a summary of the drilling methods used at different depth intervals.

- 0-35 feet: 10-inch tri-cone bit through surficial sedimentary layer; 10-inch diameter casing driven to a depth of 35 feet.

- 35-220 feet: 10-inch hammer bit open hole drilling; approximately 20 feet/hour; hit sand layer at around 205 feet; drilled 15 feet into it before hole collapsed and casing was needed.
Palouse Basin Monitoring Well Construction Program

- 220-323 feet: 8-inch tri-cone bit with 8-inch diameter casing; drill and drive casing to 323 feet.
- 323-485 feet: 8-inch hammer bit open-hole drilling through solid basalt; up to 60 feet/hour.

The following is a summary of the completion of the well.

- The borehole was backfilled with silica sand from 482 to 485 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 477 to 482 feet, slotted screen from 467 to 477 feet and blank casing from land surface to 467 feet. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 451 to 482 feet. The sand pack extends from 16 feet above the top of the screen to 8 feet below the bottom of the screen.
- The borehole was backfilled with bentonite slurry from 406 to 451 feet via a tremie pipe.
- The borehole surrounding the PVC casing was backfilled with holeplug bentonite and the bentonite slurry in the depth range of 180 to 406 feet. The holeplug was poured down very slowly to stop grout from leaking into fractures.
- The borehole was backfilled with bentonite slurry from 125 to 180 feet via a tremie pipe.
- The borehole was backfilled with holeplug bentonite from land surface to 125 feet.
- The temporary 8-inch diameter casing was removed during the last part of the seal installation process.
- A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad was poured around the casing. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 5-2 is a photo of the completed well.

5.2 Hydrogeologic Analysis

The hydrogeologic analysis of the Butte Gap Well is based on analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well construction. The information gained from well construction is similar to the initial conceptual geologic model.
Cutting samples from selected depth intervals from the Butte Gap Well were taken to the GeoAnalytical Laboratory at WSU for chemical analysis. Cutting samples from the following depth intervals were selected for analysis by Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory): 60-65 feet, 145-150 feet, 190-195 feet, 370-375 feet, 245-250 feet, 405-410 feet, 430-435 feet, and 475-480 feet.

The rock chemistry analysis of the rock chips indicates the following basalt stratigraphy (also shown on Figure 5-4). The samples from 60 to 65 feet, 145 to 150 feet, and 190 to 195 feet are from the Priest Rapids Member of the Wanapum Formation. All of the deeper cutting samples starting at 370 feet are from the R2 member of the Grande Ronde Formation. The results of the rock chemistry analysis indicate that the top of the Grande Ronde Formation is at a depth of 323 feet (see Figure 5-4).

Four water-producing zones in basalt were penetrated in the well with one in the upper basalt unit (37-40 feet) and two in the lower basalt unit (382-385 feet and 461-485 feet). The upper portion of the sedimentary interbed also produced water; however, the discharge rate could not be estimated because casing was driven simultaneous with drilling in order to stabilize the borehole.

Water-level measurements taken while the well was being constructed indicate a downward hydraulic gradient. The depth to water was about 40 feet when the well was about 210 feet deep within the upper basalt unit. The depth to water was about 85 feet as measured inside of the temporary casing at a well depth of 260 feet within the sand unit. The depth to water in the completed well was about 261 feet.

The surveyed elevation of the top of the steel casing at the Butte Gap Well is 2,513.63 feet. The depth to water in the Butte Gap Well was 261.25 feet when the data logger was installed on October 26, 2012 (Gregory, personal communication, 2012). This gives a water-level elevation of 2,252.4 feet for the aquifer in the Grande Ronde Formation at the Butte Gap Well site. The top of the upper most Grande Ronde Formation basalt is at a depth of 323 feet in the Butte Gap Well or at an elevation of about 2,189 feet.

In summary, the hydrogeologic conditions found in the Butte Gap Well site are similar to what was anticipated based on data from nearby wells and the results of a geophysical survey (TerraGraphics and RHS, 2012). The sedimentary unit believed equivalent to the Vantage unit is thicker at this location than at any other of the WDOE monitoring well sites. The downward vertical hydraulic gradient present between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation) that is typical of the Pullman-Moscow portion of the Palouse Basin is present at the Butte Gap Well. The water-level elevation in the Butte Gap Well is consistent with water-level elevation data from nearby wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in Section 9.0 of the report.
Figure 5-4  Hydrogeologic Log for the Butte Gap Well
Showing Rock Sample Depths and Well Construction Details
(w = water-producing zones)

Measurement point elevation = 2,513.63 ft

Depth to water = 261.25 ft
DOE CITY YARD WELL 1
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August 2016

Well Log ID: 1559049  Elev (ft): 2336.87  Depth (ft): 180  Quad: Pullman

Latitude: 46.734427  Longitude: -117.190012  decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 6, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
615 NW Guy Street, Pullman, Wash.; Lot 5, Block 10 of Farr’s Third Addition; west side of road

Location Method:
Latitude, longitude and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013); Google Earth imagery, topographic map. PLSS, well address, and Well Tag ID all are misidentified in DOE online database.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil, fill, loess, gravel in basal 3 ft</td>
<td>0</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, fine-grained, occasional vesicles in top 5 ft</td>
<td>18</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, fine-grained, red scoria in top 5 ft, abundant vesicles</td>
<td>92</td>
</tr>
<tr>
<td>Basalt, fine-grained, black and red, vesicles in red</td>
<td>115</td>
</tr>
<tr>
<td>Basalt, fine-grained</td>
<td>145</td>
</tr>
</tbody>
</table>
Comments:

The geologic interpretation is a summary/composite from Conrey and others (2013), Terragraphics Environmental Engineering Inc., and Ralston Hydrologic Services (2013, p. 50–54), and the driller’s log.

Note that Hooper and Webster (1982), Gulick (1994), and Bush and Garwood (2005) all show a small outcrop of Grande Ronde at nearby higher elevations along Brayton Road.

References Cited:


RESOURCES PROTECTION WELL REPORT
(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Consulting Firm
Unique Ecology Well ID Tag No. BBH-475

WELL CONSTRUCTION CERTIFICATION: I, [Name], [Title], hereby certify that the well described below was constructed and is in accordance with all applicable regulations and guidelines. The information provided is true to the best of my knowledge and belief.

Driller [Name] 
Engineer [Name] 
Trainee [Name]

Driller/Engineer/Trainee Signature: [Signature]
Driller or Trainee License No. 2872

If trainee, licensed driller's Signature and License Number:

Locking Well Cap
- 6" Casing
- 4 to 6" casing cement
- 2 to 8" Holeplug
- 8 to 100' Aqua Guard
- 100 to 125' 10/20 Silica Sand
- 125 to 127' Pea Gravel
- 127 to 180' 3/8 Holeplug

10 Centralizers every 40' End Cap

Formation Description
- 0 - 3' Back Fill
- 3 to 17' Brown Clay
- 17 to 70' Black Basalt
- 70 to 75' Basalt w/ Gray Silt
- 75 to 82' Fract. Basalt 7 gpm
- 82 to 105 Black Basalt
- 105 to 145' Lg. Broken Basalt 50 gpm
- 145 to 155' Red Basalt
- 155 to 180' Gray Basalt
- 180' Black Basalt

Type of Well ("X" in box)

- Resource Protection

Property Owner: CITY OF PULLMAN
Site Address: 615 NW Guy St
City: Pullman
County: Whitman
Location: NW 1/4-1/4 NE 1/4 Sec 06 T4N R4E EWM

Lat/Long (s, t, r)

Lat Deg ___ Min ___ Sec ___
Long Deg ___ Min ___ Sec ___

Tax Parcel No.: Lot 5, Block 10 of Farr's Third Addition
Cased or Uncased Diameter: 8"
Static Level: 86

Work/Decommission Start Date: 11/12/12
Work/Decommission Completed Date: 11/14/12

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APR 25 2016

Department of Ecology
Eastern Washington Office

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Section 8.0 City Yard Wells

8.1 Introduction

City Yard wells #1 and #2 were added to the project because drilling funds remained after the construction of the planned group of wells. The well locations, shown on Figure 2-1, was selected to test the hypothesis that the lower aquifer in the Palouse Basin is hydraulically connected to the South Fork of the Palouse River in the reach immediately downstream from downtown Pullman. This hypothesis is based in part on the belief that the Wanapum Formation is missing at this site and that the Grande Ronde Formation occurs directly under the surface sediments within the river valley. The wells are located on land owned by the City of Pullman that is adjacent to the South Fork of the Palouse River immediately downstream of downtown Pullman. Access to the wells is via Park Street west of State Street.

City Yard Well #1 was drilled to a depth of 180 feet and completed with a screen in the depth interval of 110 to 120 feet. Sufficient money remained in the WDOE project budget to drill an additional well at the same location. The decision was made to drill the second well to a greater depth in the Grande Ronde Formation to assess whether there is a vertical hydraulic gradient in this unit. City Yard Well #2 was drilled to a depth of 300 feet and completed with a screen in the depth interval of 280 to 290 feet. The wells are located about 10 feet apart.

The well locations are shown on Figure 2-1. Figure 8-1 is a photo of the drilling operation for City Yard Well #2 and Figure 8-2 shows the two completed wells.

8.2 Construction of City Yard Well #1

City Yard Well #1 was drilled to a depth of 180 feet through mostly basalt. Figure 8-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-18 feet: Topsoil/Loess: Mostly silt and clay; light brown to dark brown; some basalt gravel in the lower 3 feet.
- 18-100 feet: Basalt: gray to black, fine grained, very few vesicles in top 5 feet; weathered green and blue in upper 10 feet; chips are mixed with a lot of gray mud; mostly angular chips; water at 100 feet.
- 100-115 feet: Basalt: fine grained; red scoria in top 5 feet; abundant vesicles throughout; lots of large rounded clasts (up to 1.5-to 2-inches).
- 115-145 feet: Basalt: fine grained; mixture of black and red; vesicles in red segment; all angular chips.
- 145-180 feet: Basalt: dark gray; fine grained; smaller chips (approximately 1 mm to 1 cm average); angular chips; hole stability issues around 180 feet; end of hole.
Figure 8-1 Photo of the Drilling Operation for City Yard Well #2
Figure 8-2 Photo of City Yard Well Sites #1 and #2 After Completion
Figure 8.3 Driller Data for City Yard Well #1 from Resource Protection Well Report

**Construction Design**

- +4
- 0
- -3
- -8
- -10
- -12.5
- -12.7
- -13
- -14.5
- -16
- -18
- -20
- -25
- -100
- -125
- -127
- -130
- -155
- -180

**Well Data**

- Locking Well Cap
  +4 to -3' 6" Casing
  0 to -2' Cement Cap
  -2 to 8' Holeplug
  -8 to 100' Aqua Guard
  -100 to 125' 10/20 Silica Sand
  -125 to 127' Pea Gravel
  -127 to 180' 3/8 Holeplug
  10' .20 Slot PVC Screen
  10 Centralizers every 40'
  End Cap

**Formation Description**

- 0 - 3' Back Fill
- 3 - 17' Brown Clay
- 17 - 70' Black Basalt
- 70 - 75' Basalt w/ Gray Silt
- 75 - 82' Fract. Basalt 7 gpm
- 82 - 105 Black Basalt
- 105 - 145' Lg. Broken Basalt 50 gpm
- 145 - 155' Red Basalt
- 155 - 180' Gray Basalt
- 180' Black Basalt
The following is a summary of the drilling methods used at different depth intervals:

- 0-18 feet: 8-inch tri-cone bit used to drill through the surface sedimentary layer; 8-inch diameter casing driven to 18-foot depth.
- 18-180 feet: 8-inch hammer bit used to complete open hole drilling through solid basalt; approximately 40 feet/hour.

The hole was drilled to 180 feet. The original target depth was around 200 feet. Around 180 feet there were borehole stability problems and the driller indicated that casing would be required to continue drilling. Dale Ralston of RHS and Robin Nimmer with TerraGraphics made the decision to terminate drilling at this depth, backfill the hole and install a screen at the last water-producing zone (Figure 8-3). This decision was supported by an analysis of a cutting sample that confirmed that basalt of the Grande Ronde Formation was penetrated by the borehole.

The well was completed as follows:

- The borehole in the depth interval of 135 to 180 feet was backfilled with bentonite chips.
- The borehole was backfilled with silica sand in the depth interval of 125 to 135 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 120 to 125 feet, slotted screen from 110 to 120 feet, and blank casing from 110 feet to land surface. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 101 to 125 feet. The sand pack extends from 9 feet above the top of the screen to 15 feet below the bottom.
- The borehole around the PVC casing was backfilled with bentonite slurry from 15 to 101 feet using a tremie pipe.
- The borehole was backfilled with bentonite chips from land surface to 15 feet.
- The temporary 8-inch diameter casing was removed during the last part of the seal installation process.
- A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad around the casing was poured. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.
8.3 Construction of City Yard Well #2

City Yard Well #2 was drilled to a depth of 300 feet through mostly basalt. Figure 8-4 shows a portion the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-18 feet: Topsoil/Loess: mostly silt and clay; light brown to dark brown; some basalt gravel in lower 3 feet.
- 18-95 feet: Basalt: gray to black; fine grained; very few vesicles in top 5 feet; weathered green and blue in upper 10 feet; chips are mixed with a lot of gray mud that gets darker with depth; mostly angular chips; water at 100 feet.
- 95-120 feet: Basalt: mixture of red and black; fine grained; vesicular; some large rounded clasts (1 or 2 inches).
- 120-140 feet: Basalt: lower part of last flow; small angular dark gray chips.
- 145-195 feet: Basalt: vesicular in top 5 feet; fine to medium grained; dark gray to black; chips more coarse up to about 1 inch in diameter in lower 15 feet; colonnade.
- 195-265 feet: Basalt: vesicles in top 20 feet; top 10 feet larger vesicles with lots of blue and green secondary minerals and weathering; mostly dark gray to black; medium grained or porphyritic; plagioclase crystals visible with naked eye; water at 200 feet; one 3-inch diameter pump couldn’t keep up with output; had to rent another pump.
- 265-300 feet: Basalt: all vesicular; some very large rounded clasts; black; fine grained; secondary mineral fill in vesicles; water at about 280 feet; two 3-inch diameter pumps could no longer keep up.

The following is a summary of the drilling methods used and different depth intervals.

- 8-inch tri-cone bit used to drill through the surface sedimentary layer with 8-inch diameter casing driven to 18-foot depth.
- An 8-inch hammer bit was used to complete open hole drilling through solid basalt from 18 to 300 feet, at approximately 40 feet/hour.

The well was completed as follows:

- The borehole was backfilled with silica sand from 295 to 300 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 290 to 295 feet, slotted screen from 280 to 290 feet, and blank casing from land surface to 280 feet. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 274 to 295 feet. The sand pack extends from 6 feet above the top of the screen to 10 feet below the bottom.
### Figure 8-4 Driller Data for City Yard Well #2 from Resource Protection Well Report

<table>
<thead>
<tr>
<th>Construction/Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
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<tbody>
<tr>
<td>6&quot; Locking Well Cap</td>
<td>0 - 3' Back Fill</td>
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<tr>
<td>+4 to -295' 2&quot; PVC</td>
<td>3 - 17' Brown Clay</td>
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<tr>
<td>+1 to 2' Cement</td>
<td>17 - 123' Black Med.Basalt</td>
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<tr>
<td>-1 to 10' 3/8 Holeplug</td>
<td>123 - 155' Broken Basalt</td>
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<tr>
<td>-1 to 274' Aquaguard</td>
<td>155 - 182' Basalt</td>
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<tr>
<td>274 to 300' 10' of .20 Slot PVC</td>
<td>182 - 188 Fract Basalt 100+gpm</td>
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</tr>
<tr>
<td>Centralizers every 40'</td>
<td>188 - 221' Broken Basalt Layers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>221 - 268' Gray Basalt w/Silt</td>
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<tr>
<td></td>
<td>268 - 278' Broken Basalt</td>
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<tr>
<td></td>
<td>278 - 279' Void</td>
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</tr>
<tr>
<td></td>
<td>279 - 300' Green Basalt</td>
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</tr>
</tbody>
</table>

**SCALE: 1" = _____ PAGE ___ OF ___**
The borehole around the PVC casing from 15 to 274 feet was backfilled with bentonite slurry via a tremie pipe.

The borehole from 0 to 15 feet was backfilled with bentonite chips.

The temporary 8-inch diameter casing was removed during the last part of the seal installation process.

A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad was poured around the casing. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 8-2 is a photo of the completed City Yard wells

8.4 Hydrogeologic Analysis

The hydrogeologic analysis of the City Yard wells is based on analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well construction.

Cutting samples from selected depth intervals from each of the City Yard wells were taken to the GeoAnalytical Laboratory at WSU for chemical analysis. Cutting samples from the following depth intervals were selected for analysis from City Yard Well #1 by Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory): 20-25 feet, 80-85 feet, 105-110 feet, 125-130 feet, and 175-180 feet. Samples from the following depth intervals were selected for analysis from City Yard Well #2: 25-30 feet, 80-85 feet, 100-105 feet, 120-125 feet, 190-195 feet, 200-205 feet, 220-225 feet, 260-265 feet, and 290-295 feet.

The rock chemistry results from City Yard Well #1 are identical for the same sample depths as Well #2. Since City Yard Well #2 is deeper, the rock chemistry results from cutting samples from this well are presented on Figure 8-5 and discussed below. The samples from 80 feet and above are from the N2 member of the Grande Ronde Formation. All of the deeper cutting samples starting at 100 feet are from the R2 member of the Grande Ronde Formation. The results of the rock chemistry analysis indicate that the Wanapum Formation is not present at the location of the City Yard wells within the valley of the South Fork of the Palouse River. This is the only location where one of the WDOE monitoring wells did not penetrate some portion of the Wanapum Formation.

Three water-producing zones were penetrated in the Grande Ronde Formation at 115 feet, 180 feet, and 280 feet, all in the R2 member. City Yard Well #1 is completed in the uppermost of the three zones. City Yard Well #2 is completed opposite the lowest of the three zones.

Water-level measurements taken during drilling in both wells have little value since the well—with the exception of the surface casing—was drilled open hole. The depth to water in both wells was about 90 feet when the wells were completed.
Figure 8-5 Hydrogeologic Logs for the City Yard Wells #1 and #2 Showing Rock Sample Depths for Well #2 and Well Construction Details (w = water-producing zones)
The surveyed elevation of the top of the steel casing is 2,336.79 feet for City Yard Well #1 and 2,336.95 feet for City Yard Well #2. The depth-to-water in the City Yard wells #1 and #2 were 88.92 feet and 90.12 feet, respectively, when data loggers were installed on November 20, 2012, for Well #1 and December 3, 2012, for Well #2 (Gregory, personal communication, 2012). This gives water-level elevations of 2,247.9 feet and 2,246.8 feet for City Yard wells #1 and #2, respectively. These data cannot be used to determine a vertical hydraulic gradient within the Grande Ronde Formation at this location because the measurements were not taken on the same day. The contact between the Wanapum and Grande Ronde Formations must have been higher than the top of the uppermost basalt unit at the City Yard site which is an elevation of approximately 2,314 feet.

In summary, the hydrogeologic conditions found in the City Yard site are unique relative to the WDOE network because the Wanapum Formation is absent at this location. City Yard Well #2 penetrated about 90 feet of the N2 member and about 180 feet of the R2 member of the Grande Ronde Formation. The water-level elevations in the City Yard wells are consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in the Section 9.0 of the report.

Section 9.0 Discussion of Results

9.1 Introduction

The purpose of WDOE monitoring well network is to gain an improved understanding of the lower aquifer within the Palouse Basin within Washington. Drilling and monitoring of these wells provides new information for the Basin. The aspects of the initial information results from logging the geologic section during drilling plus water-level measurements when the wells were completed are summarized in this section. Additional information will result from long-term water-level monitoring plus further hydrogeologic studies using the wells that may include water quality monitoring.

9.2 Hydrogeologic Analysis

Geochemical analysis of cutting samples from the seven monitoring wells constructed under the WDOE drilling project allows an improved understanding of the subsurface geology. The results of the geochemical analysis, presented in Table 9-1, include identification of unit, member, and formation. For example, the uppermost basalt layer in the Grange Well was the Lolo Unit of the Priest Rapids Member of the Wanapum Formation. One or both of the members of the Wanapum Formation (Priest Rapids and Roza) were penetrated in all the WDOE monitoring wells except for the two City Yard wells where the Wanapum Formation is absent. The Roza Member was penetrated under the Priest Rapids Member in the Grange, Flat Road, and Landfill wells. Six of the seven wells penetrated the N2 member overlying the R2 member of the Grande Ronde
Table 9-1. Results of Geochemical Analysis of Drill Cuttings Samples

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<th>Depth (feet)</th>
<th>Unit</th>
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Formation; the N2 member was not present at the Butte Gap Well. Six of the seven WDOE monitoring wells penetrated the R2 member; the Landfill Well was not drilled deep enough. See Conrey and others (2013 in preparation) for more detailed on the geochemical analysis.

As is shown on the well diagrams (Figures 3-4, 4-4, 5-4, 6-4, 7-4, and 8-5), all but two of the WDOE monitoring wells (Landfill and Butte Gap wells) are completed with the well screen opposite a water-producing zone within the Meyer Ridge Unit of the R2 member of the Grande Ronde Formation. The deepest cutting sample analyzed in the Butte Gap Well was identified as the Grouse Creek Unit of the R2 member which underlies the Meyer Ridge Unit. The deepest cutting sample analyzed in the Landfill Well was identified as the Sentinel Bluffs Unit of the N2 member of the Grande Ronde Formation. The screened interval in the Landfill Well may be opposite the flow contact between the bottom of the N2 member and the top of the underlying R2 member. Rick Conrey, (personal communication, 2013) theorized that the Sentinel Bluffs Unit (N2 member) tends to be about 80 feet thick, about the same depth below the formation contact in the Landfill Well. This flow thickness appears to fit the information gained from construction of the other WDOE monitoring wells.

Measurements of depth-to-water were obtained in all of the monitor wells on April 16, 2013. The water-level data reported on the hydrogeologic log figures were obtained at various times from September to December of 2012 when data loggers were installed. The April 2013 mass measurement allows comparison of water-level data between wells at the same time.

The well survey data allow the estimation of geologic and hydrologic elevations based on the results of the geochemical analysis, completion of the wells, and water-level measurements. Table 9-2 presents the following information for each of the monitoring wells:

1. the elevation of the top of the casing,
2. the depth-to-water measurement,
3. the water-level elevation,
4. the land elevation at the well,
5. the depth to the center of the screen,
6. the elevation of the center of the screen,
7. the depth to the contact between the Wanapum and Grande Ronde Formation,
8. the elevation of the formation contact,
9. the depth difference between the water-level elevation and the formation contact elevation, and
10. the depth of the center of the well screen below the top of the Grande Ronde Formation.
## Table 9-2. Water-Level, Well Screen, and Formation Contact Data

### Water Level Data

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<th>Depth to Water (feet)</th>
<th>Water Level Elevation (feet amsl)</th>
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<td>Flat Road</td>
<td>2478</td>
<td>495</td>
<td>1983</td>
</tr>
<tr>
<td>Butte Gap</td>
<td>2512</td>
<td>472</td>
<td>2040</td>
</tr>
<tr>
<td>Banner Road</td>
<td>2437</td>
<td>418</td>
<td>2019</td>
</tr>
<tr>
<td>Landfill</td>
<td>2369</td>
<td>323</td>
<td>2046</td>
</tr>
<tr>
<td>City Yard #1</td>
<td>2332</td>
<td>115</td>
<td>2217</td>
</tr>
<tr>
<td>City Yard #2</td>
<td>2332</td>
<td>285</td>
<td>2047</td>
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</table>

### Formation Contact Data

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Wanapum/Grande Ronde Contact Depth (feet)</th>
<th>Elevation of Contact (feet amsl)</th>
<th>Water Level (2012 data) - Contact (feet)</th>
<th>Contact-Screen (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grange</td>
<td>120</td>
<td>2170</td>
<td>87</td>
<td>230</td>
</tr>
<tr>
<td>Flat Road</td>
<td>250</td>
<td>2228</td>
<td>27</td>
<td>245</td>
</tr>
<tr>
<td>Butte Gap</td>
<td>323</td>
<td>2189</td>
<td>64</td>
<td>149</td>
</tr>
<tr>
<td>Banner Road</td>
<td>240</td>
<td>2197</td>
<td>49</td>
<td>178</td>
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<tr>
<td>Landfill</td>
<td>250</td>
<td>2119</td>
<td>133</td>
<td>73</td>
</tr>
<tr>
<td>City Yard #1</td>
<td>18</td>
<td>2314</td>
<td>-66</td>
<td>97</td>
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<tr>
<td>City Yard #2</td>
<td>18</td>
<td>2314</td>
<td>-67</td>
<td>267</td>
</tr>
</tbody>
</table>
The following observations are based on an analysis of the information presented in Table 9-2.

- The elevation of the top of the Grande Ronde Formation in the City Yard wells (less than 2,314 feet) is more than 85 feet higher than any of the other wells (Figure 9-1). Of the remaining wells, the contact elevation at the Landfill Well is lowest at 2,119 feet with the highest at 2,228 feet at the Flat Road Well. The higher contact elevation at the City Yard wells is consistent with the postulated presence of an anticline and/or fault in this area (Conrey and Wolff, 2010).

- The water-level elevation in the monitoring wells from depth-to-water measurements taken on April 16, 2013, varies from a low of 2,246.4 feet in the City Yard wells #1 and #2 to a height of 2,253.8 feet in the Grange Well (Figure 9-2). The water-level elevation in the wells tends to increase with greater distance from Pullman. The Banner Road Well has a water-level elevation only about 0.2 feet higher than the City Yard wells even though it is located about three miles north of the center of the city. The Butte Gap Well has the next highest water-level elevation but is located about nine miles northeast of Pullman. This Butte Gap Well may also be impacted by production wells operated by the City of Palouse. The water-level elevation in the Flat Road Well is about 4.5 feet higher than the City Yard wells but is almost 3 feet lower than the Grange Well.

- The elevations of the center of the screen in the monitoring wells range from 1,940 feet at the Grange Well to 2,217 feet at the City Yard Well #1. The remaining wells have screen elevations in the range of 1,983 to 2,047 feet. Three of the wells have a screen elevation in the range of 2,040 to 2,047 feet.

- The difference between the water-level elevation (measured in 2012) and the formation contact elevation provides insight into the hydrogeologic setting in the basin. The ground-water levels are above the contact between the Wanapum and Grande Ronde Formations in all but the City Yard wells. The greatest height of water above the contact is in the Landfill Well (133 feet) with the least in the Flat Road Well (27 feet). The water levels in the City Yard wells are more than 66 feet below the top of the formation; the exact distance cannot be determined since the Wanapum Formation is absent at this site.

- All of the wells were constructed to penetrate into the Grande Ronde Formation. Table 9-2 shows that the Landfill Well has the least penetration into the Grande Ronde Formation (73 feet). This is also the only well that does not penetrate into the R2 member of the Grande Ronde Formation.

- There is no information to indicate that there is a difference in water-level elevation between the water-producing zones in the N2 member and waterproducing zones in the R2 member of the Grande Ronde Formation.

Some information is available on the downward hydraulic gradient between the upper aquifer in the Wanapum Formation and the lower aquifer in the Grande Ronde Formation for five of the seven WDOE monitoring wells (water levels are higher in the upper
DOE CITY YARD WELL 2
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August 2016

Well Log ID: 1559046  Elev (ft): 2337.10  Depth (ft): 300  7.5’ Quad: Pullman

Latitude: 46.734455  Longitude: -117.190018  decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 6, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
615 NW Guy Street, Pullman, Wash.; Lot 5, Block 10 of Farr’s Third Addition

Location Method:
Latitude, longitude and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013); Google Earth imagery, topographic map. PLSS is incorrect in DOE online database.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, few vesicles in top 5 ft</td>
<td>18</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, red and black, vesicular</td>
<td>92</td>
</tr>
<tr>
<td>Basalt, base of flow</td>
<td>120</td>
</tr>
<tr>
<td>Basalt, vesicular in top 5 ft</td>
<td>140</td>
</tr>
<tr>
<td>Basalt, vesicles in top 20 ft</td>
<td>195</td>
</tr>
<tr>
<td>Wapshilla Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, all vesicular</td>
<td>265</td>
</tr>
</tbody>
</table>
Comments:

The geologic interpretation is a summary/composite from Conrey and others (2013), Terragraphics Environmental Engineering Inc., and Ralston Hydrologic Services (2013, p. 55), and the driller's log.

Note that Hooper and Webster (1982), Gulick (1994), and Bush and Garwood (2005) all show a small outcrop of Grande Ronde at nearby higher elevations along Brayton Road.

References Cited:


Section 8.0 City Yard Wells

8.1 Introduction

City Yard wells #1 and #2 were added to the project because drilling funds remained after the construction of the planned group of wells. The well locations, shown on Figure 2-1, was selected to test the hypothesis that the lower aquifer in the Palouse Basin is hydraulically connected to the South Fork of the Palouse River in the reach immediately downstream from downtown Pullman. This hypothesis is based in part on the belief that the Wanapum Formation is missing at this site and that the Grande Ronde Formation occurs directly under the surface sediments within the river valley. The wells are located on land owned by the City of Pullman that is adjacent to the South Fork of the Palouse River immediately downstream of downtown Pullman. Access to the wells is via Park Street west of State Street.

City Yard Well #1 was drilled to a depth of 180 feet and completed with a screen in the depth interval of 110 to 120 feet. Sufficient money remained in the WDOE project budget to drill an additional well at the same location. The decision was made to drill the second well to a greater depth in the Grande Ronde Formation to assess whether there is a vertical hydraulic gradient in this unit. City Yard Well #2 was drilled to a depth of 300 feet and completed with a screen in the depth interval of 280 to 290 feet. The wells are located about 10 feet apart.

The well locations are shown on Figure 2-1. Figure 8-1 is a photo of the drilling operation for City Yard Well #2 and Figure 8-2 shows the two completed wells.

8.2 Construction of City Yard Well #1

City Yard Well #1 was drilled to a depth of 180 feet through mostly basalt. Figure 8-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-18 feet: Topsoil/Loess: Mostly silt and clay; light brown to dark brown; some basalt gravel in the lower 3 feet.
- 18-100 feet: Basalt: gray to black, fine grained, very few vesicles in top 5 feet; weathered green and blue in upper 10 feet; chips are mixed with a lot of gray mud; mostly angular chips; water at 100 feet.
- 100-115 feet: Basalt: fine grained; red scoria in top 5 feet; abundant vesicles throughout; lots of large rounded clasts (up to 1.5-to 2-inches).
- 115-145 feet: Basalt: fine grained; mixture of black and red; vesicles in red segment; all angular chips.
- 145-180 feet: Basalt: dark gray; fine grained; smaller chips (approximately 1 mm to 1 cm average); angular chips; hole stability issues around 180 feet; end of hole.
Figure 8-1 Photo of the Drilling Operation for City Yard Well #2
Figure 8-2 Photo of City Yard Well Sites #1 and #2 After Completion
Figure 8-3 Driller Data for City Yard Well #1 from Resource Protection Well Report

<table>
<thead>
<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 3' Back Fill</td>
<td>3 - 17' Brown Clay</td>
<td></td>
</tr>
<tr>
<td>17 - 70' Black Basalt</td>
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<td></td>
</tr>
<tr>
<td>70 - 75' Basalt w/ Gray Silt</td>
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<td></td>
</tr>
<tr>
<td>75 - 82' Fract. Basalt 7 gpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>82 - 105 Black Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>105 - 145' Lg. Broken Basalt 50 gpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145 - 155' Red Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>155 - 180' Gray Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>180' Black Basalt</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Locking Well Cap
- +4 to -3' 6" Casing
- 0 to -2' Cement Cap
- -2 to 8' Holeplug
- -8 to 100' Aqua Guard
- -100 to 125' 10/20 Silica Sand
- -125 to 127' Pea Gravel
- -127 to 180' 3/8 Holeplug
- 10' .20 Slot PVC Screen
- 10 Centralizers every 40'
- End Cap
The following is a summary of the drilling methods used at different depth intervals.

- **0-18 feet**: 8-inch tri-cone bit used to drill through the surface sedimentary layer; 8-inch diameter casing driven to 18-foot depth.
- **18-180 feet**: 8-inch hammer bit used to complete open hole drilling through solid basalt; approximately 40 feet/hour.

The hole was drilled to 180 feet. The original target depth was around 200 feet. Around 180 feet there were borehole stability problems and the driller indicated that casing would be required to continue drilling. Dale Ralston of RHS and Robin Nimmer with TerraGraphics made the decision to terminate drilling at this depth, backfill the hole and install a screen at the last water-producing zone (Figure 8-3). This decision was supported by an analysis of a cutting sample that confirmed that basalt of the Grande Ronde Formation was penetrated by the borehole.

The well was completed as follows:

- The borehole in the depth interval of 135 to 180 feet was backfilled with bentonite chips.
- The borehole was backfilled with silica sand in the depth interval of 125 to 135 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 120 to 125 feet, slotted screen from 110 to 120 feet, and blank casing from 110 feet to land surface. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 101 to 125 feet. The sand pack extends from 9 feet above the top of the screen to 15 feet below the bottom.
- The borehole around the PVC casing was backfilled with bentonite slurry from 15 to 101 feet using a tremie pipe.
- The borehole was backfilled with bentonite chips from land surface to 15 feet.
- The temporary 8-inch diameter casing was removed during the last part of the seal installation process.
- A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad around the casing was poured. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.
8.3 Construction of City Yard Well #2

City Yard Well #2 was drilled to a depth of 300 feet through mostly basalt. Figure 8-4 shows a portion the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-18 feet: Topsoil/Loess: mostly silt and clay; light brown to dark brown; some basalt gravel in lower 3 feet.
- 18-95 feet: Basalt: gray to black; fine grained; very few vesicles in top 5 feet; weathered green and blue in upper 10 feet; chips are mixed with a lot of gray mud that gets darker with depth; mostly angular chips; water at 100 feet.
- 95-120 feet: Basalt: mixture of red and black; fine grained; vesicular; some large rounded clasts (1 or 2 inches).
- 120-140 feet: Basalt: lower part of last flow; small angular dark gray chips.
- 145-195 feet: Basalt: vesicular in top 5 feet; fine to medium grained; dark gray to black; chips more coarse up to about 1 inch in diameter in lower 15 feet; colonnade.
- 195-265 feet: Basalt: vesicles in top 20 feet; top 10 feet larger vesicles with lots of blue and green secondary minerals and weathering; mostly dark gray to black; medium grained or porphyritic; plagioclase crystals visible with naked eye; water at 200 feet; one 3-inch diameter pump couldn’t keep up with output; had to rent another pump.
- 265-300 feet: Basalt: all vesicular; some very large rounded clasts; black; fine grained; secondary mineral fill in vesicles; water at about 280 feet; two 3-inch diameter pumps could no longer keep up.

The following is a summary of the drilling methods used and different depth intervals.

- 8-inch tri-cone bit used to drill through the surface sedimentary layer with 8-inch diameter casing driven to 18-foot depth.
- An 8-inch hammer bit was used to complete open hole drilling through solid basalt from 18 to 300 feet, at approximately 40 feet/hour.

The well was completed as follows:

- The borehole was backfilled with silica sand from 295 to 300 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 290 to 295 feet, slotted screen from 280 to 290 feet, and blank casing from land surface to 280 feet. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 274 to 295 feet. The sand pack extends from 6 feet above the top of the screen to 10 feet below the bottom.
<table>
<thead>
<tr>
<th>Construction/Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; Locking Well Cap</td>
<td>0 - 3' Back Fill</td>
<td></td>
</tr>
<tr>
<td>+4 to -295' 2&quot; PVC</td>
<td>3 - 17' Brown Clay</td>
<td></td>
</tr>
<tr>
<td>+1 to 2' Cement</td>
<td>17 - 123' Black Med.Basalt</td>
<td></td>
</tr>
<tr>
<td>-1 to 10' 3/8 Holeplug</td>
<td>123 - 155' Broken Basalt</td>
<td></td>
</tr>
<tr>
<td>-1 to 274' Aquaguard</td>
<td>155 - 182' Basalt</td>
<td></td>
</tr>
<tr>
<td>274 to 300' 10' of .20 Slot PVC</td>
<td>182 - 188 Fract Basalt 100+gpm</td>
<td></td>
</tr>
<tr>
<td>Centralizers every 40'</td>
<td>188 - 221' Broken Basalt Layers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>221 - 268' Gray Basalt w/Silt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>268 - 278' Broken Basalt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>278 - 279' Void</td>
<td></td>
</tr>
<tr>
<td></td>
<td>279 - 300' Green Basalt</td>
<td></td>
</tr>
</tbody>
</table>

Figure 8-4 Driller Data for City Yard Well #2 from Resource Protection Well Report
Palouse Basin Monitoring Well Construction Program

- The borehole around the PVC casing from 15 to 274 feet was backfilled with bentonite slurry via a tremie pipe.
- The borehole from 0 to 15 feet was backfilled with bentonite chips.
- The temporary 8-inch diameter casing was removed during the last part of the seal installation process.
- A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad was poured around the casing. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 8-2 is a photo of the completed City Yard wells

8.4 Hydrogeologic Analysis

The hydrogeologic analysis of the City Yard wells is based on analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well construction.

Cutting samples from selected depth intervals from each of the City Yard wells were taken to the GeoAnalytical Laboratory at WSU for chemical analysis. Cutting samples from the following depth intervals were selected for analysis from City Yard Well #1 by Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory): 20-25 feet, 80-85 feet, 105-110 feet, 125-130 feet, and 175-180 feet. Samples from the following depth intervals were selected for analysis from City Yard Well #2: 25-30 feet, 80-85 feet, 100-105 feet, 120-125 feet, 190-195 feet, 200-205 feet, 220-225 feet, 260-265 feet, and 290-295 feet.

The rock chemistry results from City Yard Well #1 are identical for the same sample depths as Well #2. Since City Yard Well #2 is deeper, the rock chemistry results from cutting samples from this well are presented on Figure 8-5 and discussed below. The samples from 80 feet and above are from the N2 member of the Grande Ronde Formation. All of the deeper cutting samples starting at 100 feet are from the R2 member of the Grande Ronde Formation. The results of the rock chemistry analysis indicate that the Wanapum Formation is not present at the location of the City Yard wells within the valley of the South Fork of the Palouse River. This is the only location where one of the WDOE monitoring wells did not penetrate some portion of the Wanapum Formation.

Three water-producing zones were penetrated in the Grande Ronde Formation at 115 feet, 180 feet, and 280 feet, all in the R2 member. City Yard Well #1 is completed in the uppermost of the three zones. City Yard Well #2 is completed opposite the lowest of the three zones.

Water-level measurements taken during drilling in both wells have little value since the well—with the exception of the surface casing—was drilled open hole. The depth to water in both wells was about 90 feet when the wells were completed.
Figure 8-5 Hydrogeologic Logs for the City Yard Wells #1 and #2 Showing Rock Sample Depths for Well #2 and Well Construction Details (w = water-producing zones)
The surveyed elevation of the top of the steel casing is 2,336.79 feet for City Yard Well #1 and 2,336.95 feet for City Yard Well #2. The depth-to-water in the City Yard wells #1 and #2 were 88.92 feet and 90.12 feet, respectively, when data loggers were installed on November 20, 2012, for Well #1 and December 3, 2012, for Well #2 (Gregory, personal communication, 2012). This gives water-level elevations of 2,247.9 feet and 2,246.8 feet for City Yard wells #1 and #2, respectively. These data cannot be used to determine a vertical hydraulic gradient within the Grande Ronde Formation at this location because the measurements were not taken on the same day. The contact between the Wanapum and Grande Ronde Formations must have been higher than the top of the uppermost basalt unit at the City Yard site which is an elevation of approximately 2,314 feet.

In summary, the hydrogeologic conditions found in the City Yard site are unique relative to the WDOE network because the Wanapum Formation is absent at this location. City Yard Well #2 penetrated about 90 feet of the N2 member and about 180 feet of the R2 member of the Grande Ronde Formation. The water-level elevations in the City Yard wells are consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in the Section 9.0 of the report.

Section 9.0 Discussion of Results

9.1 Introduction

The purpose of WDOE monitoring well network is to gain an improved understanding of the lower aquifer within the Palouse Basin within Washington. Drilling and monitoring of these wells provides new information for the Basin. The aspects of the initial information results from logging the geologic section during drilling plus water-level measurements when the wells were completed are summarized in this section. Additional information will result from long-term water-level monitoring plus further hydrogeologic studies using the wells that may include water quality monitoring.

9.2 Hydrogeologic Analysis

Geochemical analysis of cutting samples from the seven monitoring wells constructed under the WDOE drilling project allows an improved understanding of the subsurface geology. The results of the geochemical analysis, presented in Table 9-1, include identification of unit, member, and formation. For example, the uppermost basalt layer in the Grange Well was the Lolo Unit of the Priest Rapids Member of the Wanapum Formation. One or both of the members of the Wanapum Formation (Priest Rapids and Roza) were penetrated in all the WDOE monitoring wells except for the two City Yard wells where the Wanapum Formation is absent. The Roza Member was penetrated under the Priest Rapids Member in the Grange, Flat Road, and Landfill wells. Six of the seven wells penetrated the N2 member overlying the R2 member of the Grande Ronde.
Table 9-1. Results of Geochemical Analysis of Drill Cuttings Samples

<table>
<thead>
<tr>
<th>Well</th>
<th>Depth (feet)</th>
<th>Unit</th>
<th>Member or Polarity</th>
<th>Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grange</td>
<td>45</td>
<td>Lolo</td>
<td>Priest Rapids</td>
<td>Wanapum</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td></td>
<td>Roza</td>
<td>Wanapum</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>155</td>
<td>Sentinel Bluffs</td>
<td>N2</td>
<td>Grande Ronde</td>
</tr>
<tr>
<td></td>
<td>195</td>
<td>Sentinel Bluffs</td>
<td>N2</td>
<td>Grande Ronde</td>
</tr>
<tr>
<td></td>
<td>220</td>
<td>Meyer Ridge</td>
<td>R2</td>
<td>Grande Ronde</td>
</tr>
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<td>Meyer Ridge</td>
<td>R2</td>
<td>Grande Ronde</td>
</tr>
<tr>
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<td>285</td>
<td>Meyer Ridge</td>
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<td>Grande Ronde</td>
</tr>
<tr>
<td></td>
<td>340</td>
<td>Meyer Ridge</td>
<td>R2</td>
<td>Grande Ronde</td>
</tr>
<tr>
<td></td>
<td>370</td>
<td>Meyer Ridge</td>
<td>R2</td>
<td>Grande Ronde</td>
</tr>
<tr>
<td></td>
<td>415</td>
<td>Meyer Ridge</td>
<td>R2</td>
<td>Grande Ronde</td>
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<td>Flat Road</td>
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<td>Lapwai</td>
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<td>Saddle Mountains</td>
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<td>Priest Rapids</td>
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<td>175</td>
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<td>460</td>
<td>Meyer Ridge</td>
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<tr>
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<td>Depth (feet)</td>
<td>Unit</td>
<td>Member or Polarity</td>
<td>Formation</td>
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<td>Sentinel Bluffs</td>
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<td>330</td>
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<td>N2</td>
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<td>R2</td>
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<td></td>
<td>260</td>
<td>Meyer Ridge</td>
<td>R2</td>
<td>Grande Ronde</td>
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</table>
Formation; the N2 member was not present at the Butte Gap Well. Six of the seven WDOE monitoring wells penetrated the R2 member; the Landfill Well was not drilled deep enough. See Conrey and others (2013 in preparation) for more detailed on the geochemical analysis.

As is shown on the well diagrams (Figures 3-4, 4-4, 5-4, 6-4, 7-4, and 8-5), all but two of the WDOE monitoring wells (Landfill and Butte Gap wells) are completed with the well screen opposite a water-producing zone within the Meyer Ridge Unit of the R2 member of the Grande Ronde Formation. The deepest cutting sample analyzed in the Butte Gap Well was identified as the Grouse Creek Unit of the R2 member which underlies the Meyer Ridge Unit. The deepest cutting sample analyzed in the Landfill Well was identified as the Sentinel Bluffs Unit of the N2 member of the Grande Ronde Formation. The screened interval in the Landfill Well may be opposite the flow contact between the bottom of the N2 member and the top of the underlying R2 member. Rick Conrey, (personal communication, 2013) theorized that the Sentinel Bluffs Unit (N2 member) tends to be about 80 feet thick, about the same depth below the formation contact in the Landfill Well. This flow thickness appears to fit the information gained from construction of the other WDOE monitoring wells.

Measurements of depth-to-water were obtained in all of the monitor wells on April 16, 2013. The water-level data reported on the hydrogeologic log figures were obtained at various times from September to December of 2012 when data loggers were installed. The April 2013 mass measurement allows comparison of water-level data between wells at the same time.

The well survey data allow the estimation of geologic and hydrologic elevations based on the results of the geochemical analysis, completion of the wells, and water-level measurements. Table 9-2 presents the following information for each of the monitoring wells:

1. the elevation of the top of the casing,
2. the depth-to-water measurement,
3. the water-level elevation,
4. the land elevation at the well,
5. the depth to the center of the screen,
6. the elevation of the center of the screen,
7. the depth to the contact between the Wanapum and Grande Ronde Formation,
8. the elevation of the formation contact,
9. the depth difference between the water-level elevation and the formation contact elevation, and
10. the depth of the center of the well screen below the top of the Grande Ronde Formation.
Table 9-2. Water-Level, Well Screen, and Formation Contact Data

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Top of Casing Elevation (feet)</th>
<th>Measurement Date</th>
<th>Depth to Water (feet)</th>
<th>Water Level Elevation (feet amsl)</th>
<th>Measurement Date</th>
<th>Depth to Water (feet)</th>
<th>Water Level Elevation (feet amsl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grange</td>
<td>2291.96</td>
<td>9/27/2012</td>
<td>35.2</td>
<td>2256.8</td>
<td>4/16/2013</td>
<td>38.18</td>
<td>2253.8</td>
</tr>
<tr>
<td>Flat Road</td>
<td>2479.73</td>
<td>9/27/2012</td>
<td>225.1</td>
<td>2254.7</td>
<td>4/16/2013</td>
<td>228.81</td>
<td>2250.9</td>
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<tr>
<td>Butte Gap</td>
<td>2513.63</td>
<td>10/8/2012</td>
<td>261.3</td>
<td>2252.4</td>
<td>4/16/2013</td>
<td>264.53</td>
<td>2249.1</td>
</tr>
<tr>
<td>Banner Road</td>
<td>2439.24</td>
<td>10/26/2012</td>
<td>192.7</td>
<td>2246.6</td>
<td>4/16/2013</td>
<td>192.62</td>
<td>2246.6</td>
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<tr>
<td>Landfill</td>
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<td>11/20/2012</td>
<td>118.6</td>
<td>2252.6</td>
<td>4/16/2013</td>
<td>117.64</td>
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<td>City Yard #1</td>
<td>2336.79</td>
<td>11/20/2012</td>
<td>88.9</td>
<td>2247.9</td>
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<table>
<thead>
<tr>
<th>Well Name</th>
<th>Land Elevation (feet amsl)</th>
<th>Screen Depth (feet)</th>
<th>Screen Elevation (feet amsl)</th>
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<tr>
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<td>350</td>
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<td>495</td>
<td>1983</td>
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<td>2512</td>
<td>472</td>
<td>2040</td>
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<td>Banner Road</td>
<td>2437</td>
<td>418</td>
<td>2019</td>
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<td>Landfill</td>
<td>2369</td>
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<td>2046</td>
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<td>City Yard #1</td>
<td>2332</td>
<td>115</td>
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<table>
<thead>
<tr>
<th>Well Name</th>
<th>Wanapum/Grande Ronde Contact Depth (feet)</th>
<th>Elevation of Contact (feet amsl)</th>
<th>Water Level (2012 data) - Contact (feet)</th>
<th>Contact-Screen (feet)</th>
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<tbody>
<tr>
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<td>2170</td>
<td>87</td>
<td>230</td>
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<td>2228</td>
<td>27</td>
<td>245</td>
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<td>Butte Gap</td>
<td>323</td>
<td>2189</td>
<td>64</td>
<td>149</td>
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<td>Banner Road</td>
<td>240</td>
<td>2197</td>
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<td>2119</td>
<td>133</td>
<td>73</td>
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<td>City Yard #1</td>
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<td>2314</td>
<td>-66</td>
<td>97</td>
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<td>18</td>
<td>2314</td>
<td>-67</td>
<td>267</td>
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</table>
The following observations are based on an analysis of the information presented in Table 9-2.

- The elevation of the top of the Grande Ronde Formation in the City Yard wells (less than 2,314 feet) is more than 85 feet higher than any of the other wells (Figure 9-1). Of the remaining wells, the contact elevation at the Landfill Well is lowest at 2,119 feet with the highest at 2,228 feet at the Flat Road Well. The higher contact elevation at the City Yard wells is consistent with the postulated presence of an anticline and/or fault in this area (Conrey and Wolff, 2010).

- The water-level elevation in the monitoring wells from depth-to-water measurements taken on April 16, 2013, varies from a low of 2,246.4 feet in the City Yard wells #1 and #2 to a height of 2,253.8 feet in the Grange Well (Figure 9-2). The water-level elevation in the wells tends to increase with greater distance from Pullman. The Banner Road Well has a water-level elevation only about 0.2 feet higher than the City Yard wells even though it is located about three miles north of the center of the city. The Butte Gap Well has the next highest water-level elevation but is located about nine miles northeast of Pullman. This Butte Gap Well may also be impacted by production wells operated by the City of Palouse. The water-level elevation in the Flat Road Well is about 4.5 feet higher than the City Yard wells but is almost 3 feet lower than the Grange Well.

- The elevations of the center of the screen in the monitoring wells range from 1,940 feet at the Grange Well to 2,217 feet at the City Yard Well #1. The remaining wells have screen elevations in the range of 1,983 to 2,047 feet. Three of the wells have a screen elevation in the range of 2,040 to 2,047 feet.

- The difference between the water-level elevation (measured in 2012) and the formation contact elevation provides insight into the hydrogeologic setting in the basin. The ground-water levels are above the contact between the Wanapum and Grande Ronde Formations in all but the City Yard wells. The greatest height of water above the contact is in the Landfill Well (133 feet) with the least in the Flat Road Well (27 feet). The water levels in the City Yard wells are more than 66 feet below the top of the formation; the exact distance cannot be determined since the Wanapum Formation is absent at this site.

- All of the wells were constructed to penetrate into the Grande Ronde Formation. Table 9-2 shows that the Landfill Well has the least penetration into the Grande Ronde Formation (73 feet). This is also the only well that does not penetrate into the R2 member of the Grande Ronde Formation.

- There is no information to indicate that there is a difference in water-level elevation between the water-producing zones in the N2 member and water-producing zones in the R2 member of the Grande Ronde Formation.

Some information is available on the downward hydraulic gradient between the upper aquifer in the Wanapum Formation and the lower aquifer in the Grande Ronde Formation for five of the seven WDOE monitoring wells (water levels are higher in the upper
DOE FLAT ROAD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 29, 2016

Well Log ID: 873923   Elev (ft): 2479.61   Depth (ft): 520   7.5’ Quad: Ewartsville

Latitude: 46.705227   Longitude: -117.261618   decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 10, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
Flat Road, Pullman, Wash., on south side; 0.3 mi east of intersection with Wawawai-Pullman Road

Location Method:
Latitude, longitude, and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013). PLSS incorrect on driller’s report.

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<th>GEOLOGIC UNITS — DESCRIPTION</th>
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<td>Overburden</td>
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<tr>
<td>Asotin Member</td>
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<td>Basalt, fine-grained</td>
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</tr>
<tr>
<td>Basalt, medium-grained, microphenocrysts</td>
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</tr>
<tr>
<td>Wanapum Basalt</td>
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</tr>
<tr>
<td>Priest Rapids Member</td>
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<td>Basalt of Lolo</td>
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<td>Basalt, vesicular</td>
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<td>Basalt, medium-grained</td>
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<td>Latah Formation</td>
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<td>Wanapum Basalt</td>
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<td>Roza Member</td>
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<td>Basalt, plagioclase phenocrysts (up to 1 cm)</td>
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Latah Formation
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<th>Description</th>
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<tr>
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<td>Sentinel Bluffs Member</td>
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<td>Basalt, fine-grained</td>
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<td>Sediments of Moscow</td>
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<td>Clay, blue, with weathered basalt chips</td>
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<td>Basalt, fine-grained</td>
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</table>

**Comments:**

Stratigraphic picks are from Conrey and others (2013). Geologic interpretation is a summary of data from Conrey and others (2013) and Terragraphics Environmental Engineering Inc., and Ralston Hydrologic Services (2013).
**References Cited:**


Please print, sign and return to the Department of Ecology

RESOURCES PROTECTION WELL REPORT
(SUBMIT ONE WELL REPORT PER WELL INSTALLED)
Construction/Decommission ("X" in box)
X Construction

ORIGINAL INSTALLATION Notice of Intent Number:

Consulting Firm
Unique Ecology Well ID Tag No. BBH-471

WELL CONSTRUCTION CERTIFICATION: I, the contractor, accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

Driller [ ] Engineer [ ] Trainee
Name (Print Last, First Name) Leslie, Jim
Driller/Engineer/Trainee Signature
Driller or Trainee License No. 2871

If trainee, licensed driller's Signature and License Number:

Type of Well ("X" in box)
X Resource Protection

Property Owner: City of Pullman
Site Address: E. of Intersection Wawawai-Pullman Rd., Flat Rd.
City Pullman
County Whitman
Location SW1/4-1/4 SW1/4 Sec 20 Twn 14N R 44E
EWM [ ] or WWM [ ]
Lat/Long (s, t, r) still REQUIRED
Lat Deg Min Sec
Long Deg Min Sec

Tax Parcel No. N/A in Right of Way
Cased or Uncased Diameter 8"
Static Level -229'

Work/Decommission Start Date 9/18/12
Work/Decommission Completed Date 9/27/12

Construction Design

Well Data

Formation Description

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<th>Formation Description</th>
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</thead>
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</tr>
<tr>
<td>2&quot; PVC Sch. 80</td>
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<td>Centralizers every (12)</td>
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<tr>
<td>3/8 holeplug</td>
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<tr>
<td>3/8 Holeplug</td>
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<tr>
<td>460</td>
<td>275 - 285 Large Broken Basalt</td>
<td></td>
</tr>
<tr>
<td>540</td>
<td>285 - 335 Soft Basalt</td>
<td></td>
</tr>
<tr>
<td>620</td>
<td>335 - 350 Gray Basalt w/Lg. Rounds</td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>350 - 395 Honey combed red Basalt</td>
<td></td>
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<tr>
<td>780</td>
<td>Very fractured w/ 200+gpm</td>
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</tr>
<tr>
<td>860</td>
<td>395 - 491 Black Med. Basalt</td>
<td></td>
</tr>
<tr>
<td>940</td>
<td>491 - 500 Red/Black Soft Basalt</td>
<td></td>
</tr>
<tr>
<td>1020</td>
<td>500 - 520 Black Basalt</td>
<td></td>
</tr>
</tbody>
</table>

SCALE: 1" = PAGE OF

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approximately north of the WDOE Grange Well is slightly lower than the wells completed in the Grande Ronde Formation (WDOE Grange Well) and the Wanapum Formation (Grange Hall well). The water-level elevation in the Grange Well is consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in Section 9.0 of the report.

Section 4.0 Flat Road Well

4.1 Well Construction

The Flat Road Well is located along the south side of the right-of-way of Flat Road about 1,500 feet east of the intersection with the Pullman–Wawawai Road. Figure 2-1 shows the well location. Figure 4-1 is a photo of the drilling operation at the Flat Road Well site and Figure 4-2 shows the completed well. Flat Road has a maintained gravel surface and is open year around.

The bid documents included the following prediction of the geologic sequence that would be penetrated by the Flat Road Well: 1) about 50 feet of sediment, about 350 feet of basalt, about 80 feet of sediment, and about 100 feet of basalt for a total depth of about 580 feet. This information was developed from geologic cross sections and logs from existing nearby wells and was used for planning purposes.

The Flat Road Well was drilled to a depth of 520 feet through mostly basalt. Figure 4-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-17 feet: Topsoil/Loess; mostly silt and clay; dark brown to black.
- 17-30 feet: Basalt; dark gray to black; fine grained; small chips; water at 19 feet.
- 30-60 feet: Basalt; light gray; medium grained; olivine and plagioclase crystals visible with 10X hand lens (microphenocrysts); some blue/green weathering near top.
- 60-180 feet: Basalt; dark gray to black; medium grained; plagioclase and olivine visible with hand lens; abundant vesicles in top 15-20 feet; finer grain size with depth with plagioclase phenocrysts throughout; about 5 gpm at 83 feet and about 25 gpm at 140 feet.
- 180-185 feet: Basalt; weathered; dark brown and red; vesicular; small chips.
- 185-195 feet: Sedimentary interbed; shale, blue/green; subvitreous; mixed with small fragments of brown weathered basalt.
- 195-250 feet: Basalt; dark gray to black, mostly fine grained with some larger plagioclase phenocrysts (up to 1 cm); slightly vesicular near top; chips are angular to subangular; some green weathering in lower 10 feet; angular chips; smaller at top coarsening down; small evidence (shale) of a thin interbed at approximately 240 feet.
Figure 4-1 Photo of the Drilling Operation at the Flat Road Well Site
Figure 4-2 Photo of the Flat Road Well Site After Completion
## Figure 4-3 Driller Data for Flat Road Well from Resource Protection Well Report

<table>
<thead>
<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; Steel casing w/ locking cap +3 -2</td>
<td>2&quot; PVC Sch. 80 +3 - 505'</td>
<td>0 - 17 Brown Clay</td>
</tr>
<tr>
<td>Centralizers every (12) 40'</td>
<td>10' .20 slot PVC Screen 490' - 500'</td>
<td>17 - 19 Black Med. Basalt</td>
</tr>
<tr>
<td>3/8 holeplug 0' - 2'</td>
<td>Bentonite Grout -2' - 170'</td>
<td>19 - 20 Broken Basalt 1gpm</td>
</tr>
<tr>
<td>8&quot; Borehole</td>
<td>8&quot; Borehole</td>
<td>85 - 181 Black Med. Basalt</td>
</tr>
<tr>
<td>3/8 holeplug</td>
<td>3/8 holeplug</td>
<td>181 - 200 Brown Soft Basalt</td>
</tr>
<tr>
<td>Aqua Guard Grout</td>
<td>Aqua Guard Grout</td>
<td>200 - 240 Black Med. Basalt</td>
</tr>
<tr>
<td>2&quot; PVC screen</td>
<td>2&quot; PVC screen</td>
<td>240 - 275 Brown Soft Basalt</td>
</tr>
<tr>
<td>10/20 Silica Sand</td>
<td>10/20 Silica Sand</td>
<td>275 - 285 Large Broken Basalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>285 - 335 Soft Basalt</td>
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<td></td>
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<td>395 - 491 Black Med. Basalt</td>
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<td></td>
<td></td>
<td>491 - 500 Red/Black Soft Basalt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500 - 520 Black Basalt</td>
</tr>
</tbody>
</table>
- 250-330 feet: Basalt; gray; fine to medium grained; subangular chips; all fairly coarse chips (approximately 0.5- to 1-cm); about 100 gpm at 275 feet.
- 330-355 feet: Sedimentary interbed; blue shale and weathered basalt mixture; very small (1 or 2 mm) chips; subrounded chips above pebbly black/brown/green weathered basalt; some vesicles filled with blue clay water; about 200 gpm at 350 feet.
- 355-385 feet: Basalt; mostly red, fine grained; all badly weathered; mostly vesicular; lots of blue/green clay minerals.
- 385-400 feet: Basalt; about half gray and half light-red; fine grained; medium sized chips; subangular.
- 400-475 feet: Basalt; gray to black; fine to medium grained; no phenocrysts; chips are angular to subangular; faint hints of shale interbeds throughout (brown shale fragments).
- 475-490 feet: Basalt; black and red; medium grained; some vesicles with blue/green fill.
- 490-500 feet: Basalt; flow top; red scoria on top of black scoria; all vesicular; small chips; water yield was large likely greater than 200 gpm.
- 500-520 feet: Basalt; flow top; red scoria on top of black scoria; all vesicular; small chips; water yield was large likely greater than 200 gpm. 

Note that the log prepared by the field geologist indicates the presence of sedimentary interbeds in the depth intervals of 185 to 200 feet and 330 to 355 feet. The drillers log shown in Figure 4-3 has the 181- to 200-foot interval listed as “brown soft basalt” and the 335- to 350-foot interval listed as “grey basalt with large rounds.” Both of these intervals likely consist of weathered basalt.

The following is a summary of the drilling steps used in the construction of the Flat Road Well.

- An 8-inch diameter temporary steel casing was advanced through the surface sediment to a depth of 17 feet. A tri-cone bit was used for this portion of the well.
- An 8-inch diameter open hole was drilled through mostly basalt using an air hammer bit to a depth of 520 feet. A sump was constructed to capture water generated during drilling. A gasoline powered pump was used to remove water from the sump and convey it via a hose across Flat Road to the channel of Wilber Creek.

The following is a list of the steps involved in the completion of the Flat Road Well.

- The borehole was backfilled with 10-20 silica filter sand from 505 to 520 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 500 to 505 feet, slotted screen from 490 to 500 feet and blank casing from land surface to 490 feet. The
casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.

- The borehole was backfilled with 10-20 silica filter sand from 480 to 505 feet. The sand pack extends from 10 feet above the screen to 20 feet below the screen.
- The borehole surrounding the PVC casing was backfilled with bentonite slurry (AquaGuard) from 426 to 480 feet via a tremie pipe.
- The borehole surrounding the PVC casing was backfilled with holeplug bentonite chips from 288 to 426 feet because of excessive loss of the bentonite slurry.
- The borehole surrounding the PVC casing was backfilled with bentonite slurry (AquaGuard) from 214 to 288 feet via a tremie pipe.
- The borehole surrounding the PVC casing was backfilled with holeplug bentonite chips from land surface to 214 feet, again because of excessive loss of the bentonite slurry.
- The temporary 8-inch diameter casing was removed during the last part of the seal installation process.
- A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad was poured around the casing. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 4-2 is a photo of the completed well.

**4.2 Hydrogeologic Analysis**

The hydrogeologic analysis of the Flat Road Well is based on analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well construction. The information gained from well construction is considerably different than the initial conceptual geologic model.

Cutting samples from selected depth intervals from the Flat Road Well were taken to the GeoAnalytical Laboratory at WSU for chemical analysis. Cutting samples from the following depth intervals were selected for analysis by Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory): 50-55 feet, 100-110 feet, 175-180 feet, 200-205 feet, 245-250 feet, 250-255 feet, 320-345 feet, 390-395 feet, 420-425 feet, 460-465 feet, and 500-505 feet.

The rock chemistry analysis of the rock chips indicates the following basalt stratigraphy (also illustrated in Figure 4-4). The sample from 50 to 55 feet is from the Wilbur Creek Member of the Saddle Mountains Formation. The next four samples are from the Wanapum Formation with the upper two from the Priest Rapids Member and the next two from the Roza Member. All of the deeper cutting samples starting at 250 feet are from the Grande Ronde Formation. The samples from 250 to 255 feet and 320 to 325
Figure 4-4  Hydrogeologic Log for the Flat Road Well
Showing Rock Sample Depths and Well Construction Details
(w = water-producing zones)
feet are from the N2 member. The samples below 390 feet are from the R2 member. The results of the rock chemistry analysis indicate that the likely contact between the Wanapum and Grande Ronde formations is at a depth of 250 feet (see Figure 4-4).

The larger water producing zones in the Flat Road Well were at depths of 275 feet, 350 feet, and 490 feet. All three of these zones are within the Grande Ronde Formation. Smaller water producing zones were penetrated within the Wanapum Formation.

Meaningful measurements of depth-to-water were difficult to obtain from the Flat Road Well because of falling water within the open borehole below the 8-inch diameter surface casing. The following depth-to-water measurements were taken prior to starting drilling in the morning: 85 feet at a borehole depth of 320 feet and 33 feet at a borehole depth of 500 feet. These measurements likely reflect falling water within the borehole. The measured depth to water after well completion was about 226 feet below the top of casing.

A water-well report could not be located for the domestic well that is located about 300 feet west of the Flat Road Well. However, a water well report is available for a domestic well that is located (based on the legal description of T14N R44E section 10 NWSW) about 1,400 feet west of the Flat Road Well. The well was constructed for Kerry Hipps in 1996 (Figure 4-5). There is only one house in this general area. Thus, the location of the well probably is reasonably accurate. The well has a reported depth of 305 feet and a reported depth to water of 150 feet. Elevation estimates obtained from a digital topographic map indicate that the domestic well elevation is about 60 feet higher than the Flat Road Well. Based on the elevation estimates, the bottom of the domestic well is very near the contact between the Wanapum Formation and the Grande Ronde Formation as shown on Figure 4-4. Given the estimated elevation difference, the water level elevation for the Hipps well would be about 140 feet higher than the water-level elevation in the Flat Road Well. This water-level difference is consistent with the downward vertical gradient between the upper aquifer in the Wanapum Formation and the lower aquifer in the Grande Ronde Formation within the Pullman-Moscow portion of the Palouse Basin.

The surveyed elevation of the top of the casing at the Flat Road Well is 2,479.73 feet. The depth to water in the Flat Road Well was 225.06 feet when the data logger was installed on September 27, 2012 (Gregory, personal communication, 2012). This gives a water-level elevation of 2,254.7 feet for the aquifer in the Grande Ronde Formation at the Flat Road Well site. The contact between the Wanapum and Grande Ronde Formations is at a depth from land surface of about 250 feet in the Flat Road Well. The elevation of the contact is about 2,228 feet.
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Kerry Hipps  
**Address:** R.T. 2 Box 432 Pullman WA 99163

**LOCATION OF WELL:** Whitman County  
**Street Address:** 100' off Wawawai Rd

**STREET ADDRESS OF WELL (or nearest address):**

**PROPOSED USE:  
- Domestic  
- Irrigation  
- Industrial  
- Municipal  
- Dwater  
- Test Well  
- Other**

**TYPE OF WORK:  
- Owner's number of well (if more than one):**

**DIMENSIONS:**
- Diameter of well: 8 inches  
- Feet of completed well: 305'

**CONSTRUCTION DETAILS:  
- Diameter: 8"  
- Depth: 305'**

**Perforations: Yes x No  
- Type of perforator used: Skill Saw  
- Size of perforations: 8 x 1/4 in.  
- Perforations from: 285 ft. to 305 ft.**

**Screen: Yes x No  
- Manufacturer's Name:**

**Gravel packed:** Yes x No  
- Size of gravel:**

**Surface seal: Yes x No:**
- Material used in seal: Bentonite  
- Depth of strata:**

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level  
- Was a pump test made? Yes x No  
- Yield:**

**WELL CONSTRUCTOR CERTIFICATION:**

I, [NAME] [PERSON, FIRM, OR CORPORATION], have constructed or accepted responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my knowledge and belief.

**NAME:** [NAME]  
**Address:** R.T. 2 Box 615 Gonzgol, WA 83530  
**License No:** [License No]  

**Dated:** [Date]  
**WELL DRILLER:** [WELL DRILLER]  
**License No:** [License No]
In summary, the hydrogeologic conditions found in the Flat Road Well site are considerably different than what was anticipated based on data from wells mostly located to the north and northeast as described in TerraGraphics and RHS (2012). The sedimentary unit believed equivalent to the Vantage unit is much thinner (5 feet or less) than was postulated (about 80 feet). The downward vertical hydraulic gradient present between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation) that is typical of the Pullman-Moscow portion of the Palouse Basin is present at the Flat Road Well. The water-level elevation in the Flat Road Well is consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. It is interesting that the water-level elevation in the Flat Road Well is several feet lower than the water-level elevation in the Grange Well. This topic is addressed in more detail in Section 9.0 of the report.

Section 5.0  Butte Gap Well

5.1 Well Construction

The Butte Gap Well is located along the west side of the railroad right-of-way and also adjacent to L. West Road. Figure 2-1 shows the well location. Figure 5-1 is a photo of the drilling operation at the Butte Gap Well site and Figure 5-2 shows the completed well. L. West Road does not have a maintained gravel surface and is closed during winter and spring months.

The bid documents included the following prediction of the geologic sequence that would be penetrated by the Butte Gap Well: 1) about 20 feet of sediment, 2) about 150 feet of basalt, 3) about 250 feet of sediment including sand, and 4) about 100 feet of basalt for a total depth of about 520 feet. This information was developed from geologic cross sections, logs from existing nearby wells, and a surface geophysical analysis and was used for planning purposes.

The Butte Gap Well was drilled to a depth of 485 feet through surface sediments, an upper basalt unit, a thick sedimentary interbed, and into a lower basalt unit. Figure 5-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-5 feet: Topsoil: dark brown to black silt and clay.
- 5-20 feet: Loess: brown silt and clay.
- 20-40 feet: Clay and gravel mix: clay is light brown; gravel is weathered basalt; small amount of sand.
- 40-60 feet: Basalt: highly weathered (red/green/brown); rounded fragments.
- 60-140 feet: Basalt: coarse grained; dark gray to black; large visible plagioclase crystals; some brown/green weathering throughout; vesicles in top 10 feet; chips are angular to subangular.
DOE GRANGE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 30, 2016

Well Log ID: 873925  Elev (ft): 2291.94  Depth (ft): 421  7.5’ Quad: Ewartsville

Latitude: 46.704372  Longitude: -117.30541  decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 17, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
Ewartsville Road, Pullman, Wash., on northeast side, southeast of intersection with Kamerrer Road.

Location Method:
Latitude, longitude, and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013); Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
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</tr>
<tr>
<td>Soil</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay and silt, brown</td>
<td>5 – 40</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>40 – 57</td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, plagioclase phenocrysts</td>
<td>57 – 90</td>
</tr>
<tr>
<td>Basalt, plagioclase phenocrysts, vesicular in top 20 ft</td>
<td>90 – 120</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray and red</td>
<td>120 – 125</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, fine-grained, vesicular</td>
<td>125 – 145</td>
</tr>
</tbody>
</table>

419
Basalt, fine-grained 145 – 210

R2 magnetostratigraphic unit
Meyer Ridge Member
- Basalt, fine-grained, vesicular 210 – 240
- Basalt, scoria, red 240 – 245
- Basalt 245 – 255
- Basalt, scoria 255 – 260
- Basalt, medium-grained 260 – 300

Latah Formation
Sediments of Moscow
- Sand, fine-grained 300 – 305

Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member
- Basalt, some brown weathered pieces 305 – 345
- Basalt, scoria, red 345 – 365
- Basalt, fine-grained 365 – 421

Comments:
Stratigraphic picks are from Conrey and others (2013). Geologic interpretation is a summary of data from Conrey and others (2013) and Terragraphics Environmental Engineering Inc., and Ralston Hydrologic Services (2013, p. 9–13).
References Cited:


RESOURCES PROTECTION WELL REPORT
(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)
X Construction
□ Decommission

ORIGINAL INSTALLATION Notice of Intent Number:

Consulting Firm

Unique Ecology Well ID Tag No. BBH-470

WELL CONSTRUCTION CERTIFICATION: I, [name], have constructed and/or accept responsibility for the construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

Driller □ Engineer □ Trainee
Name (Print Last, First Name) J. Leslie, Jim
Driller/Engineer/Trainee Signature

If trainee, licensed driller’s Signature and License Number:

Type of Well ("x" in box)
X Resource Protection
□ Geotech Soil Boring

Property Owner City of Pullman
Site Address Rt. of Way Ewartsville Rd - Grange Site
City Pullman County Whitman
Location NW 1/4-1/4 NW 1/4 Sec 17 Twn 14N R 44E
EWM □ or WWM □

Lat/Long (s, t, r) Lat Deg Min Sec
still REQUIRED Long Deg Min Sec

Tax Parcel No. N/A Rt. of way

Cased or Uncased Diameter 8" Static Level 35'

Work/Decommission Start Date 9/4/12
Work/Decommission Completed Date 9/18/12

Construction Design

Well Data

Formation Description

6" Well Casing +3 to 3'
2" PVC sch. 80 +3 to 360'
10/.20 slot PVC Screen -345 to -355'
Centralizers every 40'
Cement 0 to 3'
Bentonite Grout -5 to 340'
10/20 Silica Sand -350 to 365'
Pea Gravel -365 to 370'
3/8 Holeplug -370 to 421'

0 - 3 Top Soil
3 -33 Tan Clay
33-55 Black Med. Basalt
55-60 Fractured Basalt w/10gpm
60-77 Black Basalt
77-79 Fractured Basalt w/20 gpm
79-210 Black Basalt
210-213 Fractured Basalt w/50+gpm
213-245 Black Basalt
245-250 Broken Red Basalt w/100 +gpm
250-345 Black Basalt
345-356 Red Broken Basalt
356-421 Black Basalt

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column provides the top-of-casing elevations. The elevation of static water level was calculated for each well using this information.

Section 3.0 Grange Well

3.1 Well Construction

The Grange Well is located within the north side of the right-of-way of Ewartsville Road immediately east of the intersection with Kammerrer Road. Figure 2-1 shows the well location. Figure 3-1 is a photo of the drilling operation at the Grange Well site and Figure 3-2 shows the completed well. Ewartsville Road has a maintained gravel surface and is open year around.

The bid documents included the following prediction of the geologic sequence that would be penetrated by the Grange Well: 50 feet of sediment, 220 feet of basalt, 80 feet of sediment, and 100 feet of basalt for a total estimated depth of about 450 feet. This information was developed from geologic cross sections and logs from existing nearby wells and was used for planning purposes.

The Grange Well was drilled to a depth of 421 feet through mostly basalt. Figure 3-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-5 feet: Topsoil; mostly silt and clay; dark brown to black.
- 5-40 feet: Loess; brown to dark brown silt and clay; some basalt gravel in bottom 10-15 feet (25- to 40-foot depth); increasing moisture with depth; there may have been a sampling error as the 8-inch diameter temporary surface casing hit refusal/rock at 33 feet; samples show silt to 40 feet.
- 40-55 feet: Basalt; light gray to gray; fine grained; sparse small vesicles; coarse chips (up to 3/4 to 1 inch).
- 50-90 feet: Basalt; gray to dark gray; fine/medium grained; some visible olivine and plagioclase phenocrysts (1-2 millimeters[mm]); vesicles in upper 5-10 feet; smaller chips than previous interval (up to 0.5-inch); water at 55 feet.
- 90-120 feet: Basalt; dark gray to black; abundant vesicles in top approximate 20 feet; olivine (1-3 mm) and plagioclase (up to 4 mm) phenocrysts; some gray/green and blue/green alteration and weathering in chips.
- 120-125 feet: Clay; interbed; dark gray and red; dull with some small pieces of basalt.
- 125-210 feet: Basalt; light gray to dark gray; mostly fine grained; vesicles in upper 20 feet; some chips show secondary weathering and clay mineralization; mostly massive.
Figure 3-1 Photo of the Drilling Operation at the Grange Well Site
Figure 3-2 Photo of the Grange Well Site After Completion
<table>
<thead>
<tr>
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<td>6&quot; Well Casing +3 to 3'</td>
<td>0 - 3 Top Soil</td>
</tr>
<tr>
<td></td>
<td>2&quot; PVC sch. 80 +3 to 360'</td>
<td>3 -33 Tan Clay</td>
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<td>10' .20 slot PVC Screen -345 to -355'</td>
<td>33-55 Black Med. Basalt</td>
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<td></td>
<td>Centralizers every 40'</td>
<td>55-60 Fractured Basalt w/10gpm</td>
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<td>Cement 0 to 3'</td>
<td>60-77 Black Basalt</td>
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<td></td>
<td>Bentonite Grout -5 to 340'</td>
<td>77-79 Fractured Basalt w/20 gpm</td>
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<td></td>
<td>10/20 Silica Sand -350 to 365'</td>
<td>79-210 Black Basalt</td>
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<tr>
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<td>Pea Gravel -365 to 370'</td>
<td>210-213 Fractured Basalt w/50+gpm</td>
</tr>
<tr>
<td></td>
<td>3/8 Holeplug -370 to 421'</td>
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<tr>
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<td>245-250 Broken Red Basalt w/100+gpm</td>
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<td></td>
<td></td>
<td>356-421 Black Basalt</td>
</tr>
</tbody>
</table>

Figure 3-3 Data for the Grange Well from the H2O Well Services Resource Protection Report
• 210-240 feet: Basalt; dark gray to black; fine grained; chips coarser with depth (approximately 4 mm average at top up to approximately 2 centimeters [cm] at bottom); vesicular throughout with blue clay fill in vesicles and some red weathering.

• 240-255 feet: Basalt; top 5 feet red scoria over gray basalt; fine to medium grained.

• 255-300 feet: Basalt; scoria (255 to 260 feet) on top of gray; medium grained basalt; some plagioclase visible with 10X hand lens; some sparse vesicles in top 20 feet; switched from hand basket sampling method (no fines) to bucket sampling method at 260 feet (catches all fines).

• 300-305 feet: Interbed; fine sand; mostly quartz with some lithics; still basalt chips in sample but possible mixing within 5-foot interval (interbed may be thinner than 5 feet).

• 305-345 feet: Basalt; dark gray to black, medium grained; some chips show brown weathering.

• 345-365 feet: Scoria; red, medium grained; large chips (0.75-1 inch); green vesicle fill; flow top; water.

• 365-421 feet: Basalt; dark gray to black; fine grained, hard.

The following is a summary of the drilling steps used in construction of the Grange Well.

• A section of 8-inch diameter temporary steel casing was advanced through the surface sediment to a depth of 33 feet. A tri-cone bit was used for this portion of the well.

• An 8-inch diameter open hole was drilled through mostly basalt using an air hammer bit to a depth of 260 feet. A small amount of water (10 to 20 gallons per minute [gpm]) was encountered in the depth ranges of 55 to 60 feet and 77 to 79 feet. An estimated 50+ gpm was yielded from the depth range of 210 to 213 feet. A large yield (100+ gpm) was encountered in the depth range of 245 to 250 feet. Water generated during drilling was discharged into a grass-covered area via a system of ditches constructed by the drilling crew. The objective was to spread the water so it would infiltrate in the grassy area owned by the Grange and not flow onto the nearby plowed farm field.

• The drilling procedure was changed at a depth of 260 feet because of caving conditions and excessive water production. An 8-inch diameter ring-type under-reamer hammer bit was used to construct the borehole and advance 6-inch diameter temporary steel casing. The casing was used to stabilize the hole and to attempt to lessen the amount of water that was being air pumped during drilling. At a depth of 300 feet, the casing was pulled back and five 50-pound bags of bentonite “hole plug” were poured down the well in an attempt to limit air pumping of water believed to originate dominantly from the 245- to 250-foot interval. The drilling and casing advancement continued to a depth of 350 feet.
An additional major water producing zone was encountered at a depth of about 350 feet. Five additional 50-pound bags of bentonite “hole plug” were placed in the well at a drilling depth of 380 feet to help seal around the 6-inch diameter steel casing.

- After driving off the disposable ring portion of the bit, a 5.5-inch diameter hammer bit was used to drill an open hole in the basalt to a depth of 421 feet. At this time, water discharging from the well during drilling started seeping onto a nearby farm field. Guy Gregory of WDOE and Dale Ralston of RHS were on site and jointly decided to stop drilling and complete the well opposite the last water producing zone (345 to 355 feet). This decision was supported by a single lab analysis of rock chemistry that indicated the basalt in the lower portion of the well is part of the Grande Ronde Formation.

The following is a list of the steps involved in the completion of the Grange Well.

- The borehole was backfilled with bentonite “hole plug” in the depth range of 373 to 421 feet.
- The borehole was backfilled with gravel from 363 to 373 feet.
- The borehole was backfilled with 10-20 silica filter sand from 361 to 363 feet.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing from 356 to 361 feet with a cap, slotted screen from 346 to 356 feet, and blank casing from land surface to 346 feet. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole was backfilled with silica filter sand from 339 to 361 feet. The sand pack extended from 5 feet above the top of the screen to 7 feet below the bottom of the screen.
- The borehole surrounding the PVC casing was backfilled with bentonite slurry (AquaGuard) from land surface to 339 feet pumped in via a tremie pipe. The temporary 6-inch diameter surface casing was removed during the grouting process. The temporary 8-inch diameter surface casing was also removed.
- A short section of 6-inch diameter steel casing was installed around the 2-inch PVC casing at land surface and a concrete pad around the casing was poured. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 3-2 is a photo of the completed well.

3.2 Hydrogeologic Analysis

The hydrogeologic analysis of the Grange Well is based on visual analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well
construction. The information gained from well construction is considerably different than the initial conceptual geologic model.

The field geologist brought the cutting samples from selected depth intervals from the Grange Well to the GeoAnalytical Laboratory at WSU for chemical analysis. Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory) selected the cutting samples for analysis from the following depth intervals: 40-50 feet, 70-75 feet, 100-105 feet, 155-160 feet, 195-200 feet, 240-245 feet, 285-290 feet, 340-345 feet, 370-375 feet, and 415-520 feet. Conrey and others (2013 in preparation) describe the chemical analysis procedures.

The rock chemistry analysis of the rock chips indicates the following basalt stratigraphy (also shown on Figure 3-4). The upper three samples (above 105 feet) belong to the Wanapum Formation. The analysis shows that the sample from 45 to 50 feet is part of the Priest Rapids Member and the samples from 70 to 75 feet and 100 to 105 feet are from the Roza Member. All of the deeper cutting samples starting at 155 feet are from the Grande Ronde Formation. The samples from 155 to 160 feet and 195 to 200 feet are from the N2 member and the samples below 220 feet are from the R2 member. The results of the rock chemistry analysis indicate that the contact between the Wanapum and Grande Ronde formations likely is the thin sedimentary interbed identified by the field geologist in the depth range of 120 to 125 feet (see Figure 3-4).

The H2O well report indicates that water producing zones occur at 55-60 feet (about 10 gpm), 77-79 feet (about 20 gpm), 210-213 feet (about 50+ gpm), and 245-250 feet (about 100+ gpm). Although not noted on their log, the driller indicated to the field geologist that additional water production occurred at a depth of about 350 feet. The top two smaller water producing zones are present within the Wanapum Formation. The remaining two larger water producing zones are both in the R2 member of the Grande Ronde Formation.

Measurements of depth-to-water were obtained during well construction generally prior to the initiation of drilling in the morning. These water-level measurements were mostly taken within the temporary 6-inch diameter casing, which eliminated problems because of falling water within the borehole. However, the measurements do represent a composite of water-producing zones penetrated from land surface to the depth of drilling. The water level was about 35 feet below the top of casing when the borehole was at the following depths: 260 feet, 280 feet, 320 feet, 370 feet, 380 feet, and 421 feet. All of these measurements were obtained when the well was below the contact between the Wanapum and the Grande Ronde Formations. The depth to water in the completed well was also approximately 35 feet.
Figure 3-4 Hydrogeologic Log for the Grange Well Showing Rock Sample Depths and Well Construction Details (w = water-producing zones)

- Depth to water = 35.17 ft
- Measurement point elevation = 2,292.0 ft
- W.L. Elev. = 2,256.8 ft
- Seal material
- Perforations
- Sand pack
- Seal material

- Soil and clay
- Basalt
- Samples – Priest Rapids/Wanapum
- Samples – Roza/Wanapum
- Samples – N2/Grande Ronde
- Samples – R2/Grande Ronde

Wanapum/Grande Ronde contact
The surveyed elevation of the top of casing at the Grange Well is 2,291.96 feet. However, the survey accuracy is likely to the nearest tenth of a foot for all wells. The depth-to-water in the Grange Well was 35.17 feet when the data logger was installed on September 27, 2012 (Gregory, personal communication, 2012). This gives a water-level elevation of 2,256.8 feet for the aquifer in the Grande Ronde Formation at the Grange Well site. The rock chemistry data indicate the contact between the Wanapum Formation and the Grande Ronde Formation is between the 100-105 foot sample (identified as Wanapum Formation) and the 155-160 foot sample (identified as Grande Ronde Formation). The contact between the Wanapum Formation and the underlying Grande Ronde Formation likely is represented by the interbed logged by the field geologist in the depth range of 120-125 feet below ground surface. The elevation of the contact between the two formations likely is about 2,170 feet.

The water-supply well for the Grange Hall is located about 200 feet west-northwest from the WDOE Grange Well. A water-well report is not available for this well but a representative of the Grange Hall indicated that the pump was set at a depth of about 40 feet (Barney Buckley, personal communication, 2013). The Grange Hall well likely is less than 100 feet deep based on the presence of water producing zones in the Wanapum Formation as shown on Figure 3-4. In addition, a water-well report is available from the WDOE web site for a 78-foot deep domestic well drilled for Charles Hatley in 1999 in the general vicinity of the Grange Hall. Mr. Buckley gave permission for measurement of the depth-to-water in the Grange Hall well. The depth to water below the top of casing was 24.68 feet when measured on March 14, 2013.

Dale Ralston of RHS and Chris Beard of TerraGraphics used a laser level on March 14, 2013, to determine the elevation of the top of the casing for the Grange Hall well using the surveyed top of the WDOE Grange Well as the datum. They also surveyed a loop across the field to Union Flat Creek at a location approximately due north of the WDOE Grange Well elevation. The survey loop to the creek was closed within about 0.1 feet.

The surveyed casing elevation of the Grange Hall well is 2,287.5 feet, which gives a water-level elevation in the Grange Hall well of 2,262.8 feet. The water level in the Grange Hall well (likely completed opposite the Wanapum Formation) is about 6 feet higher than the WDOE Grange Well (completed opposite the Grande Ronde Formation). The elevation of Union Flat Creek approximately north of the WDOE Grange Well is about 2,254 feet. Thus the creek elevation is about 9 feet lower than the ground-water elevation in the Grange Hall well and about 3 feet lower than the ground-water elevation in the WDOE Grange Well.

In summary, the hydrogeologic conditions found in the Grange Well are considerably different from what was anticipated as described in TerraGraphics and Ralston (2012). The sedimentary unit believed equivalent to the Vantage unit is much thinner (5 feet or less) than was postulated (about 80 feet). The downward vertical hydraulic gradient present between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation) that is typical of the Pullman-Moscow portion of the Palouse Basin is present at the Grange Well but the water-level difference between formations is small (about 6 feet). The water-level elevation of Union Flat Creek at a site
approximately north of the WDOE Grange Well is slightly lower than the wells completed in the Grande Ronde Formation (WDOE Grange Well) and the Wanapum Formation (Grange Hall well). The water-level elevation in the Grange Well is consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in Section 9.0 of the report.

Section 4.0 Flat Road Well

4.1 Well Construction

The Flat Road Well is located along the south side of the right-of-way of Flat Road about 1,500 feet east of the intersection with the Pullman–Wawawai Road. Figure 2-1 shows the well location. Figure 4-1 is a photo of the drilling operation at the Flat Road Well site and Figure 4-2 shows the completed well. Flat Road has a maintained gravel surface and is open year around.

The bid documents included the following prediction of the geologic sequence that would be penetrated by the Flat Road Well: 1) about 50 feet of sediment, about 350 feet of basalt, about 80 feet of sediment, and about 100 feet of basalt for a total depth of about 580 feet. This information was developed from geologic cross sections and logs from existing nearby wells and was used for planning purposes.

The Flat Road Well was drilled to a depth of 520 feet through mostly basalt. Figure 4-3 is a portion of the resource protection well report prepared by H2O. The geologic log prepared by the field geologist is given below.

- 0-17 feet: Topsoil/Loess; mostly silt and clay; dark brown to black.
- 17-30 feet: Basalt; dark gray to black; fine grained; small chips; water at 19 feet.
- 30-60 feet: Basalt; light gray; medium grained; olivine and plagioclase crystals visible with 10X hand lens (microphenocrysts); some blue/green weathering near top.
- 60-180 feet: Basalt; dark gray to black; medium grained; plagioclase and olivine visible with hand lens; abundant vesicles in top 15-20 feet; finer grain size with depth with plagioclase phenocrysts throughout; about 5 gpm at 83 feet and about 25 gpm at 140 feet.
- 180-185 feet: Basalt; weathered; dark brown and red; vesicular; small chips.
- 185-195 feet: Sedimentary interbed; shale, blue/green; subvitreous; mixed with small fragments of brown weathered basalt.
- 195-250 feet: Basalt; dark gray to black, mostly fine grained with some larger plagioclase phenocrysts (up to 1 cm); slightly vesicular near top; chips are angular to subangular; some green weathering in lower 10 feet; angular chips; smaller at top coarsening down; small evidence (shale) of a thin interbed at approximately 240 feet.
DOE LANDFILL WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 31, 2016

State Well
Log ID: 876149   Elev (ft): 2370.85   Depth (ft): 335   Quad: Colfax South

Latitude: 46.763911   Longitude: -117.273611 decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 28, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
Landfill Road, Pullman, Wash., on south side of road to Whitman County Landfill, west of intersection with Carothers Road.

Location Method:
Latitude, longitude, and elevation from Taylor Engineering (Appendix B, in Terragraphics Environmental Engineering Inc. and Ralston Hydrologic Services, 2013). PLSS section and subdivisions incorrect on driller’s report. Site visit (September 22, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td>Silt and clay, brown</td>
<td>0 – 36</td>
</tr>
</tbody>
</table>
| Wanapum Basalt                | Priest Rapids Member                             | Basalt of Lolo
|                                | Basalt, highly weathered, brown, red, and green  | 36 – 70    |
|                                | Basalt, vesicular                                | 70 – 80    |
|                                | Basalt, medium-grained                           | 80 – 145   |
| Latah Formation               | Vantage Member                                   | Basalt, plagioclase phenocrysts                   | 155 – 250 |
|                                | Clay, green, and sand, basalt fragments          | 250 – 260  |
| Grande Ronde Basalt           | N2 magnetostratigraphic unit                     |            |
Sentinel Bluffs Member
Basalt of Spokane Falls
Basalt, fine-grained 260 – 335

Comments:

Stratigraphic picks are from Conrey and others (2013). Geologic interpretation is a summary of data from Conrey and others (2013) and Terragraphics Environmental Engineering Inc., and Ralston Hydrologic Services (2013, p. 42–45).

References Cited:


Please print, sign and return to the Department of Ecology

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

Construction/Decommission ("x" in box)
☒ Construction
☐ Decommission

ORIGINAL INSTALLATION Notice of Intent Number:

Consulting Firm

Unique Ecology Well IDTag No. BBH-474

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee
Name (Print Last, First Name) McLeslie, Jim
Driller/Engineer/Trainee Signature
Driller or Trainee License No. 2871

If trainee, licensed driller's Signature and License Number:

<table>
<thead>
<tr>
<th>Construction Design</th>
<th>Well Data</th>
<th>Formation Description</th>
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<tbody>
<tr>
<td>6&quot; Locking Well Cap</td>
<td>0 - 3' Top Soil</td>
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<tr>
<td>+2 to -3' 6&quot; Casing</td>
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<td>+6&quot; to -2' Cement Cap</td>
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</tr>
<tr>
<td>+2 to 333' 2&quot; PVC</td>
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<td></td>
</tr>
<tr>
<td>-318 to 328' 10' of .20 slot PVC Screen</td>
<td></td>
<td></td>
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<tr>
<td>-2 to 19' Holeplug</td>
<td></td>
<td></td>
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<tr>
<td>-19 to 310' Aqua Guard Grout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-310 to 335' 10/20 Silica Sand</td>
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<tr>
<td>10 Centralizers every 40' End Cap</td>
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<td></td>
</tr>
<tr>
<td>3 - 36' Tan Clay</td>
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<td></td>
</tr>
<tr>
<td>36 - 80' Broken Layers of Basalt w/20gpm</td>
<td></td>
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<tr>
<td>80 - 130' Black Basalt w/gray silty seems.</td>
<td></td>
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</tr>
<tr>
<td>130 - 150' Green Basalt</td>
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<td></td>
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<tr>
<td>150 - 158' Basalt w/gray silty seems</td>
<td></td>
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<tr>
<td>158 - 162' Green Basalt</td>
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<td>162 - 210' Gray Basalt</td>
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<tr>
<td>210 - 247' Drk Brown Basalt</td>
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<tr>
<td>247 - 258' Red Basalt</td>
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<tr>
<td>258 - 263' Fract. Basalt w/ water</td>
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<td></td>
</tr>
<tr>
<td>263 - 323' Black Basalt</td>
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<tr>
<td>323 - 335' Fract. Basalt w/ water</td>
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Site Address City Landfill

City Pullman County Whitman

Location SE1/4-1/4 SW1/4 Sec 21 Twn 15 R 44

EWM ☒ or WWM ☐

Lat/Long (s, t, r) Still REQUIRED

Lat Deg Min Sec

Long Deg Min Sec

Tax Parcel No. None available per owner

Cased or Uncased Diameter 8" Static Level 65'

Work/Decommission Start Date 11/5/12

Work/Decommission Completed Date 11/9/12

ECY 050-12 (Rev. 7/08)

Ecology is an Equal Opportunity Employer
An aquifer test was conducted in a nearby domestic/stock well as a favor to the landowner who provided access to the land adjacent to the Banner Road Well. The private well is located about 1,200 feet south-southeast of the monitoring well at about the same land elevation. A well driller’s report is not available for this well. The landowner did not know the depth of the well but thought that the pump had been set at a depth of 260 feet. The static depth-to-water was measured to be about 31 feet on October 6, 2012. The domestic well likely is completed at a shallower depth than the monitoring well and has a higher water level. This indicates that there is a downward hydraulic gradient in the vicinity of the Banner Road Well.

The surveyed elevation of the top of the steel casing at the Banner Road well is 2,439.24 feet. The depth to water in the Banner Road Well was 192.67 feet when the data logger was installed on October 8, 2012 (Gregory, personal communication, 2012). This gives a water-level elevation of 2,246.6 feet for the aquifer in the Grande Ronde Formation at the Banner Road Well. The contact between the Wanapum and Grande Ronde Formations is at a depth of about 240 feet in the Banner Road Well or at an elevation of about 2,197 feet.

In summary, the hydrogeologic conditions found in the Banner Road Well are different than what was anticipated based on data from wells (TerraGraphics and RHS, 2012). The surface sedimentary unit was thicker at this location than anticipated and the anticipated 30-foot thick interbed between formations was much thinner. The downward vertical hydraulic gradient present between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation) that is typical of the Pullman-Moscow portion of the Palouse Basin is present at the Banner Road Well. The water-level elevation in the Banner Road Well is consistent with water-level elevation data from nearby wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in Section 9.0 of the report.

**Section 7.0 Landfill Well**

**7.1 Well Construction**

The Landfill Well is located near Carothers Road south of Highway 195 along the east side of property owned by Whitman County. The western portion of the property is used for the transfer station and the construction material landfill. The well location is shown on Figure 2-1. Figure 7-1 is a photo of the drilling operation at the Landfill site and Figure 7-2 shows the completed well. Access to the well is via a gravel extension off the south side of the road leading from Carothers Road to the facilities at the landfill.

The available information indicates that the Landfill monitoring well would be constructed through the following sequence of material: 1) 50 feet of sediment, 2) 150 feet of basalt, 3) 30 feet of sediment, and 4) 100 feet of basalt for a total depth of 330 feet. This information was developed from geologic cross sections and logs from existing wells and was used for planning purposes.
Figure 7-1 Photo of the Drilling Operation at the Landfill Well Site
Figure 7-2 Photo of the Landfill Well Site After Completion
The Landfill Well was drilled to a depth of 335 feet through mostly basalt. The resource protection well report prepared by H2O is attached as Figure 7-3. The geologic log prepared by the field geologist is given below.

- 0-36 feet: Loess: light brown silt and clay.
- 36-75 feet: Basalt: highly weathered; brown/green/red coloring; all rounded to sub-rounded.
- 75-100 feet: Basalt: gray to black; medium grained; vesicular in upper 10 feet; water at 80 feet.
- 100-145 feet: Basalt: dark gray to black; medium grained or porphyritic; some sparse areas of red weathering; chips mostly subangular.
- 145-155 feet: Interbed: shale, light green to dark green; some areas of rust colored weathering.
- 155-200 feet: Basalt: dark gray to black; porphyritic; phenocrysts of plagioclase and olivine; ground mass is black and very fine grained.
- 200-250 feet: Basalt: black; fine grained; top 5 feet large chips with large vesicles; chips get finer with depth; no distinguishable minerals.
- 250-260 feet: Interbed/basalt flow top: shale/sand mixture in interbed; shale mostly dark green; sand appears to be mostly lithic; basalt very weathered; water at 258 feet.
- 260-320 feet: Basalt: black; fine grained; angular chips; some green and red weathering in upper 5 feet.
- 320-335 feet: Basalt: gray to dark gray; fine grained with some plagioclase microphenocrysts; large weathered vesicular pieces in upper 5 feet; angular chips; water at 323 feet (several hundred gpm); end of well.

The sedimentary interbeds shown on the geologist’s log in the depth intervals of 145 to 155 feet and 250 to 260 feet are not identified in the driller’s geologic log. The lower of the two interbeds likely is at the contact between the Wanapum Formation and the underlying Grande Ronde Formation.

The following is a summary of the drilling methods used at different depth intervals.

- 0-36 feet: 8-inch tri-cone bit was used to drill through the surface sedimentary layer; 8-inch diameter temporary casing was driven to a depth of 36 feet.
- 36-335 feet: 8-inch hammer bit was used to drill open hole to the total depth of 335 feet.
**Figure 7-3 Driller Data for Landfill Well from Resource Protection Well Report**

**Construction Design**
- 6" Locking Well Cap
- +2 to -3' 6" Casing
- +6" to -2' Cement Cap
- +2 to 333' 2" PVC
- -318 to 328' 10' of .20 slot PVC Screen
- -2 to 19' Holeplug
- -19 to 310' Aqua Guard Grout
- -310 to 335' 10/20 Silica Sand
- 10 Centralizers every 40' End Cap

**Well Data**
- 0 - 3' Top Soil
- 3 - 36' Tan Clay
- 36 - 80' Broken Layers of Basalt w/20gpm
- 80 - 130' Black Basalt w/gray silty seems.
- 130 - 150' Green Basalt
- 150 - 158' Basalt w/gray silty seems
- 158 - 162' Green Basalt
- 162 - 210' Gray Basalt
- 210 - 247' Drk Brown Basalt
- 247 - 258' Red Basalt
- 258 - 263' Fract. Basalt w/ water
- 263 - 323' Black Basalt
- 323 - 335' Fract. Basalt w/ water

**Formation Description**
The well was completed as follows:

- The borehole was backfilled from 333 to 335 feet with silica sand.
- The 2-inch diameter PVC casing and screen assembly was placed in the well. The assembly consists of blank casing with a cap from 328 to 333 feet, slotted screen from 318 to 328 feet, and blank casing from land surface to 318 feet. The casing has centralizers every 40 feet to ensure sand and seal materials were placed uniformly around the PVC within the borehole.
- The borehole around the PVC casing was backfilled with silica sand from 310 to 333 feet. The sand pack extends from 8 feet above the top of the screen to 7 feet below the bottom.
- The borehole surrounding the PVC casing was backfilled with bentonite slurry from about 15 to 310 feet via a tremie pipe.
- The borehole was filled from land surface to about 15 feet with bentonite chips.
- The temporary 8-inch diameter casing was removed during the last part of the seal installation process.
- A short section of 6-inch diameter steel casing was placed around the 2-inch PVC casing at land surface and a concrete pad was poured around the casing. A lockable cap was installed on the casing and three protective steel posts were placed around the steel casing.

Figure 7-2 is a photo of the completed well.

7.2 Hydrogeologic Analysis

The hydrogeologic analysis of the Landfill Well is based on analysis of drill cuttings, rock chemistry analysis of selected cutting samples, yield characteristics of different intervals, and water-level data collected during drilling and after well construction. The information gained from well construction is different than the initial conceptual geologic model. The projected 30-foot thick interbed between basalt formations is only about 10 feet thick.

Cutting samples from selected depth intervals from the Landfill Well were taken to the GeoAnalytical Laboratory at WSU for chemical analysis. Cutting samples from the following depth intervals were selected for analysis by Chris Beard (field geologist) and Rick Conrey (WSU GeoAnalytical Laboratory): 55-60 feet, 75-80 feet, 115-120 feet, 160-165 feet, 200-205 feet, 245-250 feet, 265-270 feet, 290-295 feet, and 330-335 feet.

The rock chemistry analysis of the rock chips indicates the following basalt stratigraphy (also shown on Figure 7-4). The uppermost three samples (55-60, 75-80 and 115-120 feet) are from the Priest Rapids Member of the Wanapum Formation. The next three samples (160-165, 200-205, and 245-250 feet) are from the Roza Member of the Wanapum Formation. All of the deeper cutting samples starting at 370 feet are from the N2 member of the Grande Ronde Formation. The R2 member of the Grande Ronde
Formation was not penetrated in this well. The results of the rock chemistry analysis indicate that contact between the Wanapum Formation and the Grande Ronde Formation is at a depth of about 250 feet (see Figure 7-4).

Two major water-producing zones were penetrated in the Grande Ronde Formation at about 260 feet and about 330 feet in the N2 member. A small amount of water was produced from the Wanapum Formation at a depth of about 80 feet.

Water-level measurements taken during drilling have little value since the well—with the exception of the surface casing—was drilled open hole. The depth to water in the completed well was about 119 feet.

The surveyed elevation of the top of the steel casing at the Landfill Well is 2,371.21 feet. The depth to water in the Landfill Well was 118.59 feet when the data logger was installed on November 20, 2012 (Gregory, personal communication, 2012). This gives a water-level elevation of 2,252.6 feet for the aquifer in the Grande Ronde Formation at the Landfill Well. The contact between the Wanapum and Grande Ronde Formations is at a depth of about 250 feet in the Landfill Well an elevation of about 2,119 feet.

There are a number of monitoring wells and a domestic well in the western portion of the Whitman County landfill site. The monitoring wells are all completed in the sedimentary unit that overlies the basalt of the Wanapum Formation. A well drillers report is not available for the domestic water-supply well for the landfill. This well is located about 900 feet west of the WDOE Landfill Well and is believed to be completed in basalt. The static depth to water in the domestic landfill well was measured by Dale Ralston of RHS as 77.1 feet on April 3, 2013. The elevation of the domestic well was estimated to be 2,399 feet based on a detailed topographic map created for the landfill (Mark Storey, personal communication, 2013). This yields a water-level elevation of about 2,322 feet. Thus, the water-level elevation in the WDOE Landfill Well completed in the Grande Ronde Formation is about 70 feet lower in elevation than the domestic landfill well which is likely completed opposite a water-producing zone in the Wanapum Formation.

In summary, the hydrogeologic conditions found in the Landfill Well are similar to what was anticipated based on data from wells (TerraGraphics and RHS, 2012). The surface sedimentary unit and the anticipated 30-foot thick interbed was thinner at this location than anticipated. There appears to be a 70-foot difference in water level between the upper aquifer (in the Wanapum Formation) and the lower aquifer (in the Grande Ronde Formation). This downward gradient is typical of the Pullman-Moscow portion of the Palouse Basin. The water-level elevation in the Landfill Well is consistent with water-level elevation data from wells completed in the lower aquifer in the Pullman-Moscow portion of the Palouse Basin. This topic is addressed in more detail in Section 9.0 of this report.
Figure 7-4  Hydrogeologic Log for the Landfill Well  Showing Rock Sample Depths and Well Construction Details (w = water-producing zones)
DOE PULLMAN TEST AND OBSERVATION WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 4, 2017

Well Log ID: 449538  Elev (ft): 2485.19  Depth (ft): 982  7.5’  Quad: Moscow West

Latitude: 46.730592  Longitude: -117.088823  decimal degrees (WGS84)

¼,  SE ¼,  NW ¼,  Sec. 1,  T. 14 N,  R. 45 E

Well Address and (or) Other Location Information:
WA 270, Pullman, Wash., on south side of highway; well is just west of Sunshine Road, along north bank of Paradise Creek

Location Method:
Location is for well; John Bush was the driller in 1974; latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery; topographic map. Site visits (August 30, 2015; April 12, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil and gravel</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Quaternary sediments</td>
<td></td>
</tr>
<tr>
<td>Sand, poorly sorted</td>
<td>8 – 10</td>
</tr>
<tr>
<td>Gravel</td>
<td>10 – 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>12 – 28</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>1Gravel, basalt with some quartzite, poorly sorted and subangular to subrounded</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>Basalt, fractured, iron coatings</td>
<td>61 – 72</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Layer Description</td>
<td>Magnetostratigraphic Unit</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Clay, black, baked, wood</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Clay, brown, some coarse basalt sand in clay, saprolite(?)</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, very fine-grained, vesicles at the top</td>
<td>Latah Formation</td>
</tr>
<tr>
<td>Clay, yellow to brown, abundant wood</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, vesicular, vesicle fillings</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, finely vesicular, vesicle fillings</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, vesicular, abundant glass, possible evidence of water during emplacement</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Clay, pieces of weathered basalt, palagonite</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, vesicular, fractured in places, weathered in places</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, dense, vesicles at base</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Clay, tan to green</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Sand, fine- to medium-grained, silty in places, subrounded to subangular</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, glassy, weathered in places(?)</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Clay, green, silty</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Gravel, mostly basalt, some quartz, poorly sorted, subangular to subrounded</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Clay, green, silty</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Basalt, fractured, very glassy</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sentiment Bluffs Member</td>
</tr>
<tr>
<td>Sand, fine- to medium-grained, silty in places, subrounded to subangular</td>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>Clay, brown-black, silty</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>R2 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Mount Horrible member(?)</td>
<td>Basalt, dense</td>
</tr>
<tr>
<td></td>
<td>Basalt, vesicular, vesicle fillings</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>619 – 672</td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>Clay, brown</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>R2 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Mount Horrible member(?)</td>
<td>Basalt, vesicular</td>
</tr>
<tr>
<td></td>
<td>Basalt, dense</td>
</tr>
<tr>
<td></td>
<td>Basalt, vesicular</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>788 – 790</td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>Gravel, basalt in clay matrix</td>
</tr>
<tr>
<td></td>
<td>Clay, brown, silty and sandy</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N1 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Cold Spring Ridge Member(?)</td>
<td>Basalt, dense, glassy top</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>847 – 978</td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>Clay, gray, silt and sand layers</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N1 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Cold Spring Ridge Member</td>
<td>Basalt, very dense</td>
</tr>
</tbody>
</table>

**Comments:**

This gravel in the middle of the Lolo is unusual and is interpreted as a piece picked up by the flow. See Bush and others (2016) for a description of a similar outcrop in Palouse, Wash. Both the basalt above and below the interbed in Palouse and the basalt above and below encountered in this well have the same chemistry and are part of the same flow. The glassy nature of the underlying basalt is additional evidence that the lava flow picked up the gravel bed.

Stratigraphic identifications were adjusted from Conrey and Wolff (2010) who reanalyzed beads prepared by Brown (1976) and from Stephen P. Reidel (written comm., November 14, 2016).

The lithologic descriptions presented herein are summaries of details provided by Brown (1976).
References Cited:


### General Sample Description and Drilling Log of Pullman Test Well

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>Meters</td>
</tr>
</tbody>
</table>

**Overburden**

<table>
<thead>
<tr>
<th>Soil:</th>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>silty loam and clay; dark brown-black; some basalt gravel</td>
<td>8 2.4</td>
<td>8 2.4</td>
</tr>
<tr>
<td>Sand:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quartz; gray-brown wet; white-tan dry; occasional quartz pebble 2 to 5 cm in diameter; poorly sorted; angular to sub-angular</td>
<td>2 0.6</td>
<td>10 3.0</td>
</tr>
<tr>
<td>Gravel:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>basalt; gray-dark gray; sub-rounded to sub-angular; poorly sorted up to 2 cm in diameter; brownish weathering rind</td>
<td>2 0.6</td>
<td>12 3.6</td>
</tr>
</tbody>
</table>

**Middle Yakima Basalt**

<table>
<thead>
<tr>
<th>Basalt:</th>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>light gray-gray; medium to coarse grained; olivine to ½ mm; abundant black glass; drilling is slow, indicating hard dense rock</td>
<td>16 4.9</td>
<td>28 8.5</td>
</tr>
<tr>
<td>Gravel:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>basalt with some quartzite; poorly sorted; with pieces as large as 3-4 cm; sub-rounded to sub-angular; some basalt cobbles are deeply weathered and have brown - yellow-brown stain; caving conditions; WATER</td>
<td>4 1.2</td>
<td>32 9.7</td>
</tr>
<tr>
<td>Basalt:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gray-dark gray; fine to medium grained; occasional plagioclase phenocryst to 1 mm; small olivine crystals; dense; abundant black glass</td>
<td>29 13.7</td>
<td>61 18.6</td>
</tr>
<tr>
<td>Basalt:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>similar to above but fractured with brownish coating; caving; WATER</td>
<td>11 3.4</td>
<td>72 21.9</td>
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</table>

**Interbed**

<table>
<thead>
<tr>
<th>Clay:</th>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>black; vitreous on fresh surface; baked; some fine quartz silt; some wood particles</td>
<td>4 1.2</td>
<td>76 23.2</td>
</tr>
<tr>
<td>Clay:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>brown-tan; sticky; with very coarse basalt sand in clay matrix; grades downward to bluish-gray clay; may include saprolite</td>
<td>16 4.9</td>
<td>92 28.0</td>
</tr>
</tbody>
</table>
Lower Yakima Basalt

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td>Basalt: very fine grained; gray-dark gray; vesicular becoming less so toward base; vesicles filled with brownish clay; secondary fracture filling; very fine basaltic glass; locally diktytaxitic; occasional plagioclase phenocrysts to 1 mm; plagioclase shows some alteration</td>
<td>73</td>
</tr>
<tr>
<td>Clay: yellow-green; chonchoidal fracture; finely laminated with micro-structures evident</td>
<td>7</td>
</tr>
<tr>
<td>Clay and Wood: small amount of brown-buff clay; abundant burned wood; loss of circulation; WATER</td>
<td>5</td>
</tr>
<tr>
<td>Basalt: gray-dark gray; fine grained; vesicular; vesicle filling of gray and green clay; some pyrite void filling; appears fractured with weathered rind</td>
<td>35</td>
</tr>
<tr>
<td>Basalt: gray-dark gray; fine grained; becoming more finely vesicular; occasional plagioclase phenocrysts to ½ mm; minor diktytaxitic openings; a little clay vesicle filling; WATER</td>
<td>7</td>
</tr>
<tr>
<td>Basalt: light gray-gray; fine grained; finely vesicular with occasional vesicle filling by reddish brown clay; glass occasional feldspar phenocrysts to 1 mm; minor diktytaxitic texture</td>
<td>26</td>
</tr>
<tr>
<td>Basalt: gray-black; fine grained; vesicular; abundant vitreous black glass; vesicles filled with blue clay or glass</td>
<td>26</td>
</tr>
<tr>
<td>Clay: blue-gray; weathered basalt; some palagonite or saprolite</td>
<td>25</td>
</tr>
<tr>
<td>Basalt: brown-black; fine grained; vesicular; bluish-gray vesicle filling; fractured</td>
<td>3</td>
</tr>
<tr>
<td>Basalt: similar to above but badly fractured and caving; with brownish-tan weathering rind</td>
<td>3</td>
</tr>
<tr>
<td>Basalt: dark gray-black; fine grained; abundantly vesicular; bluish-gray clay filling vesicles; lesser amounts of tan to brown palagonite and/or saprolite; highly weathered flow top; WATER</td>
<td>35</td>
</tr>
</tbody>
</table>
Basalt: gray-dark gray; dense; fine to medium grained; abundant plagioclase laths up to 1 mm present; salt and pepper in appearance; minor diktytaxitic openings; massive becoming denser toward the base
Basalt: similar to above but more vesicular with tan silt as vesicle filling; WATER
Clay: olive-green - tan; hard; dense; angular to chonchoidal fracture; vitreous when scraped
Sand: quartz; very fine to silt; well-sorted; sub-rounded to sub-angular; clear-light green; grading to fine to medium grained; 10% basalt; some muscovite; greenish-brown - green; poor to fair sorting; sub-angular; poorly cemented; WATER
Basalt: dark gray-black; fine grained; occasional plagioclase phenocrysts to 1 mm; ground mass has high black glass content; diktytaxitic texture; deeply weathered?
Clay: green-dark green; with some muscovite and fine quartz silt
Gravel: basalt; coarse, up to 3 cm; sub-angular to sub-rounded; poorly sorted; occasional quartz pebbles 2-3 cm; most have greenish-brown weathering rind; some appears deeply weathered
Silty clay: green - brownish-green; coarse muscovite and quartz silt
Basalt: gray-black; highly fractured; fine grained; occasionally vesicular; bluish-gray clay as vesicle filling; occasional plagioclase phenocrysts to 1.5 mm; caving; abundance of black glass resulting in high black sheen; minor diktytaxitic texture
Clay: brown-black; some fine silt
Basalt: gray-dark gray; very fine grained; dense; minor diktytaxitic texture, becoming more abundant towards flow bottom; occasionally phryic with phenocrysts to 1.5 mm; WATER in flowtop
Basalt: similar to above but becoming abundantly vesicular with brown clay vesicle filling; WATER

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td>133</td>
<td>40.5</td>
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<td>4</td>
<td>1.2</td>
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<tr>
<td>14</td>
<td>4.3</td>
</tr>
<tr>
<td>12</td>
<td>3.7</td>
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<td>47</td>
<td>14.3</td>
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<td>18</td>
<td>5.5</td>
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<td>7</td>
<td>2.1</td>
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</tr>
<tr>
<td></td>
<td>Feet</td>
</tr>
<tr>
<td>Clay:</td>
<td>brown - greenish-brown</td>
</tr>
<tr>
<td>Basalt:</td>
<td>gray-dark gray; fine grained; vesicular with abundant clay filling; occasionally phyrict with phenocrysts to 1 mm; WATER in flowtop</td>
</tr>
<tr>
<td>Basalt:</td>
<td>gray-dark gray; dense; very fine grained; aphyric; minor diktytaxitic texture; becomes slightly phyrict with depth; some pyrite vesicle filling</td>
</tr>
<tr>
<td>Basalt:</td>
<td>similar to above but highly vesicular and some clay vesicle filling; WATER</td>
</tr>
<tr>
<td>Gravel:</td>
<td>basalt in a clay matrix; some quartz sand also present; caving</td>
</tr>
<tr>
<td>Clay:</td>
<td>brown-tan; occasional silt and sand; pyrite</td>
</tr>
<tr>
<td>Basalt:</td>
<td>dark gray-black; dense; very fine grained; slightly phyrict becoming less so toward base; minor diktytaxitic texture; very glassy near top; occasional pyrite coatings</td>
</tr>
<tr>
<td>Clay:</td>
<td>bluish-gray - brown; alternating with silty-clay and small quartz silt and sand layers; WATER?</td>
</tr>
<tr>
<td>Basalt:</td>
<td>gray-dark gray; finely crystalline; dense; aphyric; non-vesicular; drilling slow</td>
</tr>
</tbody>
</table>
CRAIG DRUFFEL WELL

[DRILLED IN 1990]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 31, 2016; November 9, 2017

Well Log ID: 164870
Elev (ft): 2455 ±10
Depth (ft): 208
Quad: Moscow West

Latitude: 46.691935
Longitude: -117.119856
decimal degrees (WGS84)

1⁄4, SE 1⁄4, SE 1⁄4, Sec. 15, T. 14, R. 45

Well Address and (or) Other Location Information:
Assumed to be 1702 Sand Road, Pullman, Wash., on northeast side of road

Location Method:
Location is for one of a few houses in the SE 1⁄4 SE 1⁄4 sec. 15 (as noted on driller’s report); Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>2 – 43</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>43 – 47</td>
</tr>
<tr>
<td>Basalt</td>
<td>47 – 70</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>70 – 174</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>174 – 189</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>189 – 198</td>
</tr>
<tr>
<td>Basalt</td>
<td>198 – 208</td>
</tr>
</tbody>
</table>
Comments:

Location may be incorrect, but the log consistently represents the geology of the area as described by the Richard Druffel well 2 and Esther Hibbs well.

Whitman County Tax Parcel 200004514143260, 1702 SAND RD, SW NW N 1/2 1974 BROOKWOOD & GARAGE, is now owned by DRUFFEL FAMILY LTD PRTNSP, one story residence, built in 1974, 1752 ft², 20.0 acres. [Note: The "143" in the last six digits "143260" in the parcel number indicates the SW¼ of sec. 14, not the SE¼ of sec. 15, so this is confusing, as the house is located in the SE¼ of sec. 15 (or "2000045154xxx" for a parcel number). However, the street number on the tax parcel fits the location of the house, as do the PLSS subdivisions (SE¼ SE¼) on the driller's report. The Richard Druffel well 2 is at 1502 Sand Road, and Mark R. Druffel lives at 1802 Sand Road, the next house to the south (which is in sec. 14 and was built in 1996).]

References Cited:
### WATER WELL REPORT

**STATE OF WASHINGTON**

**OWNER:** Craig Deuffel  
Address: R.1 Box 745 - Pullman, WA 99163

**LOCATION OF WELL:** Whitman County  
Sec. 15 T. 14 N., R. 45 W.M.

**PROPOSED USE:** Domestic  
Method: Drilled

**TYPE OF WORK:** Abandoned  
New well  
Reconditioned

**DIMENSIONS:** Diameter of well: inches  
Depth of completed well: ft.

**CONSTRUCTION DETAILS:**
- Casing installed: 8 ft. Diam. from 1 ft. to 20 ft.
- Welded: Dia. from 8 ft. to 208 ft.
- Perforations: Yes No  
Type of perforator used: SAW
- Size of perforations: 1/4 in. by 12 in.
- 30 perforations from 188 ft. to 208 ft.
- Screen type: No

**MATERIALS:**
- Soil
- Basalt - Grey - Hard
- Basalt - Grey - Broken
- Clay - Brown
- Basalt - Grey - Med
- Basalt - Grey - Fractured

**PUMP:** Manufacturer's Name

**WATER LEVELS:**
- Static level: 80 ft. below top of well  
Date: 11-12-90
- Artesian pressure: lbs. per square inch  
Date: (Cap. valve, etc.)

**WELL TESTS:** Drawdown is amount water level is lowered below static level  
Water level is measured from well top to water level  
Time: Water Level  
Time: Water Level

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** McPherson & Wright Drilling  
Address: Lewiston, Idaho 83501

**LICENSE NO.:** 0529  
Applicant's Registration No.: 180  
Date: 11-19-90

(USE ADDITIONAL SHEETS IF NECESSARY)
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, July 31, 2016; November 9, 2017

Well Log ID: 617074  Elev (ft): 2470 ±10  Depth (ft): 350  7.5’  Quad: Moscow West

Latitude: 46.687996  Longitude: -117.107985  decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 23, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
Sand Road, Pullman, Wash., on northeast side of road, with a driveway off Brown Road

Location Method:
Location is for granary (in tax parcel and PLSS given by driller); Whitman County Assessor; Google Earth imagery; topographic map; site visit (September 18, 2016), but did not observe a well. Well address incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>4</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
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<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>91</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>158</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>172</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>206</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>294</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>337</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514231900, NKA SAND RD, owner is DRUFFEL, RICHARD J (52 KIRKENAHL RD).

References Cited:
WATER WELL REPORT

Construction/Decommission

Construction Decommission

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ others
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned ☐ Method: ☐ Drilled ☐ Bored ☐ Driven
☐ DePosed ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 8 inches, drilled 350 ft.
Depth of completed well 350 ft.

CONSTRUCTION DETAILS

Casing: ☐ Welded ☐ Diam. from +1 ft. to 20 ft.
Installed: ☐ Liner installed ☐ Diam. from 5 ft. to 350 ft.
☐ Threaded ☐ Diam. From _____ ft. to _____ ft.

Perforations: ☐ Yes ☐ No
Type of perforator used SAW

SIZE of perf. 15/64 in. by 12 in. and no. of perf. 90 from 280 ft. to 340 ft.

Screens: ☐ Yes ☐ No ☐ K-Floc Location
Manufacturer's Name ________________________________
Type of Screen Model No. ___________________________
Diam. Slot size _______ ft. to _______ ft.
Diam. Slot size _______ ft. to _______ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand
Materials placed from _______ ft. to _______ ft.

Surface Seal: ☐ Yes ☐ No To what depth? 20 ft.
Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No
Type of water? ____________________________ Depth of strata _______ ft.

Method of sealing strata off ____________________________

PUMP: Manufacturer's Name ____________________________
Type of Pump H.P. ____________________________

WATER LEVELS: Land-surface elevation above mean sea level _______ ft.
Static level 247 ft. below top of well Date 5/20/08
Artesian pressure ______ lbs. per square inch Date ____________________________
Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is an amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom? ____________________________
Yield: ☐ gal/min. with _______ ft. drawdown after _______ hrs.
Yield: ☐ gal/min. with _______ ft. drawdown after _______ hrs.
Yield: ☐ gal/min. with _______ ft. drawdown after _______ hrs.

Recovery date (time taken as zero when pump turned off) (water level measured from well
top to water level):
Time Water Level Time Water Level Time Water Level

Date of test ____________________________

Bailer test: ☐ gal/min. with _______ ft. drawdown after _______ hrs.
Air test 40 gal/min. with stem set at 345 ft. for 1 hrs.
Artesian flow _______ g.p.m. Date ____________________________

Temperature of water 54 Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (use) TED WRIGHT
Driller/Engineer/Trainee Signature ____________________________
Driller or trainee License No. ____________________________

IF TRAINEE: Driller's License No. ____________________________
Driller's Signature ____________________________

CURRENT

Notice of Intent No. W218096
Unique Ecology Well ID Tag No. AHR748
Water Right Permit No. ____________________________

Property Owner Name DICK DRUFFLE
Well Street Address 52 KIRKENADAH
City Pullman County Whitman
Location NW1/4/1-1/4 NE1/4 Sec 23 Twn 14N R 45
(s, t, r still required) ERM O WRM O

Lat/Long Lat Deg _______ Lat Min/Sec _______
Long Deg _______ Long Min/Sec _______
Tax Parcel No. (Required) 2-0000-45-14-23-1900

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL FROM TO
SOIL BLACK SOIL 0 4
BASALT STRONG BLACK 4 91
CLAY GREEN STIFF 91 158
SAND COURSE CLAY LIGHT BROWN 158 172
BASALT WEATHERED WEAK 172 206
BASALT STRONG BLACK 206 294
BASALT WEATHERED WEAK 294 337
BASALT STRONG BLACK 337 350

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

SEP 11 2009

Drilling Company MCFERSON & WRIGHT DRILLING
Address 2244 BURRELL
City, State Zip LEWISTON ID, 83501
Contractor's Registration No. MCFWHD13N1 Date 8/16/09

Start Date 5/15/08 Completed Date 5/20/08

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6690.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**KEN DRUFFEL WELL**

Geologic Interpretation of Water Well Driller's Log

By John H. Bush, October/November 2016

Well Log ID: 169447  
Elev (ft): 2510 ±10  
Depth (ft): 159  
7.5’ Quad: Moscow West

Latitude: 46.677343  
Longitude: -117.104227  
decimal degrees (WGS84)

| 1/4, 1/4, SE 1/4, Sec. 23, T. 14 N, R. 45 E |

**Well Address and (or) Other Location Information:**

401 Jennings Road, Pullman, Wash., on north side of road

**Location Method:**

Location is for house belonging to Ken Druffel; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From</td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>To</td>
</tr>
<tr>
<td>Clay</td>
<td>1</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
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<tr>
<td>Basalt</td>
<td>From</td>
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<tr>
<td>Basalt, weathered</td>
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<td>Basalt</td>
<td>To</td>
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<td></td>
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<tr>
<td>Basalt</td>
<td>136</td>
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<tr>
<td>Latah Formation</td>
<td></td>
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<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From</td>
</tr>
<tr>
<td>Clay</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>To</td>
</tr>
<tr>
<td>Clay</td>
<td>159</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004514234801, 401 JENNINGS RD, SE PT S 1/2, owner is DRUFFEL, KEN (2653 SAND RD); 20.0 acres; 1½ story residence built in 1904; building permit issued 4/12/2011 for NEW 1800SF LEAN-TO ONTO EXISTING SHOP.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Ken Daufeld
Address: Rt. 1 Box 277, Pullman, Wa 99163

LOCATION OF WELL: County: Whitman

STREET ADDRESS OF WELL: (or nearest address)

PROPOSED USE:
- Domestic
- Irrigation
- Municipal
- DeWater
- Test Well
- Other

TYPE OF WORK:
- Owner's number of well
- New well
- Method: Dug
- Drilled
- Reconditioned
- Cable
- Rotary
- Jetted

DIMENSIONS:
- Diameter of well: 8-6 inches
- Depth of completed well: 159 feet

CONSTRUCTION DETAILS:
- Casing installed: 159 ft. to 299 ft.
- Welded
- Liner installed
- Threaded
- Perforations: Yes
- Type of perforator used
- Size of perforations in. by in.
- Screens: Yes
- Manufacturer's Name
- Type
- Model No.
- Diameter
- Slot size
- Diameter
- Slot size
- Gravel packed: Yes
- Size of gravel
- Material used: Cement
- Gravel placed from ft. to ft.
- Surface seal: Yes
- To what depth ft.
- Did any strata contain unusable water? Yes
- Type of water?
- Depth of strata
- Method of sealing strata off

PUMP: Manufacturer's Name

WATER LEVELS:
- Land-surface elevation ft. below top of well Date: 5-13-22
- Static level ft. below top of well Date
- Arterian pressure lbs. per square inch Date
- Artesian water is controlled by Cap, valve, etc.

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- If yes, by whom
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson, R. Wright, Drilling
Address: 2246 Burrell, Lewiston, Idaho 83501
License No.: 0533
WELL DRILLER
Registration No.: 1234
Date: 5-17-92

USE ADDITIONAL SHEETS IF NECESSARY
RICHARD J. DRUFFEL WELL 1

[DRILLED IN 1997]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July 31, 2016; November 9, 2017

Well Log ID: 172028
Elev (ft): 2490 ±10
Depth (ft): 255
Quad: Moscow West

Latitude: 46.689675
Longitude: -117.102453
decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 23, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
3002 Brown Road, Pullman, Wash., on southeast side of road; well is in lawn

Location Method:
Location is for well; Whitman County Tax Assessor; Google Earth imagery; topographic map; PLSS section and subdivisions incorrect on driller’s report. Site visit (September 18, 2016). Location may be incorrect but the log consistently represents the geology of the area as described by the Craig Druffel, other Richard (Dick) Druffel, and Esther Hibbs wells.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
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<tr>
<td>Priest Rapids Member</td>
<td></td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>12</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>52</td>
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<tr>
<td>Grande Ronde Basalt</td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
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<tr>
<td>Sentinel Bluffs Member</td>
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<tr>
<td>Basalt, weathered</td>
<td>142</td>
</tr>
<tr>
<td>No information recorded by driller</td>
<td>161</td>
</tr>
</tbody>
</table>

461
Comments:
Whitman County Tax Parcel 200004514231600, 3002 Brown Road, NE N 1/2, owner is DRUFFEL FAMILY LTD PRTNSP, two story residence built in 1957; 77.0 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name RICHARD J. DREESEL Address 3024 BROWN RD, PULLMAN, WA 99163

LOCATION OF WELL: County WHITMAN

STREET ADDRESS OF WELL: SAME

PROPOSED USE: Domestic 

TYPE OF WORK: Owner's number of well (if more than one)

DIMENSIONS: Diameter of well 8.5 inches

CONSTRUCTION DETAILS:

Perforations: Yes 

Type of perforator used

Screening: Yes 

Manufacturer's Name

Pump:

Type: H.P.

WATER LEVELS:

Land surface elevation above mean sea level ft.

WELL TESTS:

Date of test

Bail test gal./min. with ft. drawn down after hrs.

Artesian: 14 gal./min. with stem set at 150 ft. for 1 hrs.

Temperature of water Was a chemical analysis made? Yes 

Well Constructor Certification:

WELL CONSTRUCTOR CERTIFICATION:

I, McPherson & Wright Drilling, hereby certify that the well described above was constructed in accordance with all Washington well construction standards. All materials and information provided are true to the best of my knowledge and belief.

Signed:

License No.: 0633

Date: 3/21/97

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.
RICHARD DRUFFEL WELL 2

[DRILLED IN 2008]

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, July/August 2016; November 9, 2017

Well Log ID: 617076  Elev (ft): 2490 ±10  Depth (ft): 430  Quad: Moscow West

Latitude: 46.693715  Longitude: -117.120290  decimal degrees (WGS84)

⅛,  NE ⅛,  SE ⅛,  Sec. 15,  T. 14 N,  R. 45 E

Well Address and (or) Other Location Information:
1502 Sand Road, Pullman, Wash., on north side of road; metal ornament reading "Grote" hangs from mailbox.

Location Method:
Location is for house; Whitman County Tax Assessor; Google Earth imagery; topographic map; "1.5 miles east on Sand Rd" and tax parcel no. from driller's report, but PLSS section and subdivisions are incorrect on driller's report. Site visit (September 18, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>Clay, yellow brown</td>
<td>0 – 4</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>4 – 107</td>
</tr>
<tr>
<td></td>
<td>Basalt, weathered</td>
<td>107 – 112</td>
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<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay, dark brown</td>
<td>112 – 204</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td>NZ magnetostratigraphic unit</td>
<td></td>
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<td>Sentinel Bluffs Member</td>
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<td></td>
<td>Basalt, weathered</td>
<td>204 – 247</td>
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<tr>
<td></td>
<td>Basalt, hard</td>
<td>247 – 335</td>
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<tr>
<td></td>
<td>R2 magnetostratigraphic unit</td>
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</tbody>
</table>
Meyer Ridge Member

<table>
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<tr>
<th>Material</th>
<th>Depth Range</th>
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</thead>
<tbody>
<tr>
<td>Basalt, vesicular</td>
<td>335 – 345</td>
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<tr>
<td>Basalt, hard</td>
<td>345 – 424</td>
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<tr>
<td>Basalt, fractured</td>
<td>424 – 426</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>426 – 430</td>
</tr>
</tbody>
</table>

Comments:

Whitman County Tax Parcel 200004514154590, 1502 SAND RD, SE1/4 GROTE SAND RD SHRTP, owners are now GROTE, BRADLEY/JULIE ANN (Druffel); 2.0 acres; year house was built is unknown; grantor also unknown.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Notice of Intent Number 358074

PROPOSED USE: ☑ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☑ Deg ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 8 inches, drill to 430 ft.
Depth of completed well 430 ft.

CONSTRUCTION DETAILS
Casing: ☑ Welded ☐ Diam. From 1 ft. to 20 ft.
Installed: ☑ Liner installed ☐ Diam. From 10 ft. to 430 ft.
☐ Threaded ☑ Diam. From ☐ ft. to ☐ ft.

Perforations: ☐ Yes ☐ No
Type of perforator used SAW

SIZE of wells 1/8 in. by 12 in. and no. of wells 50 from 390 ft. to 430 ft.

Screens: ☑ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name

Type: ☑ Model No.

Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel/Filter packed: ☑ Yes ☐ No Size of gravel/sand

Materials placed from ft. to ft.

Surface Seal: ☑ Yes ☐ No To what depth? 20 ft.

Material used in seal BENTONITE

Did any strata contain unsuitable water? ☑ Yes ☐ No

Type of water? ☑ Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type: ☑ H.P.

WATER LEVELS: Land-surface elevation above mean sea level

Static level 251.4 ft. below top of well Date 5/12/08

Artesian pressure ___, lbs. per square inch Date
Artesian water is controlled by ___ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☑ Yes ☐ No If yes, by whom?

Yield: gal./min. with ___ ft. drawdown after ___ hrs.
Yield: gal./min. with ___ ft. drawdown after ___ hrs.
Yield: gal./min. with ___ ft. drawdown after ___ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Boiler test ___ gal./min. with ___ ft. drawdown after ___ hrs.

Airtest 100 gal./min. with stem set at 400 ft. for 1 hrs.

Artesian flow ___ g.p.m. Date

Temperature of water 55 Was a chemical analysis made? ☑ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: 1 constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☑ Engineer ☐ Trainee Name (mn) TED WRIGHT
Driller/Engineer/Trainee Signature
Driller or trainee License No.

IF TRAINEE: Driller's License No.
Driller's Signature

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
KEN DUFT WELL 1

[DRILLED IN 1977, ABANDONED ~2000]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 3, 2016; November 9, 2017

Well Log ID: 169448
Elev (ft): 2406
Depth (ft): 250
Quad: Albion

Latitude: 46.76208
Longitude: -117.22335
decimal degrees (WGS84)

¾, NE ¼, NE ¼, Sec. 26, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
801 Brayton Road, Pullman, Wash.; on west side of road, in front (east of) house

Location Method:
Latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-07, "Duft’s old well - abandoned in ~2000"); Whitman County Assessor; Google Earth imagery; topographic map

<table>
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<tr>
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<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
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<tr>
<td>Clay</td>
<td>2 – 18</td>
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<tr>
<td>Wanapum Basalt</td>
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<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>18 – 25</td>
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<td>131 – 136</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>136 – 183</td>
</tr>
<tr>
<td>Basalt, fractured, vesicular</td>
<td>183 – 188</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>188 – 214</td>
</tr>
</tbody>
</table>

R2 magnetostratigraphic unit(?)
Meyer Ridge Member(?)

| Basalt, vesicular           | 214 – 250 |

**Comments:**

There are two wells on this property: Ken Duft 1, and Kenneth Duft 2 (drilled in 2000).

Whitman County Tax Parcel 200004415261905, 801 BRAYTON RD, NE TT 132' X 360', owner is DUFT, KENNETH D; 1.0 acre, one story residence built in 1971.

**References Cited:**

WELL LOG
DEPTH AND STRATA
- Clay
- Fractured Basalt
- Basalt
- Soft Brown Basalt
- Brown Basalt
- Clay
- Sand
- Clay
- Clay
- Basalt
- Fractured Porous Basalt
- Porous Basalt

ADCOCK AIR DRILLING
511 AIRWAY DR. LEWISTON, IDAHO PHONE 5H 3.0008
6 TO 12 INCH AIR DRILLED WELLS

WELL NO. 1

OWNER OF WELL: Ray Buft
LOCATION OF WELL: N47° 26' - W117° 47'
NEAREST POST OFFICE: Pulauen
STATE: IDAHO
COUNTY: Latah
DRILLING BEGUN: 10/10/77
WELL FINISHED: 11/1/77

WELL RECORD
CASING SIZE: 8 x 6 in.
CASING DEPTH: 640 ft.
HOLE SIZE: 9 in.
HOLE DEPTH: 250 ft.
CAPACITY OF WELL: 60 gpm @ 7.5 ft.
PUMP SETTINGS: 220 - 270 ft.
CASING PERFORATIONS: None

INVOICE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 ft. of 8 in. hole</td>
<td>$13.00</td>
<td>$325.00</td>
</tr>
<tr>
<td>34 ft. of 8 in. casing</td>
<td>$7.00</td>
<td>238.00</td>
</tr>
<tr>
<td>24 ft. of 6 in. liner</td>
<td>$5.00</td>
<td>120.00</td>
</tr>
<tr>
<td>36 ft. of cement</td>
<td>$5.00</td>
<td>180.00</td>
</tr>
</tbody>
</table>

TOTAL AMOUNT DUE: $4948.65

RECEIVED

The Department of Ecology does NOT Warranty the Data and/or information on this Well Report.
KENNETH DUFT WELL 2
[DRILLED IN 2000]
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, March 19, 2016; November 9, 2017

Well Log ID: 308444  Elev (ft): 2383.92  Depth (ft): 230  Quad: Albion

Latitude: 46.761995  Longitude: -117.224415  decimal degrees (WGS84)

  ¼,  NE ¼,  NE ¼,  Sec. 26 ,  T. 15 N ,  R. 44 E

Well Address and (or) Other Location Information:
801 Brayton Road, Pullman, Wash., on west side of road, behind (west of) house

Location Method:
Latitude, longitude, and elevation from Taylor Engineering, Inc. (2013); Whitman County
Assessor; Google Earth imagery; topographic map. Well DW-09 of Moxley (2012, p. 73, "Duft
irrigation well"). Street name incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil and clay</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>5 – 71</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>71 – 96</td>
</tr>
<tr>
<td>Sand, white</td>
<td>96 – 119</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>119 – 177</td>
</tr>
<tr>
<td>Basalt, fractured, soft</td>
<td>177 – 179</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>179 – 207</td>
</tr>
</tbody>
</table>
Latah Formation
Sediments of Moscow
Basalt and clay

Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member(?)
Basalt, porous

Comments:

There are two wells on this property: Ken Duft 1 (drilled in 1977) and Kenneth Duft 2.

Whitman County Tax Parcel 200004415261905, 801 BRAYTON RD, NE TT 132’ X 360’, owner is DUFT, KENNETH D; 1.0 acre, one story residence built in 1971.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name KENNETH D. DUFT
Address 801 RIVER ROAD, PULLMAN, WA 99163

(2a) STREET ADDRESS OF WELL (or nearest address) SAME

(TAX PARCEL NO.

(3) PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
[ ] Irrigation [ ] Test Well [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
[ ] New Well
[ ] Deepened
[ ] Dug
[ ] Bored
[ ] Reconditioned
[ ] Cable
[ ] Driven
[ ] Decommission
[ ] Rotary
[ ] Jetted

(5) DIMENSIONS: Diameter of well 8 & 6 inches
Drilled 230 feet
Depth of completed well 230 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed:
[ ] Welded
[ ] Liner Installed
[ ] Threaded

Perforations:
[ ] Yes
[ ] No

Type of perforator used

Size of perforations
2 in. by

perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens:
[ ] Yes
[ ] No
[ ] K-Pac Location

Manufacturer's Name

Type

Model No

Diam

Slot size

from ft. to ft.

Diam

Slot size

from ft. to ft.

Gravel/Filter packed:
[ ] Yes
[ ] No

Size of gravel/sand

Material placed from ft. to ft.

Surface seal:
[ ] Yes
[ ] No

To what depth? 21 ft.

Material used in seal
BENTONITE

Did strata contain unusable water?
[ ] Yes
[ ] No

Type of strata
Depth of strata

Method of sealing strata off

(7) PUMP: Manufacturer's Name

Type

H.P.

(8) WATER LEVELS:

Land-surface elevation above mean sea level

Static level 125 ft. below top of well

Date 3/27/2000

Artesian pressure

Date

Artesian water is controlled by

(Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made?
[ ] Yes
[ ] No

If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Driller test gal./min. with ft. drawdown after hrs.

Air test 60 gal./min. with stem set at 200 ft. for 1 hr.

Artesian flow g.p.m. Date

Temperature of water

Was a chemical analysis made?
[ ] Yes
[ ] No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:

Formation: Description by color, character, size of material, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL FROM TO
SOIL 0 1
CLAY BROWN 1 5
CLAY BROWN 71 96
BASALT HARD GRAY 5 71
BASALT HARD GRAY 71 96
SAND WHITE 96 119
BASALT HARD GRAY 119 177
BASALT FRACURED GRAY SOFT 177 179
BASALT HARD GRAY 179 207
BASALT & CLAY 207 212
BASALT POROUS SOFT 212 230

Work Started 3/21/2000
Completed 3/27/2000

WELL CONSTRUCTION CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name TED WRIGHT
License No. 0532

Trainee Name

License No.

Drilling Company MCPherson & Wright Drilling

License No. 0532

Address 2246 BURRELL, LEWISTON ID. 83501

Contractor's Registration No. MCPhewd135n1

Date 12/25/00

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-8600. The TDD number is (360) 407-6006.

472
Kirk and Melissa Dugger Well

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 31, 2018

Well Log ID: 1643684  Elev (ft): 2470 ±10  Depth (ft): 95  7.5’  Quad: Albion

Latitude: 46.841988°  Longitude: -117.126319°  decimal degrees (WGS84)

¼, NW ¼, SE ¼, Sec. 27, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
101 Palouse-Albion Road, Pullman, Wash.; on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Site visit March 27, 2018 — well not observed

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From 0 To 10</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
</tbody>
</table>

Basalt 10 – 95
Comments:

Whitman County Tax Parcel 200004516274290; 101 PALOUSE-ALBION RD; SE PT JACK CLARK SR 195 SHORT PLAT; 6.0 acres; 04/12/12: grantors were CLARK, STEVEN D/DONNA to LOCKEMAN, STANIA; 06/29/16: grantor was LOCKEMAN, STANIA to TOY SHOP LLC; 08/08/18: grantor was TOY SHOP LLC to DUGGER, KIRK & MELISSA.

Steven D. Clark died December 23, 2016 (Moscow-Pullman Daily News, 2016).

Kirk and Melissa Dugger are affiliated with Homestead Family Grain (Homestead Family Grain, 2016).

References Cited:


WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle)
- Construction
- Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: □ Domestic □ Industrial □ Municipal
□ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: Owner’s number of well (if more than one)
□ New well □ Reconditioned Method: □ Deg □ Bored □ Driven
□ Designed □ Cable □ Rotary □ Jetted

DIMENSIONS: Diameter of well ______ inches, drilled ______ ft.
Depth of completed well ______ ft.

CONSTRUCTION DETAILS

Casing □ Welded ______ Dia. 12-2 ft. to 18 ft.
Installed: □ Liner installed ______ Dia. 15 ft. to 95 ft.
□ Threaded ______ Dia. ______ ft. to ______ ft.

Perforations: □ Yes □ No
Type of perforator used: ______
Size of perforation: ______ in. by ______ in. and no. of perforations ______

Screens: □ Yes □ No □ K-Pac Location
Manufacturer’s Name

Type __________ Model No. __________
Diam. ______ Slot size ______ ft. to ______ ft.
Diam. ______ Slot size ______ ft. to ______ ft.

Gravel/Filter packed: □ Yes □ No Size of gravel/sand ______
Materials placed from ______ ft. to ______ ft.

Surface Seal: □ Yes □ No To what depth ______ ft.
Material used in seal: ______
Did any strata contain unusable water? □ Yes □ No
Type of water? ______ Depth of strata ______

Method of sealing strata off ______

PUMP: Manufacturer’s Name

Type: □ ______

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level ______ ft. below top of well Date 10-1-17
Artesian pressure ______ lbs per square inch Date ______

Artesian water is controlled by ______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? □ Yes □ No If yes, by whom? ______
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level ______ ______ ______ ______
Date of test ______ ______ ______ ______

Bailer test: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Airest: ______ gal/min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date ______

Temperature of water ______ Was a chemical analysis made? □ Yes □ No

WELL CONSTRUCTION CERTIFICATION: I, _______ Driller □ Engineer □ Trainee Name (Print): _______
Driller/Engineer/Trainee License No. □ _______ Date: _______ 

Drilling Company: _______ Contract Company: _______ Date: _______
Address: _______ 
City, State, Zip: _______ 

Register’s Name: _______ Registration No. _______ Date: _______

RECEIVED
OCT 25 2017
Department of Ecology
Eastern Washington Office

JIM DUNNING WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018

Well Log ID: Ralston (1996) [Not in WA DOE database]
Elev (ft): 2495 ±10
Depth (ft): 240
Quad: Palouse

Latitude: 46.915714°
Longitude: -117.090279° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
15601 State Route 272, Palouse, Wash.; on south side of road (likely in Government Lot 3, at north side of Section 1)

Location Method:
Location is for mobile home (~50 ft southwest of house sharing same driveway); well log from Ralston (1996); Whitman County Assessor; Google Earth imagery; topographic map; site visit March 24, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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<td>Overburden</td>
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<td>Soil</td>
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</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>31</td>
</tr>
<tr>
<td>Basalt</td>
<td>38</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>140</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>145</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>176</td>
</tr>
<tr>
<td>Sand, fine, black</td>
<td>205</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 3538500008740850, 15601 SR 272 99161, 60X20MARLETTE 1968, owners are DUNNING, JAMES/PATSY; 42810 DEER HEIGHTS DR N, DEER MEADOWS WA 99122-9472.

[Mr. Dunning’s other parcel is Whitman County Tax Parcel 826750000000019, PALOUSE N1/2 1-16-45 BAL, owner is DUNNING, JAMES; 10.0 acres.]

Left, Metsker Map (1957) showing section 1, T 16 N., R 45 E., for Palouse, Wash.

References Cited:


## APPENDIX A

**Logs of wells near Palouse**

**Washington**

<table>
<thead>
<tr>
<th>15/45 2 sw/ne</th>
<th>Zakarison</th>
<th>DTW = ??</th>
<th>Q = 6 gpm</th>
</tr>
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<tbody>
<tr>
<td>0 - 2</td>
<td>soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 -106</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>106 -130</td>
<td>basalt</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>16/45 1 ne/sw</th>
<th>Swede Parish</th>
<th>DTW = ??</th>
<th>Q = 20 gpm</th>
</tr>
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<tbody>
<tr>
<td>0 - 2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2 - 52</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52 - 61</td>
<td>cobble</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61 - 85</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85 -196</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>196 -219</td>
<td>sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>219 -220</td>
<td>clay</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>16/45 1 se/se</th>
<th>Reggie Parson</th>
<th>DTW = 47'</th>
<th>Q = 20 gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 2</td>
<td>soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - 34</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34 - 79</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>79 - 84</td>
<td>basalt and clay, soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>84 -101</td>
<td>basalt, fractured</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101 -103</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16/45 1 nw/nw</th>
<th>Jim Dunning</th>
<th>DTW = ??</th>
<th>Q = 16 gpm</th>
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<tr>
<td>0 - 2</td>
<td>soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - 31</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 - 38</td>
<td>basalt, soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 -140</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140 -145</td>
<td>basalt, broken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145 -176</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>176 -205</td>
<td>clay, sandy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>205 -240</td>
<td>sand, fine, black - water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16/45 1 sw/sw</th>
<th>A. Flansburg</th>
<th>DTW = 157'</th>
<th>Q = 15 gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 51</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51 - 55</td>
<td>broken rock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 -213</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>213 -233</td>
<td>sand clay, water</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>16/45 2 nw/nw</th>
<th>J. Leendersten</th>
<th>DTW = 97'</th>
<th>Q = 20 gpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 2</td>
<td>soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 - 6</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 -165</td>
<td>basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>165 -174</td>
<td>basalt, weathered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>174 -186</td>
<td>clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>186 -208</td>
<td>sand and clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>208 -230</td>
<td>sand, fine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ELKS GOLF CLUB WELL 2
[Drilled in 1946]

Geologic Interpretation of Water Well Driller’s Log

Well Log ID: NA  Elev (ft): 2589.32  Depth (ft): 252  Quad: Moscow East

Latitude: 46.723399  Longitude: -116.946966  decimal degrees (WGS84)

SW ¼, SW ¼, NE ¼, Sec. 15, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
3080 ID 8, Moscow, Idaho; Elks Lodge golf course, on north side of highway

Location Method:
Approximate location from Smith (1958); said to be near Highway 8 (Gill, 1998). The surveyed elevation of 2589.32 ft (Smith, 1958) indicated that this well must have been drilled in the SW¼ SW¼ of the section; however, Crosthwaite (1975, p. 45) described location as "39N-5W-15acc1" which is SW¼ SW¼ NE¼, sec. 15, T15N, R5W; Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, black</td>
<td>0</td>
</tr>
<tr>
<td>Modern sediments(?)</td>
<td></td>
</tr>
<tr>
<td>Sand, fine</td>
<td>3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>10</td>
</tr>
<tr>
<td>Gravel, with wood</td>
<td>33</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>63</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>78</td>
</tr>
<tr>
<td>Sand</td>
<td>116</td>
</tr>
<tr>
<td>Basalt</td>
<td>119</td>
</tr>
</tbody>
</table>
Latah Formation
Vantage Member
Sand

250 – 252

Comments:

Log was interpreted from graphic log by Smith (1958). The sand in the middle of the basalt sequence adds to the evidence in two other Elks golf course wells (well 3 was drilled in 1968, well 5 in 1998) that the Lolo flow was invading sediments at this location.

Latah County Tax Parcel RP39N05W151255, 3080 HWY 8 E, owner is ELKS LODGE #249, 34.13 AC IN SENE; 38.18 AC IN SWNE 15 39 5.

References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
Introduction

The following report summarizes the results from my investigation of the Elk's Golf Course water wells. The four wells currently at the Elks include:

- Well 1 (by house) - pump pulled and backfilled with sand or slurry to a depth of 41' below surface,
- Well 2 (by highway) - pump was pulled Feb. 11, 1998 - only well with a detailed well log (see Appendix A), this well was used as the observation well for the aquifer test
- Well 3 (by creek) - the only well presently used for irrigation, this well was used as the pumping well for the aquifer test and
- Well 4 (by driveway) - present drinking water well.

Currently, the wells do not produce adequate water to irrigate the course during the 60 to 120 days of hot weather each summer. Present capacity is thought to be approximately 100 gallons per minute (gpm) from Well 3. Improvements in course irrigation and construction of a larger reservoir (northeast of present course) will result in a required capacity of nearly 300 gpm during the summer months.

Purpose

The purpose of my investigation is to provide information on the hydrogeologic characteristics of the aquifer below the Elk's Golf Course. This information will enable Dr. John Bond, P.G., to determine what course of action needs to be taken to increase the present pumping capacity at the Elk's. Wells 2 and 3 are completed in the Wanapum Basalt formation; this formation is characterized as a confined aquifer offering good water bearing capability. Reviewing other local wells completed in the Wanapum shows that the well at the University of Idaho Farm (1/4 mile west) is capable of producing 400 gallons per minute (gpm), the old Moscow Cemetery Well was capable of producing nearly 800 gpm and City of Moscow Wells 2 and 3, each produce 1000 gpm. The wells in the Wanapum Basalt tend to have high concentrations of iron (Fe) and Manganese (Mn) which is not a problem for irrigation.

(Extracted from Gill, 1998)
ELKS GOLF CLUB WELL 3

[Drilled in 1968]

Geologic Interpretation of Water Well Driller’s Log

Well Log ID: NA  Elev (ft): 2606  Depth (ft): 270  Quad: Moscow East

Latitude: 46.724092  Longitude: -116.942790  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
3080 ID 8, Moscow, Idaho; Elks Lodge golf course, on north side of highway

Location Method:
Approximate location based upon Crosthwaite (1975, fig. 5). Pictorial on driller’s log placed hole in NW¼ NW¼ SE¼ of sec. 15, barely below the north margin of the SE¼ sec. 15. Elevation is from Crosthwaite (1975, p. 12) who placed well in SW¼ SE¼ NE¼ sec. 15 (39N-5W-15adc1). Gill (1998) said well 3 is by the creek; Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, white and gray</td>
<td>2</td>
<td>45</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>45</td>
<td>51</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>51</td>
<td>145</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>145</td>
<td>151</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>151</td>
<td>168</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown, white, and tan</td>
<td>168</td>
<td>200</td>
</tr>
<tr>
<td>Clay, white, sandy</td>
<td>200</td>
<td>238</td>
</tr>
<tr>
<td>Clay, brown, gray, sandy</td>
<td>238</td>
<td>270</td>
</tr>
</tbody>
</table>
Comments:

The interbedded clay with the basalt indicates the basalt flow was invading the sediments at this location. Similar interbedding is reported for two other Elks Lodge golf course wells (well 2 was drilled in 1946, well 5 in 1998).

Latah County Tax Parcel RP39N05W151255, 3080 HWY 8 E, owner is ELKS LODGE #249, 34.13 AC IN SENE; 38.18 AC IN SWNE 15 39 5.

References Cited:


REPORT OF WELL DRILLER
State of Idaho

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:
Name: Moscow, Idaho 83843
Address: Moscow, Idaho 83843

Owner's Permit No.: 87-68-N-10

NATURE OF WORK (check): Replacement well □
New well □ Deepened □ Abandoned □

Water is to be used for: Domestic □ Irrigation □ Other □

METHOD OF CONSTRUCTION: Rotary □ Cable X

CASING SCHEDULE: Threaded X Welded □

Size of drilled hole: 23 1/2" Total depth of well: 276 ft.

Standing water level below ground: 3 ft. temp.

Fahr. Test delivery: 60 gpm

6. Ball □

Size of pump and motor used to make test:
5 H.P. Motor □ Submersible □

Length of time of test: 52 Hrs. Min.

Drawdown: 10 ft. Artesian pressure: ft.

above land surface. Give flow cfs or

or gpm. ShutOff pressure:

Controlled by: Valve □ Cap □ Plug □

No control □ Does well leak around casing?
Yes □ No X

From DEPT. MATERIAL WATER

FEET FEET

10. Clay, grey soft 140. 1.5 8/8

15. Clay, white sand and peat 40. 1.5 8/8

25. Clay 51. 1.5 8/8

31. Clay, brown sand to 10 ft. 145. 1.5 8/8

41. Clay 108 1.5 8/8

61. Clay 155 1.5 8/8

126. Clay, brown sand to 10 ft. 23. 1.6 8/8

25. Clay 47. 1.5 8/8

30. Clay 47. 1.5 8/8

1. Clay 47. 1.5 8/8

Was Screen Installed? Yes □ No X

Manufacturer's name:

Type of perforator used: Casing X

Size of perforations: 6" by 4/8" X

8/8" perforations from ft. to ft.

1/8" perforations from ft. to ft.

3/8" perforations from ft. to ft.

Was Screen Installed? Yes □ No X

CONSTRUCTION: Well gravel packed? Yes □

No. □ size of gravel X: Gravel placed from ft. to ft.

Surface seal provided? Yes □ No □ To what depth?

226 ft. Material used in seal: Drive Above

Did any strata contain unusable water? Yes □

No. □ Type of water:

Depth of strata ft. Method of sealing strata off:

Surface casing used? Yes □ No □

Cemented in place? Yes □ No □

Locate well in section

LOCATION OF WELL: County 8

Sec. 15 T. 29 N. R. 5 E. 30

Use other side for additional remarks

Insgs

486
(Extracted from Crosthwaite, 1975)
ELKS GOLF CLUB WELL 5

[Drilled in 1998]

Geologic Interpretation of Water Well Driller’s Log

Well Log ID: D0005630  Elev (ft): 2593.8  Depth (ft): 520  7.5’ Quad: Moscow East

Latitude: 46.724805  Longitude: -116.948225  decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 15, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
3080 ID 8, Moscow, Idaho; Elks Lodge golf course, on north side of highway

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Silt</td>
<td>35</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>70</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>72</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, tan, yellow, white</td>
<td>235</td>
</tr>
<tr>
<td>Sand</td>
<td>258</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>295</td>
</tr>
<tr>
<td>Basalt* and sand</td>
<td>440</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>480</td>
</tr>
<tr>
<td>Prebasalt Rocks</td>
<td></td>
</tr>
</tbody>
</table>

488
Comments:

*The basalt encountered at 440 ft in depth is believed to be invasive Lolo basalt. This interpretation is based on its reported mixture of basalt and sand, and its elevation 100 ft above Grande Ronde Basalt approximately 1 mi east in the Sunset Memorial Gardens well and Moscow Cemetery well 2. The high static level of 28 ft also suggests the basalts are all in the upper aquifer (not the lower aquifer).

Latah County Tax Parcel RP39N05W151255, 3080 HWY 8 E, owner is ELKS LODGE #249, 34.13 AC IN SENE; 38.18 AC IN SWNE 15 39 5.

References Cited:
1. DRILLING PERMIT NO. D-00-0-5638-
   Other IDWR No. 87-98-N-44

2. OWNER:
   Name BROW Moscow Lodge
   Address Box 9026
   City Moscow
   State ID Zip 83843

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location

4. PROPOSED USE: IRRIGATION
5. TYPE OF WORK: NEW WELL
6. DRILL METHOD: AIR ROTARY
7. SAMPLING PROCEDURES

<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>Amount</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>HEMSTOPITE</td>
<td>0</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>13S</td>
<td>Overbore</td>
</tr>
</tbody>
</table>

Was drive shoe used? YES  Shoe Depth(s) 73
Was drive shoe seal tested? YES  How? Air Test

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Dia.</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>-200</td>
<td>73</td>
<td>250</td>
<td>STEEL</td>
</tr>
<tr>
<td>6</td>
<td>-200</td>
<td>290</td>
<td>250</td>
<td>STEEL</td>
</tr>
</tbody>
</table>

Length of Headpipe
Length of Tailpipe

9. PERFORATIONS/SCREENS:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diam.</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>202</td>
<td>235</td>
<td>5/8 x 9</td>
<td>40</td>
<td>6</td>
<td>STEEL</td>
</tr>
<tr>
<td>258</td>
<td>278</td>
<td>1/8 x 10</td>
<td>40</td>
<td>6</td>
<td>STEEL</td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
28 ft. below ground

11. WELL TESTS:
   Test type AIR
   
<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Depth</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0</td>
<td>200</td>
<td>2+</td>
</tr>
</tbody>
</table>
   
Water temp. 54
Bottom hole temp.

Water Quality test or comment: Good

12. LITHOGRAPHIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Bore</th>
<th>Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>22</td>
<td>Clay Brown</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>22</td>
<td>35</td>
<td>Clay Sandy Tan</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>35</td>
<td>70</td>
<td>Silt</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>70</td>
<td>72</td>
<td>Clay Tan</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>72</td>
<td>80</td>
<td>Basalt Blue</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>80</td>
<td>205</td>
<td>Basalt Blue</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>205</td>
<td>235</td>
<td>Basalt Gray</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>235</td>
<td>238</td>
<td>Clay Tan</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>238</td>
<td>242</td>
<td>Clay Yellow</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>242</td>
<td>251</td>
<td>Clay White</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>251</td>
<td>260</td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>260</td>
<td>295</td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>295</td>
<td>440</td>
<td>Clay Brown</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>440</td>
<td>491</td>
<td>Basalt &amp; Sand</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>491</td>
<td>520</td>
<td>Granite Salt &amp; Pepper</td>
<td></td>
</tr>
</tbody>
</table>

Completed Depth 200 (Measurable)
Date Started 10/28/98  Completed 11/4/98

13. DRILLER'S CERTIFICATION:
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name STUWEUENI VERSINN DRILLING
Firm No. 545
Date 11-10-98

Printed Name Supervising Official

Printed Name Supervisor or Operator
(Sign once if Firm Official & Operator)
BILL ELLIOT WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, February 20, 2016

Well Log ID: NA Elev (ft): 2730 Depth (ft): 238 Quad: Robinson Lake

Elev (ft): 2730 Depth (ft): 238 7.5’

Latitude: 46.785000 Longitude: -116.985610 decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 29, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3281 Foothill Road, Moscow, Idaho; north of Moscow, on west side of road

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Latah County Assessor; Google Earth imagery; topographic map

GEOLOGIC UNITS — DESCRIPTION DEPTH (ft)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>0</td>
<td>107</td>
</tr>
<tr>
<td>Sand</td>
<td></td>
<td>107</td>
<td>112</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>112</td>
<td>127</td>
</tr>
<tr>
<td>Sand</td>
<td></td>
<td>127</td>
<td>134</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>134</td>
<td>237</td>
</tr>
<tr>
<td>Sand</td>
<td></td>
<td>237</td>
<td>238</td>
</tr>
</tbody>
</table>
Comments:
The well driller’s log is brief; his alternating clay and quartz entries suggest upward fining cycles of gravel to clay similar to those described by Bush and others (2016, Stop 2) in the Moscow area. Thus the interpretation of sediments and not granite.

Latah County Tax Parcel RP40N05W291059, 3281 FOOTHILL RD, owner is ELLIOT, WILLIAM J; 8.0 acres.

References Cited:
DAHKO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO.: 87-95-N-5-000
Other IDWR No.: __________

2. OWNER:
Name: Bill Swift
Address: 1676 N. Main
City: Moscow
State: ID Zip: 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was drive shoe used? ☐ ☐ ☐ N Shoe Depth(s) __________
Was drive shoe seal tested? ☐ ☐ ☐ How? __________

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe __________ Length of Tailpipe __________

9. PERFORATIONS/SCREENS

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

<table>
<thead>
<tr>
<th>80 ft. below ground</th>
<th>Artesian pressure ___ lb.</th>
</tr>
</thead>
</table>

Depth flow encountered __ ft. Describe access port or control devices:

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____________</td>
<td>_________</td>
<td>_____________</td>
<td>________</td>
</tr>
</tbody>
</table>

Water Temp. __________ Bottom Hole Temp. __________
Water Quality test or comments: __________

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 10 60 70</td>
<td>overburden clay</td>
<td>3/1</td>
<td>3/1</td>
</tr>
<tr>
<td>8 107 112</td>
<td>gravel sand</td>
<td>3/1</td>
<td>3/1</td>
</tr>
<tr>
<td>8 112 117</td>
<td>clay</td>
<td>3/1</td>
<td>3/1</td>
</tr>
<tr>
<td>8 122 127</td>
<td>gravel sand</td>
<td>3/1</td>
<td>3/1</td>
</tr>
<tr>
<td>8 134 139</td>
<td>quartzite</td>
<td>3/1</td>
<td>3/1</td>
</tr>
<tr>
<td>8 227 232</td>
<td>quartz</td>
<td>3/1</td>
<td>3/1</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: WITT WELL DRILLING
Firm No.: 58

Firm Official: Earl WIT 
Date: 4/14/95

Supervisor or Operator: WIT
Date: 4/14/95

(Signature if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES
BOB ELLISON WELL
Geologic Interpretation of Water Well Driller’s Log

Well Log ID: D0033733  Elev (ft): 2665 ±10  Depth (ft): 350  Quad: Viola

Latitude: 46.759721  Longitude: -117.014764  decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 31, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1028 Compton Court, Moscow, Idaho; on north side of cul de sac; has a basketball court

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery for house, topographic map. PLSS subdivisions incorrect on driller's report. Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>12</td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td>110</td>
</tr>
<tr>
<td>Clay, brown, sandy, white, and gray</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>340</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, various hardnesses</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td>110</td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>340</td>
</tr>
</tbody>
</table>
Comments:
Extra thickness of basalt (230 ft) suggests driller missed interbed? Low static (at 233 ft in depth) suggests Grande Ronde?

Latah County Tax Parcel RP016160010050, 1028 COMPTON CT, BLK 1 LOT 5, CANTERWOOD ESTATES, owner is ELLISON, ROBERT L.

Also, note that there is a well (and well house) on southwest side of bend in road (west of basketball court), on a City of Moscow parcel (see photo below).

Well is near center of photo, beyond well house.

References Cited:
IDAHIO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D
   WELL DRILLING PERMIT NO.
   Water Right or Injection Well No.
   00 33 788
   215291

2. OWNER:
   Name: Bob Ellison
   Address: 1027 Complex Ct.
   City: Moscow
   State: ID
   Zip: 83843

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well.
   Twp.: 40 1/4
   Rge.: 31 1/4
   Sec.: 1 1/2
   Gov't. Lot: 1/4
   County: Latah
   Area: 10 acres
   Address of Well Site: 1027 Complex Ct.
   City: Moscow
   Lat.: N
   Long.: W
   Address of Well Site:
   [Provide additional information as needed]

4. USE:
   Domestic  ☑
   Municipal  ☐
   Monitor  ☐
   Irrigation  ☐
   Thermal  ☐
   Injection  ☐
   Other  ☐

5. TYPE OF WORK: check all that apply
   ☑ New Well
   ☐ Modify
   ☐ Abandonment
   ☐ Other

6. DRILL METHOD:
   ☑ Air Rotary
   ☐ Cable
   ☐ Mud Rotary
   ☐ Other

7. SEALING PROCEDURES
   Seal Material
   From  To  Weight / Volume  Seal Placement Method
   Bentonte  3 3 450 a  Top Bore Peur

   Was drive shoe used?  ❌ Y  N
   Was drive shoe sealed?  ❌ Y  N

8. CASING/LINER:
   Diameter
   From  To  From  To  Gauge  Material
   6  0  -10  2  10  5  Steel
   4.5  -90  -350  160  PVC
   Length of Headpipe:  100 ft.
   Length of Tailpipe:  500 ft.
   Packer  ☐ Y  ☑ N  Type

9. PERFORATIONS/SCREENS Packer TYPE
   Perforation Method:  SAW
   Screen Type & Method of Installation
   From  To  Slot Size  Number  Diameter  Material
   -3 10  1/4  2  3  5  PVC
   Casing  Liner
   ☐  ☐

10. FILTER PACK
    Filter Material
    From  To  Weight / Volume  Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    285 ft. below ground  Artesian pressure:
    Depth flow encountered:  496 ft.
    Top of casing:  31
    Date:  6/12/04

12. WELL TESTS:
    Yield gal/min:
    Drawdown
    Pumping Level
    Time
    [Provide data as needed]

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia.
    From  To
    Remarks: Lithology, Water Quality & Temperature
    10  3 12  OVER BURDEN (dirt)
    10  12  33  Brown Clay
    10  33  66  Sandy Clay
    10  66  72  White Clay
    10  72  77  Gray Clay
    10  77  110  Brown Clay
    110  123  Blk Bskt
    123  240  Hard Gray Bskt
    240  325  Soft Blk Bskt
    325  390  Med Hl Bskt
    390  55  Sand

14. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were compiled with at the time the rig was removed.
    Company Name: Uhlenhott Drilling
    Firm No. 125
    Principal Driller: Jim Uhlenhott
    Date: 6/2/04
    Driller or Operator II: Randy Uhlenhott
    Date: 6/2/04
    Operator I:
    Date:
    Principal Driller and Rig Operator Required. Operator I must have signature of Driller/Operator II.
**JAMES C. EMERSON WELL 1**

[Drilled May 6, 1997]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: NA   Elev (ft): 2680 ±10   Depth (ft): 80   Quad: Viola

Latitude: 46.825082°   Longitude: -117.038464°   decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W

**Well Address and (or) Other Location Information:**
1035 Trestle Road, Viola, Idaho; on south side of road; driveway is 300 ft east of state line

**Location Method:**
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>5 – 55</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>55 – 80</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W124350; owner now is IZZO, JESS B; 1035 TRESTLE RD; 6.29 AC TAX #6722 SENW; 12 40 6

B**** Emerson used to reside at 1035 Trestle Road (Spokeo, Inc., 2018)

References Cited:

**WELL DRILLER'S REPORT**

**NORTHERN REGION**

**PERMIT NO.** 87-97-8

**RIG No.** 300

**OWNER:** James C. Emerson

**Address:** 2022 Meriwether Rd

**City:** Moscow ID Zip: 83843

**LOCATION OF WELL by legal description:**

Sketch map location must agree with written location.

**TYPE OF WORK** check all that apply

□ New Well □ Modify □ Abandonment □ Other

**DRILL METHOD**

□ Air Rotary □ Cable □ Mud Rotary □ Other

**SEALING PROCEDURES**

<table>
<thead>
<tr>
<th>Material</th>
<th>SEAL/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>0' - 40'</td>
<td>40#</td>
<td>DRY</td>
</tr>
</tbody>
</table>

**CASING/LINER:**

□ None

**PERFORATIONS/SCREENS**

□ Perforations Method: None

□ Screens Screen Type: None

**STATIC WATER LEVEL OR ARTESIAN PRESSURE:**

0 ft. below ground

Artesian pressure: 0 lb.

Depth flow encountered: 0 ft.

Describe access port or control devices:

**LITHOLOGIC LOG:** (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Size</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; O.D.</td>
<td>5'</td>
<td>10'</td>
<td>Top Soil</td>
</tr>
<tr>
<td>9&quot; O.D.</td>
<td>15'</td>
<td>20'</td>
<td>Sandy Clay</td>
</tr>
<tr>
<td>8&quot; O.D.</td>
<td>25'</td>
<td>30'</td>
<td>Decomposed Granite, Trap</td>
</tr>
</tbody>
</table>

**DRILLER'S CERTIFICATION**

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: T.R. Well Drilling

Firm No.: 539

Firm Official: Jim Wells

Date: 6-10-97

Supervisor or Operator:

(Sign once if Firm Official & Operator)

**FURTHER WRITINGS TO WATER RESOURCES**

SENW 12 40N 6W
JAMES C. EMERSON WELL 2
[Drilled May 14, 1997; Deepened August 20, 1997]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 10, 2018

Well Log ID: D0003187
Elev (ft): 2680 ±10
Depth 0–130; 130–700 (ft): 7.5’
Quad: Viola

Latitude: 46.825306°
Longitude: -117.035403°
decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W

Well Address and (or) Other Location Information:
1035 Trestle Road, Viola, Idaho; on south side of road; driveway is 300 ft east of state line

Location Method:
Assumed location is inside driveway loop; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>8 – 30</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>30 – 100</td>
</tr>
<tr>
<td>Sand and clay, white</td>
<td>100 – 120</td>
</tr>
<tr>
<td>Sand</td>
<td>120 – 130</td>
</tr>
<tr>
<td>Sand and clay, brown</td>
<td>130 – 140</td>
</tr>
<tr>
<td>Sand and clay, gray</td>
<td>140 – 240</td>
</tr>
<tr>
<td>Sand and clay, white, brown</td>
<td>240 – 275</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>275 – 345</td>
</tr>
<tr>
<td>Idaho Batholith*</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>345 – 700</td>
</tr>
</tbody>
</table>

*Contact between granite and sediments of Bovill is difficult to determine.
Comments:

Latah County Tax Parcel RP40N06W124350; owner now is IZZO, JESS B; 1035 TRESTLE RD; 6.29 AC TAX #6722 SENW; 12 40 6

B**** Emerson used to reside at 1035 Trestle Road (Spokeo, Inc., 2018)

References Cited:

**WELL DRILLER'S REPORT**

**Use Typewriter or Ballpoint Pen**

---

**11. WELL TESTS:**
- **Yield:** 30 gal/min.
- **Drawdown:**
- **Pumping Level:**
- **Time:**

- **Water Temp.:** 56 °
- **Bottomhole temp.:**
- **Water Quality test or comments:** GOOD
- **Depth first water encountered:**

**12. LITHOLOGIC LOG:** (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>16&quot; 0'</td>
<td>16&quot; 30'</td>
<td>Brown Clay</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8&quot; 100'</td>
<td>8&quot; 100'</td>
<td>Sand &amp; Clay</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8&quot; 100'</td>
<td>8&quot; 130'</td>
<td>White Sandstone</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**8. CASING/LINER:**
- **Diameter:** 4" - 2 1/8 0.050 STEEL
- **Casing Liner Welded Threaded:**

---

**9. PERFORATIONS/SCREENS:**
- **Perforations Method:** Slotted
- **Screens Screen Type:**

---

**10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:**
- **41" ft. below ground**
- **Artiesrian pressure:**
- **Depth flow encountered:** 130 ft.
- **Describe access port or control devices:**

---

**13. DRILLER'S CERTIFICATION:**
- **Firm Name:** T & M Well Drilling
- **Firm No.:** 539
- **Date:** 5-14-97
- **Supervisor or Operator:**

---

**Office Use Only**

**Twp. Rge Sec.**

**1/4 1/4 1/4**

**Lat:**

**Long:**

**Firm Official:**

**Date:** 5-18-97

---

**received**

**5-22-97**

**502**

**SENW 12 40N 6W**
RECEIVED
IDaho Department of Water Resources
Well Driller's Report
Use Typewriter or Ballpoint Pen

26075

11. WELL TESTS:


Yield gal/min: Drawdown: Pumping Level: Flowing Artesian: Time:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Temp. 58° Bottom hole temp.: ______
Water Quality test or comments: good

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Core</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>130</td>
<td>140</td>
<td>brown sandy clay x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8&quot;</td>
<td>40</td>
<td>160</td>
<td>gray granite &amp; clay x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>8&quot;</td>
<td>160</td>
<td>240</td>
<td>gray sandy clay x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>8&quot;</td>
<td>240</td>
<td>275</td>
<td>brown white decomposed granite x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>8&quot;</td>
<td>275</td>
<td>320</td>
<td>white brown black granite x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>8&quot;</td>
<td>320</td>
<td>335</td>
<td>sandy &amp; clay x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>8&quot;</td>
<td>335</td>
<td>345</td>
<td>decomposed granite x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>6&quot;</td>
<td>345</td>
<td>545</td>
<td>black granite x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>6&quot;</td>
<td>545</td>
<td>575</td>
<td>brown black granite x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>575</td>
<td>640</td>
<td>brown black granite x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>640</td>
<td>655</td>
<td>brown black granite x</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

5. TYPE OF WORK check all that apply (Replacement etc.)

□ New Well □ Modify □ Abandonment □ Other - OLD PN

6. DRILL METHOD 87-97-N-8-200

□ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>bentonite</td>
<td>30 750 lb</td>
<td>dry</td>
</tr>
</tbody>
</table>

Was drive shoe used? Y □ Y N □ Shoe Depth(s): 240 & 340
Was drive shoe seal tested? Y □ N □ How?: Air

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8''</td>
<td>-2</td>
<td>+238 0250 steel x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6''</td>
<td>-2</td>
<td>+340 0250 steel x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe: Length of Tailpipe:

9. PERFORATIONS/SCREENS

□ X Perforations Method slotted
□ Screens Screen Type:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Shot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>640</td>
<td>3/16</td>
<td>60</td>
<td>4''</td>
<td>PVC</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

75 ft. below ground Artesian pressure P lb.
Depth flow encountered 575 ft. Describe access port or control devices:

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: JRU WELL DRILLING Firm No. 539
Firm Official: Jim Helbing Date: 8-31-97
Supervisor or Operator: Date:

(Sign once if Firm Official & Operator)

FORWARD TO IDAHO DEPARTMENT OF WATER RESOURCES
LYNN ENOS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 14, 2016

Well Log ID: 156185  Elev (ft): 2080 ±10  Depth (ft): 70  Quad: Colfax North

Latitude: 46.932548  Longitude: -117.291977  decimal degrees (WGS84)

 四,  SE 四,  SW 四,  Sec. 29,  T. 17 N,  R. 44 E

Well Address and (or) Other Location Information:
301 N Palouse River Road, Garfield, Wash., on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 10 of Bush and others (2005 [2006]). PLSS incorrect on driller’s report. Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>23 – 38</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>38 – 46</td>
</tr>
<tr>
<td>Basalt</td>
<td>46 – 61</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>61 – 70</td>
</tr>
</tbody>
</table>
Comments:

Whitman County TaxParcel 200004417293490, SE1/4 SW1/4 29-17-44; owners now are MAJ, JOSEPH/MARY (301 N PALOUSE RD); one story residence built in 1973, 5.0 acres.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: LYNNE ENDS
Address: Rte 2, Garfield, Wash

(2) LOCATION OF WELL: County: WHITMAN

(3) PROPOSED USE: Domestic X Industrial Municipal
Irrigation D Test Well D Other

(4) TYPE OF WORK: New well D Method: Dug D Bored D
Deepened D Cable D Driven D
Reconditioned D Rotary D Jetted D

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled: ft. Depth of completed well: 70 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: Diam. from t to 39 ft.
Threaded D Diam. from t to ft.
Welded D Diam. from t to ft.

Perforations: Yes D No X Type of perforator used:
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes D No X Size of gravel:
Gravel packed from ft. to ft.
Gravel placed from ft. to ft.

Surface seal: Yes D No X To what depth: 39 ft.
Material used in seal: BENTONITE SLURRY
Did any strata contain unusable water? Yes D No X
Type of water: Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name:
Type:

(8) WATER LEVELS:
Static level ft. below top of well: 112 ft.
Artesian pressure: lbs. per square inch: Date: 
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount, water level is lowered below static level
Was a pump test made? Yes D No X If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test

Dealer test: gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date:
Temperature of water. Was a chemical analysis made? Yes D No X

WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>LAVA BKN</td>
<td>23</td>
<td>38</td>
</tr>
<tr>
<td>LAVA SOL</td>
<td>38</td>
<td>46</td>
</tr>
<tr>
<td>LAVA SMD</td>
<td>46</td>
<td>61</td>
</tr>
<tr>
<td>LAVA PRS</td>
<td>61</td>
<td>76</td>
</tr>
</tbody>
</table>

RECEIVED
APR 15 1974
DEPARTMENT OF ECOLOGY
SEASONAL OFFICE

WORK STARTED: 11/5/73, COMPLETED: 11/7/73

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: BURNS & WITT
(Person, firm, or corporation) (Type or print)
Address: 2019 Powers, Lewiston, IDA

[Signed] G.R. Burns
(Well Driller)
License No. 0047 Date: 2/17/74

S.F. No. 7356 - Rev. 4-71.

(AIR TEST 50 GPM.

USE ADDITIONAL SHEETS IF NECESSARY)
Evangelical Free Church Well
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 17, 2016

Well Log ID: 570669
[Well Tag ID: BBH-177]

Elev (ft): 2610 ±10
Depth (ft): 255
Quad: Viola

Latitude: 46.753278
Longitude: -117.064643
decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 30, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
4812 Airport Road, Pullman, Wash., on north side of road; well is in field, ~100 ft southeast of parking lot.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Well street address and county are incorrect on driller’s report. Site visit April 15, 2016; verified well tag ID.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>2 – 79</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>79 – 130</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>130 – 142</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>142 – 217</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>217 – 247</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>247 – 255</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004615303904, 4812 PULLMAN AIRPORT RD, SW1/4 TRACR D N OF RD, owner is EVANGELICAL FREE CHURCH, 20.8 acres.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission** ("x" in circle)
- Construction
- Decommission

**Notice of Intent Number**

**PROPOSED USE:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**TYPE OF WORK:**
- Owner’s number of well (if more than one)
- New well
- Reconditioned
- Method: ____________
- Drilled
- Bored
- Driven
- Other

**DIMENSIONS:**
- Diameter of well: 8 inches, drilled 255 ft.
- Depth of completed well: 255 ft.

**CONSTRUCTION DETAILS**
- Casing: ______ Welded __ Diameter: 8 in. Diam. from top to bottom: 81 ft.
- Installed: ______ Liner installed 8 in. Diam. from top to bottom: 255 ft.
- Threaded ______ Diam. From top to bottom: ______

**Perforations:**
- Yes ______ No ______
- Type of perforator used: SAW

**SIZE of perf(s):** 1/8 in. by ft. in. and number of perf(s): 22 from 215 ft. to 255 ft.

**Screen(s):**
- Yes ______ No ______
- K-Pac ______ Location ______

**Manufacturer’s Name:**
- Type ______
- Diameter ______
- Slotted ______
- Slot size ______

**Filter/Filter packed:**
- Yes ______ No ______
- Size of gravel/sand ______

**Material placed from ______ to ______:**
- BENTONITE ______

**Surface Seal:**
- Yes ______ No ______
- To what depth ______ ft.

**Material used in seal:** BENTONITE

**Any strata contain usable water:**
- Yes ______ No ______

**Type of water:**
- Depth of stratum ______

**Method of sealing strata off:**

**PUMP:**
- Manufacturer’s Name ______
- Type ______
- H.P. ______

**WATER LEVELS:**
- Land-surface elevation above main sea level ______ ft.
- Static level: 20 ft. below top of well ______ ft.
- Artesian pressure ______ lbs. per square inch ______ Date ______
- Artesian water is controlled by ______ (cap, valve, etc.)

**WELL TESTS:**
- Drawdown in amount water level is lowered below static level ______ ft.
- Was a pump test made? ______
- If yes, by whom? ______
- Yield ______ gal/min. with ______ ft. drawdown after ______ hrs.
- Yield ______ gal/min. with ______ ft. drawdown after ______ hrs.
- Yield ______ gal/min. with ______ ft. drawdown after ______ hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

**Date of test ______**
- Bailer test ______
- Arttest ______
- Artesian flow ______
- Temperature of water ______
- Was a chemical analysis made? ______

**WELL CONSTRUCTION CERTIFICATION:**

- Driller ______
- Engineer ______
- Trainer ______
- Name (print): BRETT UHLENKOTT
- Driller/Engineer/Trainer License No. 2697

**IF TRAINEE:**
- Driller’s License No. ______
- Driller’s Signature ______

**CURRENT**

**Notice of Intent No.** W 178096

**Unique Ecology Well ID Tag No.:** BBH 177

**Water Right Permit No.:** ______

**Property Owner Name:** EVANGELICAL FREE CHURCH

**Well Street Address:** 1234 S. GRANDE AVENUE

**City:** PULLMAN ______
- **County:** ASOTIN ______

**Location:** NE1/4-1/4 SW1/4 Sec 30 Twn 15 R 46E WM 800
- **(s, t, r Still REQUIRED)?**

**Tax Parcel No. (Required):** 2000004115303904

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

**Formation:** Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIRT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAN CLAY</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>MED HARD BASALT</td>
<td>2</td>
<td>79</td>
</tr>
<tr>
<td>MED HARD BASALT</td>
<td>79</td>
<td>130</td>
</tr>
<tr>
<td>MED HARD BASALT</td>
<td>79</td>
<td>130</td>
</tr>
<tr>
<td>MED HARD BASALT</td>
<td>130</td>
<td>270</td>
</tr>
<tr>
<td>MED HARD BASALT</td>
<td>270</td>
<td>255</td>
</tr>
</tbody>
</table>

**Drilling Company:** TWO U DRILLING, LLC

**Address:** PO BOX 104

**City, State, Zip:** COTTONWOOD, ID, 83522

**Contractor’s Registration No.:** RAYUHLP270A

**Driller or trainer License No.:** 2697

**Contractor’s License No.:** 2697

**Driller/Engineer/Trainer Signature:** BRETT UHLENKOTT

**Start Date:** 12/01/08

**Completed Date:** 12/08/08

**Department of Ecology**

**Eastern Regional Office**

255

**RECEIVED**

**JAN 2, 2009**

**RECEIVED**

**JAN 3, 2009**

Ecology is an Equal Opportunity Employer
**F–C Inc. Well**

*(F Bar C Inc. Well)*

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, October 8, 2016

---

**Well Log ID:** 455940  
**Elev (ft):** 2420 ±10

**Depth (ft):** 260  
**7.5’ Quad:** Colfax North

**Latitude:** 46.948396  
**Longitude:** -117.286932  
**decimal degrees (WGS84)**

-----

**Well Address and (or) Other Location Information:**

1352 Glenwood Road, Colfax, Wash., on east side of road.

-----

**Location Method:**

Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 15, 2016).

-----

**GEOLOGIC UNITS — DESCRIPTION**

**DEPTH (ft)**

<table>
<thead>
<tr>
<th>Overburden</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>28 – 33</td>
</tr>
<tr>
<td>Basalt, medium</td>
<td>33 – 45</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>45 – 155</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latah Formation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>155 – 160</td>
</tr>
<tr>
<td>Clay, green</td>
<td>160 – 165</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>165 – 170</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>170 – 250</td>
</tr>
<tr>
<td>*Basalt, fractured</td>
<td>250 – 260</td>
</tr>
<tr>
<td>Basalt</td>
<td>260</td>
</tr>
</tbody>
</table>
Comments:

*This basalt could be the top of the Grande Ronde, but no interbed was noted.

Whitman County Tax Parcel 200004417204839, 1352 GLENWOOD RD, COLFAX, SE 1/4 3 AC IN S1/2 OF SW 1/4, owner is now LANDERS, RICHARD; 3.0 acres; no previous sales history recorded online.

Mr. Farrell Cochran died in 1995 (The Spokesman Review, 1995).

References Cited:

WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name F-C INC. C/O RALF MULLEN Telephone Address 302 N. MILL ST. COLOMBO, WA 99111

(2) LOCATION OF WELL: County WHITMAN
(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK:
Owner's Number of well (if more than one)

NEW WELL

(5) DIMENSIONS:
Diameter of well 6 inches
Drilled 260 ft. Depth of completed well 260 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 * Dia. from +1 ft. to 33 ft.
WELDED 4 * Dia. from -10 ft. to 260 ft.

Perforations: YES
Type of perforator used SELIL SAW
SIZE of perforations 1/8 in. by 6 in.
40 perforations from 240 ft. to 260 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: NO
Manufacturer's Name
Type
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO
Size of gravel

Gravel placed from ft. to ft.

Surface seal: YES
To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water
Depth of strata ft.
Method of sealing strata off CASING

(7) PUMP: Manufacturer's Name
Type NONE
H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level ...

Static level 100 ft. below top of well Date 07/17/96
Artesian Pressure lbs. per square inch Date
Artesian water controlled by CAP

(10) WELL LOG

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation.

MATERIAL | FROM | TO
--- | --- | ---
TOPSOIL | 0 | 1
CLAY | 1 | 28
BASALT SOFT | 28 | 33
BASALT MEDIUM | 33 | 45
BASALT HARD | 45 | 155
CLAY BROWN | 155 | 160
CLAY GREEN | 160 | 165
CLAY BROWN | 165 | 170
BASALT MEDIUM | 170 | 200
BASALT HARD | 200 | 250
BASALT FRACTURED W/WATER | 250 | 255
BASALT MEDIUM | 255 | 260

Received:
OCT - 3 1996

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Work started 07/16/96 Completed 07/17/96

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: FOGLE PUMP & SUPPLY, INC.
(Person, firm, or corporation) (Type or print)

ADDRESS 316 W 5TH

License No. 1287

[SIGNED] [SIGNATURE]

Contractor's Registration No. FOGLEPS09514 Date 08/30/96
**ALFRED FAIRBANKS WELL**

*Drilled in 1990*

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, November 1, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 163035</th>
<th>Elev (ft): 2455 ±10</th>
<th>Depth (ft): 200</th>
<th>7.5’</th>
<th>Quad: Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.678300</td>
<td>Longitude: -117.133963</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¼, SE ¼, SW ¼, Sec. 22, T. 14 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**

3301 Johnson Road, Pullman, Wash; on west side of road; well is on north side of driveway.

**Location Method:**

Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; Pullman quadrangle Well 2 of Bush and Garwood (2005 [2006]). Site visit (November 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>0 – 13</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>13 – 106</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>106 – 180</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td>180 – 200</td>
</tr>
</tbody>
</table>
Comments:

There are two wells on the property: Alfred Fairbanks well, and Gayle Fairbanks well (drilled in 2001).

Whitman County Tax Parcel 200004514223901, 31952 JOHNSON RD, SW PT LYING W OF RR & RD, owners are FAIRBANKS, ALFRED M/GAYLE (2047 W 1080 N, PROVO UT); 1½ story residence built in 1949, 9306 ft\(^2\), 6 bedrooms/6baths; 5.0 acres.

References Cited:

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Alfred Fairbanks
Address: 204678 Allman WA 99163

(2) LOCATION OF WELL: County: Whitman
(2a) STREET ADDRESS OF WELL: (or nearest address)

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ☐
Deepened ☐ Method: Dug ☐ Bored ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled 200 feet. Depth of completed well 200 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 ft. Diam. from 1 ft. to 20 ft.
Welded ❑ Liner installed ❑
Threaded ❑ Diam. from 10 ft. to 200 ft.

Perforations: Yes ☐ No ☐
Type of perforator used: Saw

Size of perforations 4\(\frac{1}{2}\) in. by 12 in.

50 perforations from 70 ft. to 200 ft.
20 perforations from 70 ft. to 200 ft.
30 perforations from 70 ft. to 200 ft.

Screens: Yes ☐ No ☐

Manufacturer's Name
Type: Model No.
Diam.: Slot size: from ft. to ft.
Diam.: Slot size: from ft. to ft.

Gravel packed: Yes ☐ No ☐
Size of gravel

Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☐ To what depth? 20 ft.

Material used in seal

Did any strata contain unusable water? Yes ☐ No ☐

Type of water

Depth of strata

Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Static level: 35 ft. below top of well
Artesian pressure: lbs. per square inch
Artesian water is controlled by
(Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐
If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test: 6 p.m. Air Test

Temperature of water: Was a chemical analysis made? Yes ☐ No ☐

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

McPherson & Wright Drilling
2240 E. 17th St.
Lowiston, Idaho 83501

(Signed) Eric Wright
(WELL DRILLER)
Contractor's License No. 0519
Registration No. 760613501
Date: 5-30-70
515

(USE ADDITIONAL SHEETS IF NECESSARY)
PAUL FAIRES WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 3, 2016

Well Log ID: 157366 Elev (ft): 2390±10 Depth (ft): 255 7.5’ Quad: Colfax North

Latitude: 46.911050 Longitude: -117.308823 decimal degrees (WGS84)

¼, ¼, NE ¼, Sec. 6, T. 16 N, R. 44 E

Well Address and (or) Other Location Information:
3301 Hilty Road, Colfax, Wash., on south side of road

Location Method:
Located at house; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 4 of Bush and others (2005 [2006]); Government Lot 11 or 12 per driller’s report (but DOE online database uses "GOV LOTS 1 & 2"). Site visit (September 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td>Clay</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
</tbody>
</table>

516
Comments:
Whitman County Tax Parcel 200004416061590, SCHIERMAN BROS SHPLT #1, owners are VILLA FAMILY REVOCABLE TRUST (RICHARD & PATRICIA VILLA), mailing address is 3301 HILTY RD; 2.0 acres.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Paul Squires

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: [ ] Domestic [ ] Irrigation [ ] Industrial [ ] Municipal

(4) TYPE OF WORK: [ ] Owner's number of well (if more than one)

[ ] New well

[ ] Deepened

[ ] Reconditioned

Method: [ ] Dug

[ ] Cable

[ ] Bored

[ ] Rotary

[ ] Jetted

(5) DIMENSIONS: Diameter of well: 8 ft. 6 inches.

Drilled 255 feet. Depth of completed well: 255 ft.

(6) CONSTRUCTION DETAILS:

Casing Installed: 8 ft. Diam. from 4 ft. to 20 ft.

Welded

[ ] Diameter from to ft.

Threaded [ ] Diameter from to ft.

Perforations: [ ] Yes [ ] No

Type of perforator used:

SIZE of perforations: in. by in.

perforations from to ft.

perforations from to ft.

perforations from to ft.

Screens: [ ] Yes [ ] No

Manufacturer's Name:

Type

Model No.

Diam. [ ] Slot size.

Diam. [ ] Slot size.

Gravel packed: [ ] Yes [ ] No

Size of gravel

Gravel placed from ft. to ft.

Surface seal: [ ] Yes [ ] No

To what depth? 20 ft.

Material used in seal:

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water:

Method of sealing strata off:

(7) PUMP: Manufacturer's Name:

Type: H.P.

(8) WATER LEVELS:

Land-surface elevation above mean sea level:

Static level 140 ft. below top of well Date 7-24-92

Artesian pressure per square inch Date

Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? [ ] Yes [ ] No

If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level

Date of test:

Bailer test gal./min. with ft. drawdown after hrs.

Air test gal./min. with stem set at 240 ft. for 1 hrs.

Artesian flow g.p.m. Date

Temperature of water Was a chemical analysis made? [ ] Yes [ ] No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO

[ ] Clay

[ ] Sand

[ ] Gravel

[ ] Rock

[ ] Other

RECEIVED

AUG 25 1992

DEPARTMENT OF
ECOL OGY

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME

McPHERSON & WRIGHT DRILLING

2240 Barren

Lewiston, Idaho 83501

Address

WEIL DRILLER License No. 0523

(Signed) Jack Wright

Contractor's Registration No. W1040135N 1 Date 8-10-92

(USE ADDITIONAL SHEETS IF NECESSARY)
# FAIRMONT CITY CEMETERY WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 13, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>293497</th>
<th>Elev (ft):</th>
<th>2580 ±10</th>
<th>Depth (ft):</th>
<th>365</th>
<th>7.5’</th>
<th>Quad: Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.710115</td>
<td>Longitude:</td>
<td>-117.172080</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼, NE ¼, SW ¼, Sec. 8, T. 14 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
500 SE Fairmont Road, Pullman, Wash., well house is in same building as restrooms, at east end of cemetery, south of Clearwater Drive

**Location Method:**
Location is for well house; Site visit (April 10, 2016); Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden</strong></td>
<td></td>
</tr>
<tr>
<td>Top soil and clay</td>
<td>0 – 44.5</td>
</tr>
<tr>
<td><strong>Wanapum Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>44.5 – 202</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>202 – 209</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, with basalt</td>
<td>209 – 238</td>
</tr>
<tr>
<td><strong>Grande Ronde Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>238 – 304</td>
</tr>
<tr>
<td><strong>R2 magnetostratigraphic unit</strong></td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular, soft</td>
<td>304 – 325</td>
</tr>
<tr>
<td>Basalt</td>
<td>325 – 365</td>
</tr>
</tbody>
</table>
Comments:

Owner is City of Pullman.

References Cited:
STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

Date: Mar. 31, 1931

Record by: M. R. Ebner

Source: G. W. Decla, Claim

Location: State of Washington

County: Whitman

Area:

Map:
NE¼ SW¼ sec. 8 T. 14 N., R. 45 E.

Drilling Co.: drilled

Address:

Method of Drilling:

Owner: City of Pullman

Address: Pullman, Wash.

Land surface, datum: ft above

below

<table>
<thead>
<tr>
<th>Corelation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil &amp; clay</td>
<td>44.5 44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt rock</td>
<td>158 202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft basalt rock of blackish color</td>
<td>7 209</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed clay &amp; basalt rock</td>
<td>29 238</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt rock</td>
<td>66 304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft basalt rock, very porous</td>
<td>21 325</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt rock</td>
<td>40 365</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pump Tests:

Dim.: 365.5' x 6''

SWL: 235.5'

Dd: not given

Yield: 75 g.p.m. (Claim)

Pump: 75 g.p.m. Pomona

(Over)

Turn up

Sheet of sheets

521
## WELL LOG—Continued

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor 15 hp</td>
<td>Depth forward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing 6&quot; OD from 0' to 48'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LARRY FARR WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: 169762 Elev (ft): 2260 ±10 Depth (ft): 250 7.5’ Quad: Colfax South

Latitude: 46.800776° Longitude: -117.257721° decimal degrees (WGS84)

| ¼, SE ¼, NW ¼, Sec. 10, T. 15 N, R. 44 E |

Well Address and (or) Other Location Information:
4002 Albion–Parvin Road, Pullman, Wash.; on west side of road

Location Method:
Location is for house near road (with green metal roof); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>0 – 176</td>
</tr>
<tr>
<td>Cambrian–Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Quartzite, weathered</td>
<td>176 – 188</td>
</tr>
<tr>
<td>Quartzite</td>
<td>188 – 250</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415102903, 4002 ALBION-PARVIN RD, NW W OF RD & PT SE 1/4, owner is FARR LIVING TRUST, LARRY; 4004 ALBION PARVIN RD; PULLMAN WA; 106.0 acres; 1 story residence built in 2011; 6/6/2011: building permit issued NEW HOME: 1200SF MAIN AND 1200SF BASEMENT.

Whitman County Tax Parcel 200004415102901, 4004 ALBION-PARVIN RD, NW1/4 IMP ONLY FARR LAND, owner is FARR, LARRY; 4004 ALBION PARVIN RD; RESIDENCE RETRO-FIT 16 WINDOWS (no date). [This is likely the house at end of long drive on hill.]

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Larry Parr  Address: RT.1 Box 384 F Pullman WA 99163
(2) LOCATION OF WELL: County: Whitman  Town: SE 1/4 Sec. 10 T. 15 N. R. 49 E.
(3) PROPOSED USE: Domestic  Irrigation  Dr. Water  Other
(4) TYPE OF WORK: Owner's number of well: 1
Abandoned  New well  Reconditioned
Deepened  Dug  Cable  Rotary
Reconditioned  Driven  Jetted
(5) DIMENSIONS: Diameter of well: 6 inches.  Depth of completed well: 250 ft.
(6) CONSTRUCTION DETAILS:
Casing installed: 8 in. Diam. from 0 ft. to 181 ft.
Welded  Liner installed  Threaded
(7) PUMP: Manufacturer's Name:
Type: H.P.
(8) WATER LEVELS:
Static level: 105 ft. below top of well  Date: 10/10/96
Artesian pressure: 5 lbs. per square inch  Date
Artesian water is controlled by:
(Cap. valve etc.)
(9) WELL TESTS:
Drawdown is amount of water level is lowered below static level
Was a pump test made? Yes  No
Yield: 10 gpm with 6 hrs
Recovery data (time taken as zero when pump turned off) (water level measured
from well top to water level)
Time  Water Level  Time  Water Level
Date
Bail test: 10 gpm with 6 hrs
After:
Arrest test: 10 gpm with stem set at 245 ft. for 30 min.
Artesian flow: gpm  Date
Temperature of water: Was a chemical analysis made? Yes  No
(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show
thickness of aquifers and the kind and nature of the material in each stratum penetrated,
with at least one entry for each change of information.
MATERIAL
FROM  TO
OSSOGRUN
176 188
GRANITE T
188 250

RECEIVED
DEC 03 1996

DEPARTMENT OF ECOLOGY
SHORELANDS AND
WATER RESOURCES PROGRAM

Work started 10/12/96  Completed 10/30/96

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well,
and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best
knowledge and belief.

NAME: Witt Well Drilling
Address: 1251 South Grade Julianalea, Idaho
Licence No. 0673
Date: 10/16/96

(Signed)  Regis Witt  Date

(USE ADDITIONAL SHEETS IF NECESSARY)
**TRENT GOETZE WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 24, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>617211</th>
<th>Elev (ft):</th>
<th>2630 ±10</th>
<th>Depth (ft):</th>
<th>230</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.751139°</td>
<td>Longitude:</td>
<td>-117.067613°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼, SE ¼, SW ¼, Sec. 30, T. 15 N, R. 46 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
4811 Pullman Airport Road, Pullman, Wash.; on south side of road, Airway Hills Golf Center

**Location Method:**
Location is for well, located on hill south of golf center building; Whitman County Assessor; Google Earth imagery; topographic map; driller misspelled last name "Geotze" and recorded incorrect ¼-¼ section. Site visit March 14, 2018; Mr. Goetze showed us the well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>0 – 62</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>62 – 94</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>94 – 137</td>
</tr>
<tr>
<td>Basalt</td>
<td>137 – 197</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>197 – 212</td>
</tr>
<tr>
<td>Basalt</td>
<td>212 – 230</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004615303903, 4811 PULLMAN AIRPORT RD, AIRWAY HILLS SHT PLT #1 LOT C-3 DRIVING RANGE administrative split; owners are GOETZE, TRENT/SHERRI; 2.0 acres.
12/7/2017: Building permit for NEW 6340SF GOLF CENTER.

Well, above, is located on hill south of golf center building.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner’s number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Boring ☐ Dug ☐ Borred ☐ Driven
☐ Deepened ☐ Other: 

DIMENSIONS: Diameter of well 8" inches. Drilled 300 ft.
Depth of completed well 230 ft.

CONSTRUCTION DETAILS

Casing: ☐ Welded 8" Diam. from 1 ft. to 71 ft.
Installed: ☐ Liner installed 8" Diam. from 50 ft. to 150 ft.
☐ Threaded 8" Diam. From ft. to ft.

Perforations: ☐ Yes ☐ No
Type of perforator used

SIZE of perfs in. by in. and no. of perfs from ft. to ft.

Screen: ☐ Yes ☐ No ☐ K-Pac ☐ Location

Manufacturer’s Name ____________________________________________

Type __________________________________________________________
Diam. from ft. to ft.
Diam. from ft. to ft.
Gravel/Filter packed: ☐ Yes ☐ No
Size of gravel/and
Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 71 ft.

Material used in seal BENTONITE

Did any strata contain unusual water? ☐ Yes ☐ No

Type of water: Depth of strata

Method of sealing strata off

PUMP: Manufacturer’s Name ________________________________________

Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level _________ ft.

Static level 1099 ft. below top of well Date 7/29/05

Artesian pressure _____ lbs. per square inch Date _______________

Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken at zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test ______________________________

Bailer test: gal./min. with ft. drawdown after hrs.

Airest 40 gal./min. with stem set at 220 ft. for 1 hrs.

Artesian flow rate p.m. Date ______________________________

Temperature of water 55 Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (last) TED WRIGHT

Driller/Engineer/Trainee Signature____________________________________

Driller or trainee License No. ________________________________

IF TRAINEE: Driller’s license No. ________________________________

Driller’s Signature ________________________________

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
## Tom Fitzwell

**Geologic Interpretation of Water Well Driller’s Log**  
By John H. Bush, January 20, 2018

<table>
<thead>
<tr>
<th>Well Log ID: D0054281</th>
<th>Elev (ft): 2640 ±10</th>
<th>Depth (ft): 400</th>
<th>Quad: Viola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.827074°</td>
<td>Longitude: -117.034462°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
</tbody>
</table>

| ¼, NE ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W |

**Well Address and (or) Other Location Information:**  
1081 Trestle Road, Viola, Idaho; on southeast side of road, opposite sewage facility

**Location Method:**  
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>From 0 – 1</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>From 1 – 50</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sediments of Bovill</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>From 50 – 127</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>¹Granite</td>
</tr>
<tr>
<td>¹Granite</td>
<td>From 127 – 400</td>
</tr>
</tbody>
</table>

¹ Probably not all granite
Comments:

Latah County Tax Parcel RP40N06W122712; owner now is FITZE, KRISTINE MARIE; 1081 TRESTLE RD; 8.49 AC TAX #6775 NENW; 12 40 6.

References Cited:
1. WELL TAG NO. D
WELL DRILLER’S REPORT

2. OWNER:
Name: Tom Fitz
Address: 915 Rodeo Dr.
City: Moscow
State: ID
Zip: 83843

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well:

4. USE:
X Domestic □ Municipal □ Monitor □ Irrigation
□ Thermal □ Injection □ Other

5. TYPE OF WORK check all that apply
□ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD:
X Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES

8. CASING/LINER:

9. PERFORATIONS/SCREENS Packer Type
Perforation Method: Drill
Screen Type & Method of Installation:

10. FILTER PACK

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
12. WELL TESTS:
Yield gal/min Dr & D Water Temp: 58° Bottom hole temp:
Drawdown Pumping Level
From 400

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

14. DRILLER’S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Principal Driller: Alvin Carris
Date: 12-26-07
Driller or Operator II: 
Date: 
Operator I: 
Date: 12-26-07

Forward white copy to water resources
A. FLANSBURG WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018

[Not in WA DOE database]

Latitude: 46.887742°   Longitude: -117.116620°   decimal degrees (WGS84)

1/4, SW 1/4, SW 1/4, Sec. 11, T. 16N, R. 45E

Well Address and (or) Other Location Information:
14231 State Route 27, Palouse, Wash., on east side of highway

Location Method:
Location is for house; Well 17 of Bush and others (2005 [2006]); Whitman County Assessor; Google Earth imagery; topographic map; well log from Ralston (1996)

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<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 51</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>51 – 55</td>
</tr>
<tr>
<td>Basalt</td>
<td>55 – 213</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>213 – 233</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004516113901, 14231 SR 27, SW1/4 PT NW1/4 6-03/53423 646089, owner is FLANSBURG FARMS INC, 13831 SR 27; 2 acres; one story residence built in 1941.

Allan Flansburg died in 2016 (Moscow-Pullman Daily News, 2016).

References Cited:

APPENDIX A

Logs of wells near Palouse

Washington

15/45 2 sw/ne Zakarison DTW = ?? Q = 6 gpm
0 - 2 soil
2 -106 clay
106 -130 basalt

16/45 1 ne/sw Swede Parish DTW = ?? Q = 20 gpm
0 - 2 soil
2 - 52 clay
52 - 61 cobble
61 - 85 basalt
85 -196 basalt
196 -219 sand
219 -220 clay

16/45 1 se/se Reggie Parson DTW = 47' Q = 20 gpm
0 - 2 soil
2 - 34 clay
34 - 79 basalt
79 - 84 basalt and clay, soft
84 -101 basalt, fractured
101 -103 basalt

16/45 1 nw/nw Jim Dunning DTW = ?? Q = 16 gpm
0 - 2 soil
2 - 31 clay
31 - 38 basalt, soft
38 -140 basalt
140 -145 basalt, broken
145 -176 clay
176 -205 clay, sandy
205 -240 sand, fine, black - water

16/45 1 sw/sw A. Flansburg DTW = 157' Q = 15 gpm
0 - 51 clay
51 - 55 broken rock
55 -213 basalt
213 -233 sand clay, water

16/45 2 nw/nw J. Leendersten DTW = 97' Q = 20 gpm
0 - 2 soil
2 - 6 clay
6 -165 basalt
165 -174 basalt, weathered
174 -186 clay
186 -208 sand and clay
208 -230 sand, fine
FRANK FLEENER WELL 1

[DRILLED OCTOBER 29, 1979]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018

Well Log ID: 166669       Elev (ft): 2830 ±10        Depth (ft): 125       Quad: Viola

Latitude: 46.795900°       Longitude: -117.040078°       decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 8, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
4482 Estes Road, Pullman, Wash.; on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; last name misspelled "Fleenor" on driller's report (Government Lot 4); site visit March 20, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
</tbody>
</table>

535
Comments:
Whitman County Tax Parcel 200004615084901; SE LT 4 RR 3.87 AC; owner is FLEENER, S FRANK; 4482 ESTES RD; 1.0 acre.
This was likely a dry well; Frank Fleener well 2 is about 700 ft west—in field on north side of Estes Road.

References Cited:
2246 Burrell  
Lewiston, Idaho 83501

McPherson & Wright Drilling

Ray McPherson
(509) 878-1761
PALOUSE, WA 99161

Ted Wright
(208) 743-7295
LEWISTON, ID 83501

Elev 2765

WEIL NO. 1

OWNER OF WELL  Frank Fleeman

LOCATION OF WELL

NEAREST POST OFFICE  Moscow

STATE  Idaho

COUNTY  Latah

DRILLING BEGUN  10-29-79

WELL FINISHED  10-29-79

WELL RECORD

CASING SIZE

CASING DEPTH

HOLE SIZE

HOLE DEPTH  125 ft.

CAPACITY OF WELL

PUMP SETTINGS

CASING PERFORATIONS

INVOICE

DATE  11-13-79

ITEM

UNIT PRICE

AMOUNT

125 ft. of 6 in. hole

$10.00

$1250.00

MEMO:

Government lot 4
Section 8
Township 15
Range 41 E, W1

2/3/81

2/12/81

TOTAL AMOUNT DUE  $1250.00

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
FRANK FLEENER WELL 2
[DRILLED NOVEMBER 2, 1979]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018


Latitude: 46.796169°    Longitude: -117.042984°    decimal degrees (WGS84)

⅛, SW ⅛, SE ⅛, Sec. 8, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
4482 Estes Road, Pullman, Wash.; well is on north side of road, in field west and downhill from house

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; last name misspelled "Fleenor" on driller's report and in Lum and others (1990, p. 72); site visit March 20, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td>From 0 - 2</td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>0 - 2</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>2 - 30</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td>40 - 112</td>
</tr>
<tr>
<td>¹Sediments of Bovill</td>
<td>Sand and clay</td>
<td>40 - 112</td>
</tr>
<tr>
<td></td>
<td>¹Granite(?) or sediments</td>
<td>112 - 280</td>
</tr>
</tbody>
</table>

¹Difficult problem to interpret weathered granite from slightly transported granite. Grader (2011) noted many reported granite wells are really sediments of Bovill. The area was originally mapped as granite (Bush and Provant, 1998), but I now believe they are mostly sediments of Bovill.
Comments:

Whitman County Tax Parcel 200004615084902; 4482 ESTES RD, PULLMAN 99163; SE LT 4 RR 3.87 AC; owner is FLEENER, S FRANK; 4482 ESTES RD; 5.0 acres.

Well, at right, is marked by an orange plastic pipe.

References Cited:


# WELL LOG

## DEPTH AND STRATA

<table>
<thead>
<tr>
<th>Depth</th>
<th>Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>Soil</td>
</tr>
<tr>
<td>2-40</td>
<td>Clay</td>
</tr>
<tr>
<td>40-54</td>
<td>Decomp-</td>
</tr>
<tr>
<td>54-68</td>
<td>Granite</td>
</tr>
<tr>
<td>68-71</td>
<td>Decom-</td>
</tr>
<tr>
<td>71-108</td>
<td>Granite</td>
</tr>
<tr>
<td>108-112</td>
<td>Salt</td>
</tr>
<tr>
<td>112-280</td>
<td>Alternating</td>
</tr>
<tr>
<td></td>
<td>sand to hard granite</td>
</tr>
</tbody>
</table>

## OWNER OF WELL
Frank Fleenor

## LOCATION OF WELL
Moscow

## NEAREST POST OFFICE
Idaho

## STATE
Latah

## COUNTY

## DRILLING BEGUN
10-30-79

## WELL FINISHED
11-2-79

# WELL RECORD

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>280 ft. of 8 in. hole</td>
<td>$13.00</td>
<td>$3640.00</td>
</tr>
<tr>
<td>240 ft. of 6 in. liner</td>
<td>4.50</td>
<td>1080.00</td>
</tr>
<tr>
<td>60 ft. of 8 in. casing</td>
<td>7.25</td>
<td>435.00</td>
</tr>
</tbody>
</table>

**TOTAL AMOUNT DUE:** $35200.45

**3%**

**4545**
RAY AND JOAN FOLWELL WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 385301 Elev (ft): 2600 ±10 Depth (ft): 230 7.5’ Quad: Albion

Latitude: 46.754900° Longitude: -117.151914° decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1301 Kitzmiller Road, Pullman, Wash.; on south side of road

Location Method:
Location is for well, west of house, opposite fenced garden; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 27, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>76</td>
</tr>
<tr>
<td>Basalt</td>
<td>80</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>224</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>229</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515283903, 1301 KITZMILLER RD, PULLMAN 99163, STREIBICK AG ACRES SW1/4 LT C 20 AC, owners now are FOLWELL, RAYMOND/JOAN; 20.1 acres; 12/01/02: grantors were STRIEBICK, JACK/MAUREEN to FOLWELL, RAYMOND/JOAN.

Above, well looks to be between second and third pine trees to the right (west) of home.

References Cited:
WATER WELL REPORT
Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller
Construction/Decommission (circle)
  ☐ Construction
  ☐ Decommission
ORIGINAL CONSTRUCTION Notice of Intent Number

PROPOSED USE:
  ☐ Domestic  ☐ Industrial  ☐ Municipal
  ☐ DeWater  ☐ Irrigation  ☐ Test Well  ☐ Other

TYPE OF WORK:
Owner's number of well (if more than one).
  ☐ New Well  ☐ Reconditioned  Method: ☐ Dug  ☐ Bored  ☐ Driven
  ☐ Deepened  ☐ Cable  ☐ Rotary  ☐ Jetted

DIMENSIONS:
Diameter of well _ inches, drilled _ ft.
Depth of completed well _ ft.

CONSTRUCTION DETAILS
Casing:
  ☐ Yes  ☐ No  ☐ Sheet Cant
  ☐ Welded  ☐ Diam. from _ ft. to _ ft.
Installed:
  ☐ Yes  ☐ No  ☐ Liner installed
  ☐ Diam. from _ ft. to _ ft.
Diam. from _ ft. to _ ft.

Perforations:
  ☐ Yes  ☐ No  ☐ Type of perforator used

SIZE of perfs in. by in. and no. of perfs from _ ft. to _ ft.

Screens:
  ☐ Yes  ☐ No  ☐ K-Pac Location

Manufacturer's Name:

Type:  Model No.

Gravel/Filter packed:
  ☐ Yes  ☐ No  ☐ Size of gravel/sand

Materials placed from _ ft. to _ ft.

Surface Seal:
  ☐ Yes  ☐ No  ☐ To what depth? _ ft.

Materials used in seal:

Did any strata contain unusable water?  ☐ Yes  ☐ No

Type of water:

Depth of strata:

Method of sealing strata off:

PUMP:
Manufacturer's Name:

Type:  H.P.

WATER LEVELS:
Land-surface elevation above mean sea level
Static level _ ft. below top of well Date _
Artesian pressure lbs. per square inch Date _
Artesian water is controlled by
  (cap, valve, etc.)

WELL TESTS:
Drawdown is amount water level is lowered below static level.
Was a pump test made?  ☐ Yes  ☐ No
If yes, by whom?

Yield: gal./min. with _ ft. drawdown after _ hrs.
Yield: gal./min. with _ ft. drawdown after _ hrs.
Yield: gal./min. with _ ft. drawdown after _ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time  Water Level  Time  Water Level

Date of test

Bailer test gal./min. with _ ft. drawdown after _ hrs.

Airtest _ gal./min. with stem set at _ ft. for _ hrs.

Artesian flow g.p.m. Date

Temperature of water _ Was a chemical analysis made?  ☐ Yes  ☐ No

WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all
Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (Print) ☐
Driller/Engineer/Trainee Signature

Driller or Trainee License No. __________

If trainee, licensed driller's
Signature and License no. __________

CURRENT
Notice of Intent No. N 177968
Unique Ecology Well ID Tag No. AHF662
Water Right Permit No. __________

Property Owner Name

Well Address

City  Pullman  County: Whitman

Lat/Long:  Long Deg. __________  Long Min/Sec __________

REQUIRED  Tax Parcel No. __________

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

USE ADDITIONAL SHEETS IF NECESSARY:

MATERIAL  FROM  TO

RECEIVED
AUG 27 2004

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT


EASTERN REGIONAL OFFICE

ECOLOGY IS AN EQUAL OPPORTUNITY EMPLOYER  ECO 050-1-20 (REV 04/01)
**Geologic Interpretation of Water Well Driller's Log**  
By John H. Bush, July 29, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 168853</th>
<th>Elev (ft): 2630 ±10</th>
<th>Depth (ft): 440</th>
<th>7.5’ Quad: Moscow West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.724481</td>
<td>Longitude: -117.094689</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
</tbody>
</table>

| ¼, NW ¼, SW ¼, Sec. 1 | T. 14 N | R. 45 E | 991 Sunshine Road, Pullman, Wash.; on north side of road |

**Location Method:**  
Location is for house; Whitman County Tax Assessor; Google Earth imagery, topographic map. Site visit (September 18, 2016).

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>Clay, brown</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N2 magnetostratigraphic unit</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td>Meyer Ridge Member</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514013790, 991 SUNSHINE RD, SW1/4 PT NW1/4 FORD PADEN SHPLT #1, owners are FORD, JOSEPH and MARGARET PADEN; 2.37 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Joe Ford
Address: NW 524 Sunset Dr., Pullman, WA 99163

LOCATION OF WELL: County: Whitman

PROPOSED USE: ☑ Domestic ☐ Irrigation ☐ Industrial ☐ Municipal ☐

TYPE OF WORK: Abandoned ☐ New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well = 6 inches.
Drilled = 440 ft. Depth of completed well = 440 ft.

CONSTRUCTION DETAILS:
Casing Installed: 6 in. Diam. from +2 ft. to -62 ft.
Welded Liner installed: 41 1/2 in. Diam. from -440 ft. to -440 ft.
Perforations: Yes ☑ No ☐
Type of perforator used: SAW
SIZE of perforations: 1/8 in. by 3 in.
40 perforations from -440 ft. to -440 ft.

Screens: Yes ☐ No ☑
Manufacturer’s Name and Model No.

WATER LEVELS:
Land-surface elevation above mean sea level = 362 ft.
Static level = 96 ft. below top of well
Artesian pressure = 15 lbs. per square inch
Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS:
Was a pump test made? Yes ☑ No ☐
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test = 9-6-91
Bailer test = gal./min. with ft. drawdown after hrs.
Air test = 15 gal./min. with stem set at 440 ft. for 75 hrs.
Artesian flow = g.p.m. Date
Temperature of water = °F
Was a chemical analysis made? Yes ☐ No ☑

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: [Redacted]
Address: [Redacted]
License No.: [Redacted]

Contractor’s Registration No.: Date 9-7-97

(USE ADDITIONAL SHEETS IF NECESSARY)
## DANIEL FOUCACHON WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 30, 2018

<table>
<thead>
<tr>
<th>Well Log ID: D0076124</th>
<th>Elev (ft): 2695 ±10</th>
<th>Depth (ft): 300</th>
<th>7.5’ Quad: Robinson Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.781933°</td>
<td>Longitude: -116.979600° decimal degrees (WGS84)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| ¼ NW ¼, Sec. 28, T. 40 N, R. 5 W |

### Well Address and (or) Other Location Information:
Foothill Road, Moscow, Idaho; on east side of road

### Location Method:
Location is for well (latitude and longitude from driller’s report); Latah County Assessor; Google Earth imagery; topographic map

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, brown</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 15</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>15 – 18</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>18 – 40</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>40 – 61</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>61 – 66</td>
</tr>
<tr>
<td>Clay, gray and brown</td>
<td>66 – 115</td>
</tr>
<tr>
<td>Clay and sand, brown</td>
<td>115 – 135</td>
</tr>
<tr>
<td>Clay, hard, brown</td>
<td>135 – 150</td>
</tr>
<tr>
<td>Sand, brown</td>
<td>150 – 175</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt and sand</td>
<td>175 – 225</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>225 – 250</td>
</tr>
</tbody>
</table>
Idaho Batholith

Granite, multicolored 250 – 300

Comments:

Latah County Tax Parcel RP40N05W283910, owner is FOUCACHON, DANIEL; FOOTHILL RD, 5.01 AC TAX #7792 SWNW; 0.52 AC TAX #7841 SWNW; 28 40 5.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. DO076124
2. OWNER: Daniel Foucachon
3. LOCATION OF WELL by legal description:
   Twp. 40N  Rge. 5W
   Sec. 28  City: Moscow
   Govt Lot 46   County: Latah
   Lat. 46 0'  Long. 116 0'  Address: 3200 Foothill Road
   Address of well site:
   City: Next to 3200 Foothill, Moscow

4. USE:
   Domestic  Residential  Monitor  Irrigation  Injection

5. TYPE OF WORK:
   New Well  Replacement  Modify existing  Abandonment  Other

6. DRILL METHOD:
   Air Rotary

7. SEALING PROCEDURES:
   Seal Material: Bentonite
   From 30  To 90  Quantity (ft. or %) 900
   Placement controlled:

8. CASING CHAMBER:
   Diameter 5" +2 6' 158 250  Steel  X
   4" -5 145  Sch 40  PVC  X
   Was drive shoe used? Yes, ring bit shoe
   Shoe Depth 158

9. PERFORATION SCREENS
   Perforations: Yes  No
   Manufactured screen: Yes  No
   Method: 020 Screen Johnson
   Method of installation:
   From 170  To 150  Slot Size 020  Diameter 4"
   Number 4  Material PVC

10. FILTER PACK
    Filter Material: NONE
    From  To  W/L/Volume  Placement Method

11. FLOWING ARTESIAN:
    Flowing artesian: Yes  No
    Artesian Pressure (PSIG) CAP
    Describe control device:

12. STATIC WATER LEVEL AND WELL TESTS:
    Depth first water encountered (ft) 18  Static water level: 59'
    Water temp. 49 degrees  Bottom hole temp.
    Describe access port: CAP
    Well Test:
    Drawdown (feet) 10  Discharge or yield 4  Test Duration 4 hrs
    Test Method: X
    Water quality test or comments: Cloudy, no odor

13. LITHOLOGIC LOG and/or repairs or abandonment:

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Remarks, lithology or description of repairs or abandonment</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>2</td>
<td>Dark brown dirt</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td></td>
<td>brown clay</td>
<td>Y</td>
</tr>
<tr>
<td>15</td>
<td>18</td>
<td></td>
<td>gray clay</td>
<td>N</td>
</tr>
<tr>
<td>18</td>
<td>40</td>
<td></td>
<td>gray clay and sandy granite</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>40</td>
<td>61</td>
<td>gray clay</td>
<td>Y</td>
</tr>
<tr>
<td>61</td>
<td>66</td>
<td></td>
<td>brown sandy clay</td>
<td>Y</td>
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<td>66</td>
<td>78</td>
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<td>blue clay</td>
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<td>78</td>
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<td>Y</td>
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<td>115</td>
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<td>Y</td>
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<td>135</td>
<td>146</td>
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<td>hard pan brown clay</td>
<td>Y</td>
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<td>146</td>
<td>150</td>
<td></td>
<td>soft brown sand</td>
<td>Y</td>
</tr>
<tr>
<td>150</td>
<td>155</td>
<td></td>
<td>brown course sand</td>
<td>Y</td>
</tr>
<tr>
<td>155</td>
<td>164</td>
<td></td>
<td>hard brown quartz &amp; granite</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>164</td>
<td>175</td>
<td>granite sand</td>
<td>X</td>
</tr>
<tr>
<td>175</td>
<td>225</td>
<td></td>
<td>brown sand and basalt</td>
<td>X</td>
</tr>
<tr>
<td>225</td>
<td>250</td>
<td></td>
<td>brown sandy clay</td>
<td>Y</td>
</tr>
<tr>
<td>250</td>
<td>300</td>
<td></td>
<td>Hard multi colored granite</td>
<td>Y</td>
</tr>
</tbody>
</table>

Completed Depth (Measurable): 210
Data Started: 8/15/2017  Data Completed: 8/22/2017

14. DRILLER'S CERTIFICATION:
   Company Name: All Ways Drilling, Inc.
   Co. No. 510
   Principal Driller: Stanley K Wolfe  Date 8/28/17
   Driller: Stanley K Wolfe  Date 8/28/17
   Operator II  Date

*Signature of Principal Driller and operator are required.

RECEIVED
SEP 01 2017
549
IDWR / NORTH
DEBBIE FRAZIER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: NA Elev (ft): 2610 ±10 Depth (ft): 198 7.5’ Quad: Palouse

Latitude: 46.898934° Longitude: -117.007776° decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 18, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1020 (formerly 7216) Walker Road, Viola, Idaho; on east side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>109</td>
</tr>
<tr>
<td>Granite</td>
<td></td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP41N05W181058, FRAZIER, BRADLY ALAN; 1020 WALKER RD; 8.17 AC TAX #5201 SWNE & NWNE, 18 41 5.

References Cited:
1. DRILLING PERMIT NO.: 87-25-N-24-000

2. OWNER:
   Name: Debbie Pajew
   Address: 7314 W. Willard Rd.
   City: Boise

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. PROPOSED USE:
   - Domestic
   - Municipal
   - Monitor
   - Irrigation
   - Thermal
   - Injection

5. TYPE OF WORK:
   - New Well
   - Modify or Repair
   - Replacement
   - Abandonment

6. DRILL METHOD:
   - Mud Rotary
   - Air Rotary
   - Cable
   - Other

7. SEALING PROCEDURES
<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>breeze</td>
<td>0.54</td>
<td>1200 lbs. dry</td>
</tr>
</tbody>
</table>

8. CASING/LINER:
<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>11</td>
<td>154</td>
<td>26.4</td>
<td>Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. PERFORATIONS/SCREENS
<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8</td>
<td>18</td>
<td>4.5/8</td>
<td>80</td>
<td>6.0</td>
<td>PVC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESSIAN PRESSURE:
    - 55 ft. below ground
    - Artesian pressure: 10 lb.
    - Depth flow encountered: 43-170 ft.

11. WELL TESTS:
    | Yield ga/min | Drawdown | Pumping Level | Time |
    |--------------|----------|---------------|------|
    | approx 10    |          |               |      |

    Water Temp.:
    Bottom hole temp.:
    Water Quality test or comments:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    | Bore Dia. | From | To | Remarks: Lithology, Water Quality & Temperature |
    |-----------|------|----|-----------------------------------------------|
    | 10 0/sq   | 54   | 0  | quartz sand, 100 ft.                          |
    | 8 54/64    | 60   | 0  | quartz sand, 100 ft.                          |
    | 8 60/58    | 154  | 0  | fractured granite, 100 ft.                    |

13. DRILLER'S CERTIFICATION
    I certify that all minimum well construction standards were complied with at the time the rig was removed.

    Firm Name: Witt Well Drilling
    Firm Official: Earl Witt
    Supervisor or Operator: Roger Witt

    (Sign once if Firm Official & Operator)

Firm No. 58

Date: Started: 6/19/95
Completed: 6/29/95

FORWARD WHITE COPY TO WATER RESOURCES
JOHN FRIEL WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 3, 2016

Well Log ID: 917097
Elev (ft): 2360 ±10
Depth (ft): 160
Quad: Albion

Latitude: 46.836195
Longitude: -117.185968
decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 31, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
8902 Parvin Road, Pullman, Wash., on west side of road. Well is under blue barrel, inside fenced area with cattle.

Location Method:
Location is for well, west and south of bridge, west of Parvin Road and north of Mick Parvin Road, south of driveway to 8902 house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 19, 2016) and verified well location with Mr. Friel's brother and a hired hand. Last name is misspelled "Frieo" on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 58</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>58 – 133</td>
</tr>
<tr>
<td>Basalt</td>
<td>133 – 145</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>145 – 155</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>155 – 160</td>
</tr>
</tbody>
</table>
Comments:

There are two wells on this parcel: the John Friel well, and the Denney Latham well (drilled in 2002).

Whitman County Tax Parcel 200004516311690, 8902 PARVIN RD, NE 1/4 PT N 1/2 N OF RDS 5000 & 5280 29AC, owner is FRIEL, JOHN BENNETT; 29.0 acres; [Road 5280 is Mick Parvin Road; Road 5000 is Parvin Road]; grantors were LATHAM, DENNEY/RUBY, on 10/25/12.

References Cited:
**WATER WELL REPORT**

**Notice of Intent Number**: WE18299

**Property Owner Last Name**: Friess
**First Name**: John

**Organization Name**: 

**Well Tag ID Number (e.g., AAA-001)**: BCP0x4
**Variance Granted? (Circle One)**: Yes / No

**Water Right Permit Required? (Circle One)**: Yes / No

**Well Use (Circle All That Apply)**:
- Agricultural Irrigation
- Commercial
- Domestic
- Group Domestic
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

**Type of Work (Circle One)**:
- Alteration
- Deepened Well
- Hydrofracturing
- Replacement
- Other

**Method (Circle One)**:
- Cable
- Dug
- Hydrofracturing
- Jetted
- Rotary
- Other

**Drilling Start Date**: 5/24/14
**Drilling Completion Date**: 5/26/14

**Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)**

**Well Street Address**: Across the road from 8902 Perrin Rd
**Well City**: Pullman
**Well County**: Whitman
**Well Zip Code**: 99163

**Tax Parcel Number**: 20004516311690

**If claiming tax parcel exemption (Circle One)**: Tribal / Federal Property / Right of Way / Railroad Land

**Township**: 16 N
**Range**: 45
**Section**: 31

**Latitude**: 41° 28' 21.0" N
**Longitude**: 117° 6' 48" W

**CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.**

**Diameter of Well**: __________ ft
**Depth of Completed Well**: __________ ft

**Casings** (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered)

**Type (Circle One)**: Concrete / Plastic / Steel / Other

**Diameter in**: __________ inches
**Stackup**: __________ inches
**Depth**: __________ ft

**Liners? (Circle One)**: Yes / No

**Perforations? (Circle One)**: Yes / No

**Screens? (Circle One)**: Yes / No

**ECY 050-1-20 (Rev 2/11)** The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.
If you need this document in an alternate format for the visually impaired, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
<th>Layer Formation Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>mid grey breccia</td>
<td>58</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>hard grey breccia</td>
<td>133</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>breccia &amp; shale mix</td>
<td>145</td>
<td>155</td>
<td>*water at 155'</td>
</tr>
<tr>
<td>sand</td>
<td>155</td>
<td>160</td>
<td></td>
</tr>
</tbody>
</table>
**ORRIN FRINK WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

<table>
<thead>
<tr>
<th>Well Log ID</th>
<th>Elev (ft)</th>
<th>Depth (ft)</th>
<th>Quad</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>2784</td>
<td>89</td>
<td>Robinson Lake</td>
</tr>
</tbody>
</table>

| Latitude: 46.774895° | Longitude: -116.925279° decimal degrees (WGS84) |

| ¼, SW ¼, SE ¼, Sec. 26, T. 40 N, R. 5 W |

**Well Address and (or) Other Location Information:**

1016 Frink Road, Moscow, Idaho; on north side of road

**Location Method:**
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 163, well sample 11); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>2 – 10</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>10 – 43</td>
</tr>
<tr>
<td>*Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>43 – 89</td>
</tr>
</tbody>
</table>

*Difficult to determine contact between granite and sediments of Bovill (Latah Formation)
Comments:

Latah County Tax Parcel RP40N05W268516, owner now is FRINK, MERRILL T; 1016 FRINK RD; E 2 AC SESW; SESE; 39.0 AC SWSE; 26 40 5.

Mr. Orrin Frink died in 2015 (Moscow-Pullman Daily News, 2015).

References Cited:


1. WELL OWNER
Name: Orrin Frink
Address: 2402 Frink Road, Moscow, Idaho 83843
Owner’s Permit No.: 87-85-N-2

2. NATURE OF WORK
☐ New well ☐ Deeperd ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel ☐ Concrete ☐ Other
Diameter: 250 inches
Thickness: 8 inches
Steel from 6 inches to 6 feet
Concrete from 6 inches to 6 feet
Other from 6 inches to 6 feet

Was casing drive shoe used? ☐ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Perforations: 46 every 4 feet

Well screen installed? ☐ Yes ☐ No
Manufacturer’s name

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 15 feet below land surface.
Flowing? ☐ Yes ☐ No
G.P.M. flow
Artesian closed-in pressure: 16 p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature: 60°F. Quality:

8. WELL TEST DATA
Discharge G.P.M.: 1
Pumping Level: 10'
Hours Pumped: 1

9. LITHOLOGIC LOG
<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>Black dirt</td>
<td>x</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Yellow clay</td>
<td>x</td>
</tr>
<tr>
<td>43</td>
<td>43</td>
<td>Granite &amp; clay</td>
<td>x</td>
</tr>
<tr>
<td>52</td>
<td>52</td>
<td>Granite, medium hard</td>
<td>x</td>
</tr>
<tr>
<td>79</td>
<td>79</td>
<td>Granite, hard</td>
<td>x</td>
</tr>
<tr>
<td>89</td>
<td>89</td>
<td>Granite, soft breaks</td>
<td>x</td>
</tr>
</tbody>
</table>

10. Work started: 3-1-85 finished 4-6-85

11. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Don Town Well Drilling
Address: 2380 Moscow Mtn Rd, Moscow, Idaho 83843
Signed by (Firm Official): Don Town
(Operator):
MIKE GALLINA WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: D0028471  Elev (ft): 2790 ±10  Depth (ft): 350  Quad: Viola

Latitude: 46.814527°  Longitude: -117.023528°  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 13, T. 40 N, R. 6 W

Well Address and (or) Other Location Information:
1041 Hazeltine Road, Moscow, Idaho; at end of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; last name misspelled "Gillena" on driller’s report; site visit (March 21, 2018)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
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</tr>
<tr>
<td>Clay</td>
<td>0 – 56</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td>56 – 190</td>
</tr>
<tr>
<td>Sand and clay</td>
<td></td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>190 – 350</td>
</tr>
</tbody>
</table>

¹Recorded as brown granite—difficult to tell—interpreted as sediments of Bovill(?)

560
Comments:
Latah County Tax Parcel RP40N06W130033; GALLINA, MICHAEL A; 1041 HAZELTINE RD; N 700' OF E 300' OF NENE; 13 40 6 (4.82 AC).

References Cited:
**IDAHO DEPARTMENT OF WATER RESOURCES**

**WELL DRILLER'S REPORT**

1. **WELL TAG NO. D**
   - Well ID No.: 00 28471
   - DRILLING PERMIT NO.: 603393
   - Water Right or Injection Well No.: 

2. **OWNER:**
   - Name: Mike Gillen
   - Address: 1285 Hudson Rd.
   - City: Kent
   - State: WA Zip: 98034

3. **LOCATION OF WELL by legal description:**
   - Twp: 140
   - Rge: 60
   - Sec: 13
   - G:\ County: Latah
   - Lat: 1/4 NE 1/4 NE

4. **USE:**
   - Domestic □
   - Municipal □
   - Monitor □
   - Irrigation □

5. **TYPE OF WORK**
   - New Well □
   - Modify □
   - Abandonment □
   - Other □

6. **DRILL METHOD:**
   - Air Rotary □
   - Cable □
   - Mud Rotary □
   - Other □

7. **SEALING PROCEDURES**
   - Seal Material: Bentonite
   - From: 0
   - To: 50
   - Weight / Volume: 650
   - Seal Placement Method: Top Pour

8. **CASING/LINER:**
   - Diameter: 6
   - From: 250
   - To: 350
   - Gauge: 160
   - Material: PVC

9. **PERFORATIONS/SCREENS PACKER TYPE**
   - Perforation Method: Saw
   - Screen Type & Method of Installation:

10. **FILTER PACK**

11. **STATIC WATER LEVEL OR ARTESIAN PRESSURE:**
   - 40 ft. below ground
   - Artesian pressure: 562 lb.
   - Depth flow encountered: 6 ft.

12. **WELL TESTS:**
   - Yield (gallon/min): 40
   - Drawdown: 1
   - Pumping Level: 1.8
   - Water Temp. (°F): 56
   - Water Quality Test: Good

13. **LITHOLOGIC LOG:**
   - Description of Materials:

14. **DRILLER'S CERTIFICATION**
   - Company Name: WILENKOFT DRILLING
   - Firm No.: 102
   - Principal Driller: (Signature)
   - Driller or Operator: (Signature)
   - Operator I: (Signature)
   - Date: 6-10-03

---

**FORWARD WHITE COPY TO WATER RESOURCES**
GARAGE MAHAL WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: 616654  Elev (ft): 2500 ±10  Depth (ft): 305  7.5’  Quad: Moscow West

Latitude: 46.730744°  Longitude: -117.096441°  decimal degrees (WGS84)

¼, SE ¼, NE ¼, Sec. 2, T. 14 N, R. 45 W

Well Address and (or) Other Location Information:
6860 State Route 270, Pullman, Wash., on north side of highway

Location Method:
Location is for well, at northeast corner of property, between two yellow poles; Latah County Assessor; Google Earth imagery; topographic map; driller reported incorrect address; site visit April 1, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>0 – 92</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>92 – 106</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>106 – 112</td>
</tr>
<tr>
<td>Basalt, with voids</td>
<td>112 – 128</td>
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<tr>
<td>Basalt</td>
<td>128 – 195</td>
</tr>
<tr>
<td>Wood</td>
<td>195 – 196</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
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<tr>
<td>Meyer Ridge Member</td>
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</tr>
<tr>
<td>Basalt, vesicular</td>
<td>196 – 243</td>
</tr>
<tr>
<td>Basalt</td>
<td>243 – 268</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514021691, 6860 SR 270, LT 2 CKG SHORTPLAT #1 NE1/4 N OF RD 4.23AC APP 400'X486', owner is GARAGE MAHAL LLC, GARAGE MAHAL LLC, PULLMAN WA.

Well is between two yellow posts, at upper level of recreational vehicle parking lot.

References Cited:
WATER WELL REPORT

POSED USE:  Domestic  Industrial  Municipal
DeWater  Irrigation  Test Well  Other

TYPE OF WORK:  Owner's number of well (if more than one)
New well  Reconditioned  Method:  Drilled  Drilled
Deepected  Bored  Bored  Bored

DIMENSIONS: Diameter of well 8 inches, drilled 305 ft.
Depth of completed well 305 ft.

CONSTRUCTION DETAILS
Casing  Welded  8" Diam from 1 ft. to 20 ft.
Installed:  Liner installed  8" Diam from 15 ft. to 305 ft.
Perforations:  Yes  No

Screen:  Yes  No
K-Pac Location
Manufacturer's Name
Type
Diam Slot size from ft. to ft.
Diam Slot size from ft. to ft.
Gravel/Filter packed:  Yes  No
Size of gravel/sand
Materials placed from ft. to ft.

Surface:  Yes  No
To what depth? 20 ft.
Material used in seal
BENTONITE
Did any strata contain unusable water?  Yes  No

Type of water:  Depth of strata
Method of sealing strata off

PUMP:  Manufacturer's Name
Type:  H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 238 ft. below top of well Date 3/10/07
Artesian pressure lbs. per square inch Date
Artesian water is controlled by

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made?  Yes  No
If yes, by whom?
Yield:  gal/min. with ft. drawdown after hrs.
Yield:  gal/min. with ft. drawdown after hrs.
Yield:  gal/min. with ft. drawdown after hrs.
Recovery rate (time taken as zero when pump turned off) Water level measured from well top to water level

Time Water Level Time Water Level Time Water Level

Date of test
Bailer test  gal/min. with ft. drawdown after hrs.
Artesian: 35 gal/min. with stem set at 3000 ft. for hrs.
Artesian flow rates: Date
Temperature of water 55 Was a chemical analysis made?  Yes  No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller  Engineer  Trainee Name (initials) TED WRIGHT
Driller/Engineer/Trainee Signature
Driller or trainee License No.

IF TRAINEE: Driller's License No.
Driller's Signature

CURRENT
Notice of Intent No. W218051
Unique Ecology Well ID Tag No. AHR725
Water Right Permit No.
Property Owner Name GARAGE MAHAL LLC
Well Street Address 1721 HWY 8
City PULLMAN  County WA
Location SE1/4-1/4 NW1/4 Sec 2 Twn 14N R 45
Lat/Long Lat Deg Long Min/Sec
Long Deg Long Min/Sec
Tax Parcel No. (Required) 2-0000-45-14-02-1691

CONSTRUCTION OR DECOMMISSION DISRUPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (Use ADDITIONAL SHEETS IF NECESSARY)

MATERIAL
FROM
TO
BASALT STRONG BLACK 0 92
BASALT BLACK & CLAY BROWN 92 106
BASALT WEATHERED WEAK 106 112
VOID 112 113
BASALT STRONG BLACK 113 126
VOID 126 128
BASALT STRONG BLACK 128 195
VOID 195 196
WATER 195 243
WATER 243 288
BASALT VASCULAR BLACK WEAK 288 305
BASALT VASCULAR BLACK 305

Start Date 3/06/07 Completed Date 3/10/07

SEP 11 2009

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6541.
GARFIELD TOWN WELL 4
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 1, 2016

Well Log ID: 166899   Elev (ft): 2470 ±5   Depth (ft): 315   7.5’   Quad: Garfield

Latitude: 47.007585   Longitude: -117.142978   decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 33 , T. 18 N , R. 45 E

Well Address and (or) Other Location Information:
405 W California Street, Garfield, Wash.; on east side of 5th Street

Location Method:
Well is located in wishing well structure in lawn outside 5th Street entrance to Garfield Town Hall. Site visit (April 13, 2016), met Mr. Ray McCown, mayor of Garfield, who said this was Garfield Town Well 4. Location on driller’s report is given as Lot 4 of Block 11.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 110</td>
</tr>
<tr>
<td>Sand</td>
<td>110 – 170</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>170 – 183</td>
</tr>
<tr>
<td>Clay, white</td>
<td>183 – 210</td>
</tr>
<tr>
<td>Clay, blue and yellow</td>
<td>210 – 222</td>
</tr>
<tr>
<td>Grande Ronde Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>222 – 310</td>
</tr>
<tr>
<td>Basalt, soft, vesicular</td>
<td>310 – 315</td>
</tr>
</tbody>
</table>
Comments:

There are outcrops of Lolo at least 200 ft above the well at the north edge of town (Waggoner, 1990); thus, the basalt encountered at ~2250 ft in elevation in the well is not likely the Lolo flow. The first flow encountered at 2250 ft in elevation (at 222–310 ft in depth) could be the Roza and the porous basalt at 2160 ft in elevation (at 310–315 ft in depth) the Grande Ronde. In either case, the thick sediments are, in part, the Latah Formation.
Above, plat map from Anderson Map Company (1910) showing Original Town (in pink).

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Darfield City
Address: Darfield Washington

(2) LOCATION OF WELL: County: Thurston
T4 SW 1/4 Sec. 33, T 18 N, R 4 S W.M.
Heating and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)...
New well ☑ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☑ Jetted ☐

(5) DIMENSIONS: Diameter of well 10 inches.
Depth of completed well 31 1/2 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 12" Diam. from 0 ft. to 61 ft.
Threaded ☐ Diam. from 0 ft. to 222 ft.
Welded ☑ Diam. from 211 ft. to 315 ft.
Perforations: Yes ☑ No ☐
Type of perforator used Touch Cut
SIZE of perforations 3/16" in. by 1/4" in.
perforations from 211 ft. to 315 ft.
perforations from 315 ft. to...

Screens: Yes ☑ No ☐
Manufacturer's Name
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel packed: Yes ☑ No ☐ Size of gravel:
Gravel placed from ft. to...
Surface seal: Yes ☑ No ☐ To what depth? 60 ft.
Material used in seal Cement Grout
Did any strata contain unusable water? Yes ☑ No ☐

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level...
Static level 78 ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes ☑ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test...
Bailer test: gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water...

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Sand (capping)</td>
<td>7-10</td>
<td>110</td>
</tr>
<tr>
<td>Green Clay</td>
<td>170</td>
<td>183</td>
</tr>
<tr>
<td>White Sands Clay</td>
<td>183</td>
<td>210</td>
</tr>
<tr>
<td>White Clay</td>
<td>210</td>
<td>222</td>
</tr>
<tr>
<td>Mud Sand and Gray Sands</td>
<td>222</td>
<td>310</td>
</tr>
<tr>
<td>Deep Water Sands</td>
<td>310</td>
<td>315</td>
</tr>
</tbody>
</table>

Receive DATE: OCT 4, 1989

DEPARTMENT OF ECOLOGY

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: William Wilkins
ADDRESS: Evan Lake, 875 31
LICENSE NO.: 1740
DATE: OCT 1, 1989

USE ADDITIONAL SHEETS IF NECESSARY.
**JIM GARRETT WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, November 2, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>D0067760</th>
<th>Elev (ft):</th>
<th>2880 ±10</th>
<th>Depth (ft):</th>
<th>380</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Robinson Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.80007</td>
<td>Longitude:</td>
<td>-116.9616</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
1147 Idler’s Rest Road, Moscow, Idaho; on northwest side of road, long (0.3 mi) driveway to home site.

**Location Method:**
Location is for well (latitude and longitude from driller’s report); Latah County Assessor; Google Earth imagery; topographic map.

<table>
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<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td>14</td>
<td>?</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>?</td>
<td>380</td>
</tr>
</tbody>
</table>

570
Comments:

Driller's report shows 366 ft of granite, some of which is probably sediments of Bovill. There are soft zones as deep as 327 ft, but I cannot tell where the sediments of Bovill unit ends and granite starts.

Latah County Tax Parcel RP40N05W210051, 1147 IDLERS REST RD, owner is GARRETT, JAMES W; 32.55 AC TAX #6102 NENE & SENE; 32.55 acres.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 00477160
   Drilling Permit No. 873382
   Water right or injection well #

2. OWNER: Jim Garrett
   Name: Jim Garrett
   Address: 110 Crystal Ct
   City: Tyrone, State GA Zip 30390

3. WELL LOCATION:
   Twp. 42 North or South Rge. 5 East or West
   Sec. 21 NE 1/4
   Govt.Lot 40 County Latah
   Lat. 46° 48.004 (Deg. and Decimal minutes)
   Long. 116° 52.091 (Deg. and Decimal minutes)
   Address of Well Site: 1145 Idlers Rest Rd.
   (Your lease name or road + distance to road or landmark)
   Lot: Blk: Sub. Name:

4. USE: Domestic ☑ Municipal ☐ Irrigation ☐ Thermal ☐ Injection ☐ Other ☐

5. TYPE OF WORK:
   ☑ New well ☑ Replacement well ☐ Modify existing well ☐ Abandonment ☐ Other ☐

6. DRILL METHOD: ☑ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other ☐

7. SEALING PROCEDURES:
   Seal material: From (ft) To (ft) Quantity (lbs or ft) Placement method/procedure
   (check plug)

8. CASING/LINER:
   Diameter (nominal) From (ft) To (ft) Gauge Schedule Material Casing Liner Threaded Welded
   1-1/2 4-1/2 250 steel
   4-1/2 380 PVC
   Was drive shoe used? ☑ ☐ ☑ N Shoe Depth(s)

9. PERFORATIONS/SCREENS:
   Perforations ☑ ☐ ☑ Method drilled: will saw
   Manufactured screen ☑ ☐ ☑ Type
   Method of installation ☑ ☑ ☐

10. FILTER PACK:
    Filter Material From (ft) To (ft) Quantity (lbs or ft) Placement method

11. FLOWING ARTESIAN:
    Flowing Artesian? ☑ ☐ ☑ Yes No Artesian Pressure (PSIG)
    Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft) 305
    Static water level (ft) 90
    Water temp. (°F) 51° Bottom hole temp. (°F)
    Describe access port
    Well test:
    Test method:
    Drawdown (feet) Discharge or yield (gpm) Test duration (minutes)
    380 4 10
    Pump Bailer Air Flowing artesian
    Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:
    Bed Diag. (in) From (ft) To (ft) Remarks, lithology or description of repairs or abandonment, water temp.
    Water
    10 0 14 dust
    10 14 38 med tan + brown Granite
    10 38 87 med tan + brown Granite
    10 87 136 hard white Granite
    10 136 143 med grn Granite
    10 143 215 hard white Granite
    10 215 303 soft tan + brown Granite
    10 303 320 soft white + brown Granite
    10 320 380 med salt + pepper Granite

RECEIVED
SEP 25 2014
IDWR / NORTH

Completed Depth (Measurable): 380
Date Started: 9/9/14 Date Completed: 9/10/14

14. DRILLER'S CERTIFICATION:
    I/we certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Dick Uhlenkott Drilling No. 709
    *Principal Driller* Date 9-20-14
    *Driller* Date
    *Operator II* Date
    Operator I Date

* Signature of Principal Driller and rig operator are required.
**KENNETH GARRETT WELL 2**

**DRILLED IN 1990**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, November 1, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2715</th>
<th>Depth (ft):</th>
<th>205</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Robinson Lake</th>
</tr>
</thead>
</table>

Latitude: 46.773923°  
Longitude: -116.955420°  
decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 27, T. 40 N, R. 5 W

**Well Address and (or) Other Location Information:**
3123 West Twin Road, Moscow, Idaho; on north side of road, on west side of driveway

---

**Location Method:**  
Location and elevation from Candel (2014, p. 164, well 23); Latah County Assessor; Google Earth imagery; topographic map.

---

**GEOLOGIC UNITS — DESCRIPTION**

<table>
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<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>From 0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>*Sand(?), gray, soft</td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>Sand(?) and clay, brown, soft</td>
<td></td>
<td>73</td>
</tr>
<tr>
<td>Sand(?), soft</td>
<td></td>
<td>97</td>
</tr>
</tbody>
</table>
Comments:

*Driller reported soft and (or) decomposed granite—Interpreted as sediments of Bovill and not granite. Driller's reports for several other wells in sec. 27 reported granite but most soft.

Latah County Tax Parcel RP40N05W276207, 3123 WEST TWIN RD, owner is WOODBURY, LARRY C, 19.47 acres, SWSW 27 40 5. (This parcel is west of adjoining parcel RP40N05W2760 owned by GARRETT FAMILY TRUST at 3129 WEST TWIN RD.)

References Cited:

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name: KENNETH GARRETT
Address: 3400 W. TWIN RD., Moscow, ID 83845
Owner's Permit No.: 87-90-N 42

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase  ☐ Abandoned (describe abandonment procedures such as
materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☒ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection  ☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Casing schedule:
- Steel ☐  Concrete ☐ Other ☐ Avc
- Thickness from To
  - 8 inches 6 inches + 1 feet 48 feet
  - 6 inches 6 inches + 35 feet 205 feet
  - 4 inches 4 inches + 15 feet 100 feet

Was casing drive shoe used? ☐ Yes  ☐ No
Was a packer or seal used? ☑ Yes  ☐ No
Perforated? ☐ Yes  ☐ No
How perforated? ☐ Factory  ☐ Knife  ☐ Torch
Size of perforation: 7/4 inches by 1/2 inches
Number of perforations from To
- 45 feet 75 feet
- 75 feet 100 feet

Well screen installed? ☐ Yes  ☑ No
Manufacturer's name:
Type: Diameter Slot size Set from feet to feet
- Steel Diameter Slot size Set from feet to feet
- Concrete Diameter Slot size Set from feet to feet
- Other Diameter Slot size Set from feet to feet
Gravel packed? ☐ Yes  ☐ No  ☐ Size of gravel
Placed from feet to feet
Surface seal depth: 48 feet
Material used in seal: ☐ Cement grout
- Bentonite  ☐ Puddling clay
- Sealing procedure used:
  - Slurry pit  ☐ Temp. surface casing
  - Overbore to seal depth
Method of joining casing: ☐ Threaded  ☐ Welded  ☐ Solvent Weld
- Cemented between strata

Describe access port

6. LOCATION OF WELL
Sketch map location must agree with written location.
- Subdivision Name:
- Lot No.
- Block No.
- County:
- Section:
- Township:
- Range:

7. WATER LEVEL
Static water level: 25 feet below land surface.
Flowing? ☑ Yes  ☐ No  ☐ G.P.M. flow
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature: °F  Quality:
Describe artesian or temperature zones below

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☐ Air  ☐ Other
Discharge G.P.M.: 1/2 G.P.M.
Pumping Level: Air Test
Hours Pumped: 1/2

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore Diam.</th>
<th>Depth From</th>
<th>To</th>
<th>Material</th>
<th>Water Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0-101</td>
<td>GUNN - TAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>101-130</td>
<td>GRANITE - GREY - SOFT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>130-140</td>
<td>GRANITE - BROWN - DESERT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>140-205</td>
<td>GRANITE &amp; SAND - SOFT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Work started 10-23-80 finished 10-23-80

11. DRILLERS CERTIFICATION
If we certify that all minimum well construction standards were
complied with at the time the rig was removed.

MCPHERSON & WRIGHT DRILLING: 650
Address: 2248 Burnt, Lewiston, Idaho 83501 Date 11-19-80
Signed by (Firm Official) and (Operator)

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
JOHN GEHRING WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 9, 2018

Well Log ID: 1065290  Elev (ft): 2480 ±10  Depth (ft): 180  Quad: Palouse

Latitude: 46.922563°  Longitude: -117.105102°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
14502 State Route 272, Palouse, Wash.; on northeast side of road

Location Method:
Location is for well, by shed at base of driveway; Whitman County Assessor; topographic map. Driller recorded incorrect highway, Section, ¼-¾ Section, and tax parcel; site visit March 24, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 17</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>17 – 162</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>162 – 180</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004517353290, 14502 SR 272, SW1/4 GEHRING SR 272 SHPLT#731101, GEHRING, JOHN/TASHA; 10/20/2017: NEW 768 SF STICK FRAME GARAGE.

Above, well is at lower right corner of gray shed (in front of white bucket)

References Cited:
WATER WELL REPORT

Deborah of Washington

Construction/Decommission ("x" in circle)
- Construction
- Decommission

Notice of Intent Number

PROPOSED USE:  Domestic  Industrial  Municipal
- DeWater  Irrigation  Test Well  Other

TYPE OF WORK: Owner's number of well (if more than one)
- New well  Reconditioned  Method:  Drilled  Bored  Driven

DIMENSIONS: Diameter of well inches, drilled ft. Depth of completed well ft.

CONSTRUCTION DETAILS
- Casing  Welded  9' Diam. from +2 ft. to +8 ft.
- Installed:  Liner installed 4' Diam. from -5 ft. to -180 ft.

Perforations:  Yes  No
Type of perforator used

SIZE of perfor 1/4 in. by in. and no of perfor 48 from 160 ft. to 180 ft.

Screens:  Yes  No  K-PA Location

Manufacturer's Name

Diam. Slot size from ft. to ft.

Gravel/Filter packed:  Yes  No
Size of gravel/sand

Materials placed from ft. to ft.

Surface Seal:  Yes  No  To what depth? ft.

Material used in seal

Did any strata contain usable water?  Yes  No

Type of water

Method of sealing strata off

PUMP: Manufacturer's Name

WATER LEVELS: Land-surface elevation above mean sea level ft.

Static level ft. below top of well Date

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was pump test made?  Yes  No

Yield: gal/min. with ft. drawdown after hrs.

Yield: gal/min. with ft. drawdown after hrs.

Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal/min. with ft. drawdown after hrs.

Arttest gal/min. with stem set at ft. for 1.5 hrs.

Artesian flow gpm. Date

Temperature of water Cold  Was a chemical analysis made?  Yes  No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[Signatures]

Drilling Company H2O Well Service Inc.
Address 382 W. Hayden Ave.
City, State, Zip Hayden, ID, 83835
Contractor's Registration No. H2OWES101DW Date 6/29/15

Received

JUL 27 2015

Department of Ecology
Eastern Washington Office

Start Date 6/23/15  Completed Date 6/24/15

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Michael Germain Well
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 9, 2018

Well Log ID: D0072052  Elev (ft): 2640 ±10  Depth (ft): 345  7.5’ Quad: Moscow East

Latitude: 46.749760°  Longitude: -116.958250°  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 3, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
Darby Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well, from driller’s coordinates; Latah County Assessor; Google Earth imagery; topographic map.

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)

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<tr>
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<td>Clay, brown</td>
<td>0 – 18</td>
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<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>18 – 96</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>96 – 230</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>230 – 295</td>
</tr>
<tr>
<td>Sand</td>
<td>295 – 335</td>
</tr>
<tr>
<td>Clay</td>
<td>335 – 345</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N05W035552, GERMAIN, MICHAEL R; 9.89 AC TAX #7519 NWSW 3 39 5.

References Cited:
1. WELL TAG NO. D 20072052
   Drilling Permit No. 8197233
   Water right or injection well #

2. OWNER: Michael Germain
   Name ____________________________
   Address 14030 Basalpi Circle
   City Sunnyside State WA zip 99370

3. WELL LOCATION:
   Twp. 39 North or South □ Rgp. 5 East or West □
   Sec. 3 1/4 or 3 1/4
   Gov't Lot 1 1/4 or 1 1/4
   County Latah
   Lat. 46° 0' 41" (Deg. and Decimal minutes)
   Long. 116° 57' 49.5" (Deg. and Decimal minutes)
   Address of Well Site Darby Road
   City Moscow

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation □ Thermal □ Injection
   □ Other

5. TYPE OF WORK:
   □ New well □ Replacement well □ Modify existing well
   □ Abandonment □ Other

6. DRILL METHOD:
   □ Air Rotary □ Mud Rotary □ Cable □ Other

7. SEALING PROCEDURES:
   Bored 38 1550 ft overburden (granular)

8. CASING/LINER:
   Diameter (nominal) From (ft) To (ft) Gauge Schedule Material
   6" - 60 345 2.50 Steel

9. PERFORATIONS/SCREENS:
   Perforations □ Y □ N Method □ Plasma
   Manufactured screen □ Y □ N Type
   Method of Installation

10. FILTER PACK:
    Filter Material From (ft) To (ft) Quantity (lbs or ft) Placement method

11. FLOWING ARTESSIAN:
    Flowing Artesian? □ Y □ N Artesian Pressure (PSIG)
    Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft) 295' Static water level (ft) 150'
    Water temp. (°F) 58° Bottom hole temp. (°F)
    Describe access port Wellcap
    Drawdown (feet) Discharge or yield (gpm) Test duration (minutes)
    310' 30 est 1.14

13. LITHOLOGIC LOG and/or repairs or abandonment:
    | Core Dbl. (ln) | From (ft) | To (ft) | Remarks, lithology or description of repairs or abandonment, water temp. | Water |
    |---------------|----------|---------|------------------------------------------------------------------------|-------|
    | 12. 0 18     | Brown clay | x |
    | 13. 18 96    | White clay | x |
    | 230 245      | White clay | x |
    | 295 335      | Sand      | x |
    | 335 345      | Clay      | x |

14. DRILLER'S CERTIFICATION:
    We certify that all minimum well construction standards were complied with at the time the rig was removed.

   Company Name: Keil's SensWell Drilling Co. No. 616
   *Principal Driller: Name Date 6/29/16
   *Driller: Name Date 6/29/16
   *Operator II: Name Date
   *Operator I: Name Date

* Signature of Principal Driller and rig operator are required.

RECEIVED
JUL 14 2016
IDWR / NORTH
RICHARD GIBB WELL

[DRILLED MAY 8, 1989; DEEPENED DECEMBER 20, 1990]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

Well Log ID: NA Elev (ft): 2682 Depth (ft): 345

7.5’ Quad: Robinson Lake

Latitude: 46.769800° Longitude: -116.959883° decimal degrees (WGS84)

⅛, ⅛, ⅛, ¼, Sec. 33, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3100 West Twin Road, Moscow, Idaho; on southeast side of road

Location Method:
Location is for well; latitude and longitude from Candel (2014, p. 164, well sample 22 which correlates to driller's reports for Richard Gibb on p. 136 and p. 136); Latah County Assessor; Google Earth imagery; topographic map; driller recorded adjacent parcel PLSS for same owner

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 24</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>24 – 26</td>
</tr>
<tr>
<td>Clay</td>
<td>26 – 39</td>
</tr>
<tr>
<td>Sand</td>
<td>39 – 44</td>
</tr>
<tr>
<td>Clay</td>
<td>44 – 72</td>
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<tr>
<td>Clay and sand</td>
<td>72 – 91</td>
</tr>
<tr>
<td>Clay</td>
<td>91 – 137</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>137 – 345</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP40N05W330553, owner now is SORENSEN, LAURENE S; 3100 WEST TWIN RD; SE 2.84 AC TAX #2519 NENE; 33 40 5.

References Cited:
1. WELL OWNER

Name: Richard Gibb
Address: Moscow
Owner's Permit No.: 87-89-N-2

2. NATURE OF WORK

- New well
- Replacement
- Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

- Domestic
- Irrigation
- Test
- Municipal
- Industrial
- Stock
- Waste Disposal or Injection
- Other (specify type)

4. METHOD DRILLED

- Rotary
- Air
- Hydraulic
- Reverse rotary
- Cable
- Dug
- Other

5. WELL CONSTRUCTION

Casing schedule:
- Steel
- Concrete
- Other

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was casing drive shoe used? Yes No
Was a packer or seal used? Yes No
Perforated? Yes No
How perforated? Factory Knife Torch
Size of perforation inches by inches
Number of perforations from to feet

Well screen installed? Yes No
Manufacturer's name

Type
Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet
Gravel packed? Yes No Size of gravel
Placed from feet to feet
Surface soil depth feet
Material used in seal: Cement grout Bentonite Puddling clay
Sealing procedure used: Slurry pit Temp. surface casing
Method of joining casing:

Describe access port

6. LOCATION OF WELL

Sketch map location must agree with written location.

<table>
<thead>
<tr>
<th>Subdivision Name</th>
<th>Lot No.</th>
<th>Block No.</th>
</tr>
</thead>
</table>

County: Latah

7. WATER LEVEL

Static water level 30 feet below land surface.
Flowing? Yes No G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by: Valve Cap Plug
Temperature of: Quality
Describe artesian or temperature zones below:

8. WELL TEST DATA

- Pump
- Bailer
- Air
- Other

Discharge G.P.M.: Pumping Level Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore</th>
<th>Depth From To</th>
<th>Material</th>
<th>Water</th>
<th>Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>0-89</td>
<td>overburden, clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>90-115</td>
<td>Quartz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td>115-124</td>
<td>Clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1D</td>
<td>124-140</td>
<td>Quartz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1E</td>
<td>140-157</td>
<td>Clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1F</td>
<td>157-170</td>
<td>Quartz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

JUN 13 1989

10. Work started 4/30/89 finished 5/18/89

11. DRILLERS CERTIFICATION

I, we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Witt Well Drilling
Firm No.: 58
Address: P.O. Box 2015, Lewiston, ID 83501
Date: 7/31/89
Signed by (Firm Official) Earl Witt
And (Operator) Roger Witt
GLENWOOD WELL 1

[GRANDE RONDE BASALT]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 23, 2016; November 9, 2017

Well Log ID: NA Elev (ft): 2080 ±10 Depth (ft): 105 7.5’ Quad: Colfax North

Latitude: 46.929515 Longitude: -117.282143 decimal degrees (WGS84)

¼, ¼, NE ¼, Sec. 32, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
Glenwood, Wash.; on north bank of Palouse River, about 800 ft southeast of intersection of North Palouse Road and Glenwood Road; about 600 ft west of Glenwood Well 2 (Glenwood East Well).

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (May 17, 2016)

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GRADE RONDE BASALT</th>
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</thead>
<tbody>
<tr>
<td>*N2 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
</tr>
<tr>
<td>Basalt</td>
</tr>
</tbody>
</table>

586
Comments:

*No driller’s report exists for this well, but it is known to start in the N2 of the Grande Ronde (Bush and others, (2005 [2006]).

Walters and Glancy (1969, p. 83) reported that the Glenwood West well produced 625 gpm in 1963.

Whitman County Tax Parcel 200004417326900, NE1/4 PT N1/2 GLENWOOD WELLS SHRTPL, owner is COLFAX, CITY OF.

References Cited:


GLENWOOD WELL 2

[GLENWOOD EAST WELL]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, October 23, 2016; November 9, 2017

Well Log ID: NA Elev (ft): 2080 ±10 Depth (ft): 100 7.5’ Quad: Colfax North

Latitude: 46.929515 Longitude: -117.282143 decimal degrees (WGS84)

¼, ¼, NE ¼, Sec. 32, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
Glenwood, Wash.; on north bank of Palouse River, about 1400 ft southeast of intersection of North Palouse Road and Glenwood Road; about 600 ft east of Glenwood Well 1 (Glenwood West Well).

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (May 17, 2016)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>*N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>0 – 100?</td>
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</table>
Comments:

*No driller’s report exists for this well, but it is known to start in the N2 of the Grande Ronde (Bush and others, (2005 [2006]).

Walters and Glancy (1969, p. 83) reported that the Glenwood East well produced 625 gpm in 1963.

Whitman County Tax Parcel 200004417326900, NE1/4 PT N1/2 GLENWOOD WELLS SHRTPL, owner is COLFAIX, CITY OF.

References Cited:


**GOLDEN WHEAT ACREAGES WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, February 7, 2018

Well Log ID: 1629117  Elev (ft): 2650 ±10  Depth (ft): 620  7.5’  Quad: Viola

Latitude: 46.752675°  Longitude: -117.099790°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Orville Boyd Road, Pullman, Wash.; on south side of road in field

**Location Method:**
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; driller reported incorrect ¼-section; site visit March 14, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>98</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green, and basalt</td>
<td>238</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>260</td>
</tr>
<tr>
<td>Basalt</td>
<td>300</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
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<tr>
<td>Basalt, soft</td>
<td>330</td>
</tr>
<tr>
<td>Basalt</td>
<td>390</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>458</td>
</tr>
<tr>
<td>Basalt</td>
<td>515</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>575</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515264901, SE PT S OF RD, owner is GOLDEN WHEAT ACREAGES LLC, 18 CRESCENT KEY, BELLEVUE WA; 20.0 acres; 12/21/15: grantor was J-S FARMLAND HOLDINGS LLC to GOLDEN WHEAT ACREAGES LLC (for $0).

Left, well is visible on skyline, to left of dirt pile.

References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/ Decommission ("x" in circle)

Construction "x"

Decommission ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: Domestic X Industrial  X Municipal

DeWater  X Irrigation  Test Well  X Other

TYPE OF WORK: Owner’s number of well (if more than one)

X New well  O Reconditioned Method: X Dug  O Bored  Driven

O Deepened  O Cable  O Rotary  O Jettied

DIMENSIONS: Diameter of well 10 inches, drilled 18 ft.

Depth of completed well 600 ft.

CONSTRUCTION DETAILS

Casing X Welded  X Diameter: +2 ft. to -98 ft.

Installed: X Inner installed 4" Diameter: -20 ft. to 60 ft.

X Threaded  X Diameter: -20 ft. to 60 ft.

Perforations: X Yes X No

Type of perforator used SKILLSAW

SIZE of perfor 1/4" by 1 and no. of perfor 560 from 600 to 620.

Screens: X Yes X No X K-Pac Location

Manufacturer’s Name

Type  Model No. __________________

Diam Slot size from ft. to ft. ft.

Diam Slot size from ft. to ft. ft.

Gravel/Filter packed: X Yes X No Size of gravel/ sand

Materials placed from ft. to ft.

Surface Seal: X Yes X No To what depth 18 ft.

Material used in seal Bentonite hole 1/2"9

Did any strata contain unusable water? X Yes X No

Type of water

Depth of strata

Method of sealing strata off

PUMP: Manufacturer’s Name

Type ____________________________

WATER LEVELS: Land-surface elevation above mean sea level ft.

Static level 180 ft. below top of well Date 6-10-17

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? X Yes X No If yes, by whom?

Yield: gal/min. with ft. drawdown after hrs.

Yield: gal/min. with ft. drawdown after hrs.

Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal/min. with ft. drawdown after hrs.

Airest 30 gal/min. with stem set at 60 ft. for 1 hrs.

Artesian flow g.p.m. Date

Temperature of water 51° Was a chemical analysis made? X Yes X No

WELL CONSTRUCTION CERTIFICATION: I, constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller X Engineer X Trainee Name (Print) Brett Unkenkott

Engineer/Trainee Signature

Driller or trainee License No. 2651

IF TRAINEE: Driller’s License No.

Driller’s Signature

Drilling Company Brett Unkenkott Drilling

Address 50 PO BOX 255

City, State, Zip Corvallis, OR 97330

Contractor’s Registration Number 69589 Date 6/17/17

CURRENT

Notice of Intent No. WE25530

Unique Ecology Well ID Tag No. B10 189

Water Right Permit No.

Property Owner Name Golden Wheat Agreages, LLC

Well Street Address Orrville Boyd Rd

City Pullman County Whitman

Location SE 1/4 NW 1/4 SW 1/4 Sec 29 T26 N R 45 EWM or WWM

(s, t, r Still REQUIRED)

Lat/Long

Lat Deg _______ Lat Min/Sec _______

Long Deg _______ Long Min/Sec _______

Tax parcel No. (Required) 2000045152504910

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NEEDED.)

MATERIAL

FROM TO

dirt 0 3

brown clay 3 98

red black loam 98 180

hard black loam 180 258

soft black loam + green shale 238 300

soft black loam 300 330

red black loam 330 340

soft black loam 340 458

soft black loam 458 515

soft black loam 515 573

red black loam 573 615

WATER 600

*WATER 600*

JUN 14 2017

Start Date 6/8/2017 Completed Date 6/10/2017

ECY 050-1-20 (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6572. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6541.
**BILL GOTTSACKER WELL**

Geologic Interpretation of Water Well Driller's Log  
By John H. Bush, May 11, 2018

Well Log ID: NA  Elev (ft): 2720 ±10  Depth (ft): 100  Quad: Robinson Lake

Latitude: 46.785142°  Longitude: -116.970276°  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 28, T. 40 N, R. 5 W

**Well Address and (or) Other Location Information:**
1101 Idlers Rest Road, Moscow, Idaho; at end of long lane/driveway extending west of Schultz Road intersection with Idlers Rest road

**Location Method:**
Assumed location is for well(?) northwest of well house(?); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Loess</td>
<td>2 – 30</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>30 – 75</td>
</tr>
<tr>
<td>Sand</td>
<td>75 – 100</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP40N05W282408, owner now is STOSZEK LIVING TRUST, 1101 IDLERS REST RD, NENW 28 40 5.

Bill Gottsacker used to live at 1101 Idlers Rest Road, Moscow, Idaho (Rehold.com, 2018).

References Cited:
1. DRILLING PERMIT NO.: 87-96-N-30

2. OWNER: Bill Gottacker
   Address: 2330 SW Buckman Road
   Tetonia, ID 83452

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. USE:
   [ ] Domestic  [ ] Municipal  [ ] Monitor  [ ] Irrigation  [ ] Thermal  [ ] Injection  [ ] Other

5. TYPE OF WORK: check all that apply
   [ ] New Well  [ ] Modify  [ ] Abandonment  [ ] Other

6. DRILL METHOD: [ ] Air Rotary  [ ] Cable  [ ] Mud Rotary  [ ] Other

7. SEALING PROCEDURES
   SEAL/FILTER PACK  AMOUNT  METHOD
   [ ] Cantente  0 20 8 sacks  Day

8. CASING/LINER:
   Diameter  From  To  Gauge  Material  Casing Liner Wedged Threaded
   [ ] 8" 1/2 7.3 80 20D  □ □ ○ ○ ○

9. PERFORATIONS/SCREENS:
   [ ] Perforations  Method: pullback
   [ ] Screens  Screen Type: PVC
   From  To  Slot Size  Number  Diameter  Material  Casing Liner
   [ ] 65 70 20 6" PVC  □ □ ○ ○ ○
   [ ] 70 80 12 4" PVC  □ □ ○ ○ ○

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    25 ft. below ground  Artesian pressure  lb.
    Depth flow encountered  ft.  Describe access port or control devices:

11. WELL TESTS:
   Yield gal/min.  Drawdown  Pumping Level  Time
   [ ] 5 gpm  30"  [ ] Air  [ ] Flowing Artesian
   Water Temp.  Bottom hole temp.
   Water Quality test or comments: 3 gll trb is calirnt
   Depth first Water Encountered 757 ft

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
   Water
<table>
<thead>
<tr>
<th>Bore</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
<td>dirt</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>0</td>
<td>clay sand</td>
</tr>
<tr>
<td>10</td>
<td>35</td>
<td>0</td>
<td>sand</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION
   I/we certify that all minimum well construction standards were complied with at the time the rig was removed.
   Firm Name: [ ]
   Firm Official: [ ]
   Date: [ ]
   Supervisor or Operator: [ ]
   Date: [ ]

FORWARD WHITE COPY TO WATER RESOURCES
**ED GRAY WELL**

*(VIOLA CITY WELL 2)*

*[DRILLED IN 1995]*

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 4, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2680 ±10</th>
<th>Depth (ft):</th>
<th>205</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.835628°</td>
<td>Longitude:</td>
<td>-117.039587°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
1001 Viola Road, Viola, Idaho; on east side of lane that extends south of Viola Road, on former airstrip.

**Location Method:**
Paul Kimmel (personal communication, March 15, 2018) related that his father-in-law, Ed Gray, had the well drilled along his airstrip, south of Viola city well 1; Latah County Assessor; Google Earth imagery; topographic map. Site visit (March 16, 2018).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Latah Formation</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
<td>133</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>133</td>
<td>205</td>
</tr>
</tbody>
</table>

*The interpretation that the clay reported for this well belong to the sediments of Bovill is based on examination of ditch, road, and excavation sites over a 40-yr period. These sites show that the valley floor beneath Viola contains a thin layer of modern sediments underlain by the sediments of Bovill.*
Comments:

Latah County Tax Parcel RP40N06W015601, owner is BAKER, GABE ALLEN; 1001 VIOLA RD, 7.06 AC, GOVT LOT 6, 1 40 6.

Idaho Department of Water Resources Well Construction Search Web page lists the well as "City of Viola (Owner/Operator), James Edwin Gray (Owner/Operator)."

Well is in front (west) of house, along old air strip (now unpaved road).

References Cited:
3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

   Twp. 10      or South □
   Rge.  6      or West □
   Sec.  1
   Gov't Lot
   Address of Well Site

   (Write at least name of road + Distance to Road or Landmark)
   Lt.:          Blk.:          Sub. Name:

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   SEAL/FILTER PACK
   AMOUNT
   METHOD
   Cement  10 54  3 24  grain
   Astmmt  0 10  1/4  bags  Day

   Was drive shoe used? □ Y □ N  Shoe Depth(s)__________
   Was drive shoe seal tested? □ Y □ N  How?__________

8. CASING/LINER:
   Diameter From To Gauge Material Casing Liner Welded Threaded
   8" +2 133 200  steel  □  □ □ □
   6" -10 205 100  steel  □  □ □ □

   Length of Headpipe__________ Length of Tailpipe__________

9. PERFORATIONS/SCREENS
   □ Perforations Method__________
   □ Screens Screen Type__________
   From To Slot Size Number Diameter Material Casing Liner
   140 305  3/8 360 6  PVC  □  □

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    Depth flow encountered__________ ft. Describe access port or control devices:

    NWSF 1 40 N 6W

11. WELL TESTS:
    [Yard gal./min. Drawdown Pumping Level Time]
    300

    Water Temp._________________ Bottom hole temp._________________

    Water Quality test or comments:_________________ Depth first water encountered 198

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
    184 0 54 clay  □  □
    10 54 133  clay  □  □
    8 133 255  sand & silt  □  □

13. DRILLER'S CERTIFICATION
    I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Firm Name:  WILHELMSCOTT DRILLING Pirm No. 125
    Firm Official:  CLAY WILHELMSCOTT Date:  Feb 7, 96
    and
    Supervisor or Operator:  NEAL WILHELMSCOTT Date:  Feb 7, 96
    (Sign once if Firm Official & Operator)
LISA GREENVILLE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August 2016

Well Log ID: D0033789  Elev (ft): 2690 ±10  Depth (ft): 400  7.5’ Quad: Viola

Latitude: 46.761407  Longitude: -117.018431  decimal degrees (WGS84)

NE ¼, SW ¼, SW ¼, Sec. 31, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1218 Canter Wood Drive, Moscow, Idaho; on north side of road; well house is east of house and white fence, at end of a short dead-end lane

Location Method:
Location is for well house; Latah County Assessor; Google Earth imagery; topographic map. Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 22</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand, coarse, white</td>
<td>22 – 89</td>
</tr>
<tr>
<td>Clay, brown and gray</td>
<td>89 – 140</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>140 – 212</td>
</tr>
<tr>
<td>Basalt</td>
<td>212 – 289</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>289 – 312</td>
</tr>
<tr>
<td>Sand</td>
<td>312 – 400</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP016160020010; 1218 CANTERWOOD DR; owner now is MARR, JAMES CLIFTON; CANTERWOOD ESTATES, BLK 2 LOT 1.

Above, well house is in the center, to the right of the trees and white fence.

References Cited:
CORRECTED REPORT

1. WELL TAG NO. D 33789

2. OWNER:
   Name: Lisa Greenville
   Address: 1217 Confer Road, Moscow
   City: Moscow, State: ID, Zip: 83843

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well:
   Twp: 46 North, Rge: 6 East
   Sec: 31
   Lot: 1
   County: Latah
   Address of Well Site: 1217 Confer Road, City: Moscow

4. USE:
   ☑ Domestic
   ☐ Municipal
   ☐ Monitor
   ☐ Irrigation
   ☑ Thermal
   ☐ Injection
   ☐ Other

5. TYPE OF WORK check all that apply
   ☑ New Well
   ☑ Modify
   ☑ Abandonment
   ☑ Other

6. DRILL METHOD:
   ☑ Air Rotary
   ☑ Cable
   ☑ Mud Rotary
   ☐ Other

7. SEALING PROCEDURES
   Seal Material
   From | To
   --- | ---
   PE + 12 | 4" + 12
   Weight/Volume: 400 #
   Seal Placement Method: Top Pour

   Was drive shoe used? ☑ N
   Shoe Depth(s): 138'
   Was drive shoe seal tested? ☑ N
   How? Air Pressure

8. CASING/LINER:
   Diameter
   From | To | Gauge | Material
   --- | --- | --- | ---
   4.5 | 2.75 | 3/8 | PVC
   Length of Headpipe: Length of Tailpipe
   Type: N Type

9. PERFORATIONS SCREENS PACKER TYPE
   Perforation Method: S A W
   Screen Type/Method of Installation
   From | To | Slot Size | Number | Diameter | Material
   --- | --- | --- | --- | --- | ---
   300 | 370 | 1/2 | 3 | 4.5 | PVC
   Casing | Liner
   Completed Depth: 376 (Measurable)
   Date: Started: 5-19-04 Completed: 5-19-04

10. FILTER PACK
    | Filter Material | From | To | Weight/Volume | Placement Method
    --- | --- | --- | --- | ---

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    40N 5W 31
    Artesian pressure = lb.
    Depth flow encountered = ft.
    Describe access port or control devices: Top of casing

12. WELL TESTS:
    Yield gpm/min | Drawdown | Pumping Level | Time
    --- | --- | --- | ---
    100 | 1.25

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water Temp: 56°
    Water Quality test or comments:
    Depth first Water Encounter: 31'

14. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: J. Henry Drilling
    Date: 5-23-04
    Principal Driller and Operator: J. Henry Drilling
    Date: 5-23-04
    Operator I: 601
JIM GRIFFITH WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: D0067764  Elev (ft): 2700 ±10  Depth (ft): 200  7.5’  Quad: Robinson Lake

Latitude: 46.776746°  Longitude: -116.979600°  decimal degrees (WGS84)

SW ¼, NW ¼, SW ¼, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3162 Foothill Road, Moscow, Idaho; on east side of road

Location Method:
Location is for well, assumed to be just east of a small shed south of driveway, near latitude and revised longitude from driller’s report; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Clay, white, with sand and minor cobbles</td>
<td>91</td>
</tr>
<tr>
<td>Clay, gray and brown</td>
<td>107</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>143</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>168</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W285438, owner is GRIFFITH, JAMES L; 3162 FOOTHILL, 10 AC S. 635.05' OF W 686.01' OF NWSW 28 40 5.

References Cited:
1. WELL TAG NO. D 0067764
Drilling Permit No. 83514
Water right or injection well □

2. OWNER: Jim Griffith
Name: Jim Griffith
Address: 2215 Itani Drive
City: Moscow State: ID Zip: 83843

3. WELL LOCATION:
Twp. 40 North ☑ or South □ Rge. 5 East ☑ or West □ Sec. 28 1/4 NW 1/4 NW 1/4 NW 1/4
Govt Lot: 418 County: Latah
Lat.: 46° 59.597' (Deg. and Decimal minutes)
Long.: 116° 58.726' (Deg. and Decimal minutes)
Address of Well Site: 14 mile North of 3142 Foothills Rd.
City: Moscow

4. USE: ☑ Domestic □ Municipal □ Monitor □ Irrigation □ Thermal □ Injection □ Other

5. TYPE OF WORK:
☑ New well □ Replacement well □ Modify existing well
☑ Abandonment □ Other

6. DRILL METHOD:
☑ Air Rotary □ Mud Rotary □ Cable □ Other

7. SEALING PROCEDURES:
Seal material: Bentonite From (ft): 0 To (ft): 38 Quantity (lbs or #): 24 sack top pour

8. CASING/LINER:
(Diameter (nominal): 8"
From (ft): 0 To (ft): 143 Schedule: 150 Steel
Casing Liner: □ Threaded □ Welded □

9. PERFORATIONS/Screens:
Perforations: □ Y ☑ N Method
Manufactured screen: □ Y ☑ N Type
Method of Installation:

10. FILTER PACK:
Filter Material: From (ft): To (ft): Quantity (lbs or #): Placement method

11. FLOWING ARTEIAN:
Flowing Artesian? □ Y ☑ N Artesian Pressure (PSIG)
Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft): 105 Static water level (ft): 43
Water temp. (°F): 56 Bottom hole temp. (°F): 
Describe access port

Well test:
Drawdown (feet) Discharge or Yield (gpm) Test duration (minutes)
Pump: 200 □ 3 □ 60
Bailer: 8 □ 8 □ 8
Air: □ 8 □ 8
Flowing artisan: 8 □ 8 □

Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

<table>
<thead>
<tr>
<th>Borehole (in)</th>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Remarks, lithology or description of repairs or abandonment, water temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 0 38</td>
<td>8 0</td>
<td>38</td>
<td>Brown Clay</td>
</tr>
<tr>
<td>8 48 91</td>
<td>8 91</td>
<td>107</td>
<td>White clay, some sand and cobbles</td>
</tr>
<tr>
<td>8 0 143</td>
<td>8 143</td>
<td>143</td>
<td>Grey, brown, clay</td>
</tr>
<tr>
<td>8 143 143</td>
<td>8 143</td>
<td>143</td>
<td>Black, mud, grey</td>
</tr>
<tr>
<td>8 143 200</td>
<td>8 143</td>
<td>200</td>
<td>Hard white clay</td>
</tr>
</tbody>
</table>

RECEIVED
OCT 08 2014
IDWR/NORTH

14. DRILLER'S CERTIFICATION:
□ We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: Brett Uhlenkott Drilling Co. No. 709

*Principal Driller:* Brett Uhlenkott Date: 10-1-14

*Driller:* Date:

*Operator I:* Date: 0-1-14

*Signature of Principal Driller and rig operator are required.*

604
### Geographic Information

- **Well Log ID:** 150463
- **Elev (ft):** 2450 ±10
- **Depth (ft):** 239
- **Quad:** Colfax North
- **Latitude:** 46.898306
- **Longitude:** -117.306982
  decimal degrees (WGS84)
- **Location Method:** Located at only house in NW¼, NW¼, sec. 8; is near Colfax North quadrangle Well 2 of Bush and others (2005 [2006]); Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 13, 2016).

### Geologic Units — Description

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>Soil</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>Clay, brown</td>
<td>1</td>
<td>119</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td>Basalt of Lolo</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>224</td>
<td>238</td>
</tr>
<tr>
<td></td>
<td>Basalt, weathered</td>
<td>238</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>238</td>
<td>239</td>
</tr>
</tbody>
</table>
Comments:
Probably Whitman County Tax Parcel 2000004416082290, 3151 SR 272, NW1/4 4 AC IN NW, owners are now KAREKLAS, IOANNIS/JENNIFER, 1½ story residence, built in 1906, 4.0 acres. Former grantors: FALK, MICHAEL/WENDY to DEAN, MARIANNE, on 9/1/2006; DEAN, MARIANNE to KAREKLAS, IOANNIS/JENNIFER, on 4/30/2010.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Charles O'Quintill  
**Address:** No. 188 Culpep, An. Tin

**LOCATION OF WELL:** Whitman

**STREET ADDRESS OF WELL** (or nearest address)

**PROPOSED USE:** Dug Well  
**TYPE OF WORK:** Owner's number of well (if more than one)

**DIMENSIONS:** Diameter of well 8.6'  
**CONSTRUCTION DETAILS:** Casing installed: 2 Diam. from 8 to 1.25 ft.

**WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand - Gravel</td>
<td>0</td>
<td>1.16</td>
</tr>
<tr>
<td>Basalt - Gravel</td>
<td>1.16</td>
<td>2.29</td>
</tr>
<tr>
<td>Basalt - Gravel</td>
<td>2.29</td>
<td>2.39</td>
</tr>
</tbody>
</table>

**SCREENS:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Manufacturer's Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diam.</td>
<td>Slot size</td>
</tr>
<tr>
<td>Diam.</td>
<td>Slot size</td>
</tr>
</tbody>
</table>

**WATER LEVELS:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Land-surface elevation above mean sea level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static level</td>
<td>ft. below top of well</td>
</tr>
<tr>
<td>Artesian pressure</td>
<td>lbs. per square inch</td>
</tr>
</tbody>
</table>

Artesian water is controlled by (Cap, valve, etc.)

**WELL TESTS:**

<table>
<thead>
<tr>
<th>Drawdown in amount water level is lowered below static level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield: gal./min. with ft. drawdown after hrs.</td>
</tr>
</tbody>
</table>

**DATE OF TEST:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water Level</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Water Level</td>
</tr>
</tbody>
</table>

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

McPherson & Wright Drilling  
NAME: 2246 Burrell  
ADDRESS: Lewiston, Idaho 83501  
(208) 743-7295

(Signed) Lic. No. 0523

Contractor's Reference:  
RUN-941-39-1 Date 9-10-1983

(USE ADDITIONAL SHEETS IF NECESSARY)
**WAYNE GUSTIN WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 9, 2018

<table>
<thead>
<tr>
<th>Well Log ID: NA</th>
<th>Elev (ft): 2760 ±10</th>
<th>Depth (ft): 250</th>
<th>7.5’</th>
<th>Quad: Viola</th>
</tr>
</thead>
</table>

Latitude: 46.842737°  
Longitude: -117.011971°  
decimal degrees (WGS84)

\[
\begin{align*}
\text{¼}, & \quad \text{NW} \; \text{¼}, & \quad \text{NE} \; \text{¼}, & \quad \text{Sec.} \; \text{6}, & \quad \text{T.} \; \text{40 N}, & \quad \text{R.} \; \text{5 W}
\end{align*}
\]

**Well Address and (or) Other Location Information:**

1010 Chaney Road, Viola, Idaho; on east side of road

**Location Method:**

Location is for well, in grass southwest of house; Latah County Assessor; Google Earth imagery; topographic map; driller reported incorrect Range; site visit March 21, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td>3</td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td>3</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>48</td>
</tr>
<tr>
<td>Granite</td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W060906, GUSTIN, ROBERT WAYNE II; 1010 CHANEY RD, 6.6 AC TAX #2786 GOVT LOT 2, 6 40 5.

Well is in grass, to side (west) of house

References Cited:
WELL DRILLER'S REPORT

1. WELL OWNER
Name: WAYNE GUSTIN
Address: VINIA
Owner's Permit No.: 86-73-N-36

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test
☐ Municipal  ☐ Industrial  ☐ Stock

4. METHOD DRILLED
☐ Cable  ☐ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 1/2 inches
Total depth: 250 feet
Casing schedule: ☐ Steel  ☐ Concrete

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 10 feet below land surface
Flowing? ☐ Yes  ☐ No  G.P.M. flow:
Temperature: °F  Quality:
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☐ Other
Discharge G.P.M.: Draw Down: Hours Pumped:
0 6 PM  AIR TEST

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>50.1</td>
<td>No</td>
</tr>
<tr>
<td>3.18</td>
<td>9</td>
<td>CLAY</td>
<td></td>
</tr>
<tr>
<td>4.4</td>
<td>14.7</td>
<td>HARD GRANITE</td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>168.73</td>
<td>COMPOSED GRANITE</td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>178.25</td>
<td>HARD GRANITE</td>
<td></td>
</tr>
</tbody>
</table>


11. DRILLER'S CERTIFICATION
This well was drilled under my supervision and this report is true to the best of my knowledge.

Adcock DRILLING 115
Lewiston

Address

Signed By

Date: 4-19-23
## JOHN GWINV WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, September 4, 2016

<table>
<thead>
<tr>
<th>Well Log ID: NA</th>
<th>Elev (ft): 2530 ±10</th>
<th>Depth (ft): 266</th>
<th>Quad: Elberton</th>
</tr>
</thead>
</table>

Latitude: 46.989069  
Longitude: -117.169905  
decimal degrees (WGS84)

### Well Address and (or) Other Location Information:
Lange Road, Garfield, Wash., abandoned farm yard on south side of road.

### Location Method:
Approximately located based upon well 8D1 of Walters and Glancy (1969, p. 84, 150, and pl. 2); Whitman County Assessor; Google Earth imagery; topographic map; elevation from Walters and Glancy (1969). Elberton quadrangle Well 14 of Bush and others (2005 [2006]). Site visit (September 14, 2016).

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Silt</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>46</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, gray and yellow</td>
<td>185</td>
</tr>
<tr>
<td>Sand, soft, yellow</td>
<td>208</td>
</tr>
<tr>
<td>Clay, green and brown</td>
<td>218</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft, vesicular</td>
<td>251</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>256</td>
</tr>
</tbody>
</table>
Comments:

Either Whitman County Tax Parcel 200004517082900, NW PT NW1/4, GWINN, DONNA/JOSEPHINE, who reside at 5861 ELBERTON RD, GARFIELD WA; 30.0 acres; or Whitman County Tax Parcel 200004517082290, NW BAL NW1/4, GWINN FAMILY, C/O J WILLARD GWINN, who resides at 5861 ELBERTON RD, GARFIELD WA; 8.0 acres.

References Cited:


Table 2 - Records of representative wells - Continued

<table>
<thead>
<tr>
<th>Well no.</th>
<th>Owner or tenant</th>
<th>Altitude (feet)</th>
<th>Depth (feet)</th>
<th>Diam. (inches)</th>
<th>Water level below land surface</th>
<th>Use</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Feet</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>T. 17 N., R. 44 E. - Cont.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>33C1</td>
<td>City of Colfax</td>
<td>2,090</td>
<td>380</td>
<td>12</td>
<td>--</td>
<td>--</td>
<td>N Was drilled for public supply, but yield is insufficient.</td>
</tr>
<tr>
<td>33G1</td>
<td>E. W. Johnson</td>
<td>2,390</td>
<td>69</td>
<td>6</td>
<td>17.22</td>
<td>10- 4-56</td>
<td>D Probably entirely in basalt.</td>
</tr>
<tr>
<td>33Q1</td>
<td>... do ...</td>
<td>2,405</td>
<td>80</td>
<td>8</td>
<td>30.18</td>
<td>10- 3-56</td>
<td>D,S</td>
</tr>
<tr>
<td>34M1</td>
<td>Paul Johnson</td>
<td>2,475</td>
<td>85</td>
<td>6</td>
<td>20</td>
<td>10- 56-56</td>
<td>D</td>
</tr>
<tr>
<td>34N1</td>
<td>... do ...</td>
<td>2,505</td>
<td>400</td>
<td>8</td>
<td>--</td>
<td>--</td>
<td>N Depth to water in excess of 300 ft. 10-4-56.</td>
</tr>
<tr>
<td>35F1</td>
<td>Adolf Harder</td>
<td>2,540</td>
<td>180</td>
<td>6</td>
<td>30</td>
<td>--</td>
<td>D,S</td>
</tr>
<tr>
<td>T. 17 N., R. 45 E.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4C1</td>
<td>Town of Garfield</td>
<td>2,485</td>
<td>380</td>
<td>10</td>
<td>130</td>
<td>--</td>
<td>P Drawdown 1 ft after 4 hr pumping 300 gpm. C, L.</td>
</tr>
<tr>
<td>6J1</td>
<td>J. C. Gwinn</td>
<td>2,480</td>
<td>170</td>
<td>6-4</td>
<td>72</td>
<td>--</td>
<td>D L.</td>
</tr>
<tr>
<td>8D1</td>
<td>John Gwinn</td>
<td>2,530</td>
<td>266</td>
<td>6-4</td>
<td>180</td>
<td>12- 46-56</td>
<td>D L.</td>
</tr>
<tr>
<td>13D1</td>
<td>W. S. Redman</td>
<td>2,555</td>
<td>9</td>
<td>36</td>
<td>2.77</td>
<td>12- 4-53</td>
<td>D,S</td>
</tr>
<tr>
<td>13M1</td>
<td>Harry Curtis</td>
<td>2,500</td>
<td>240</td>
<td>6</td>
<td>140</td>
<td>--</td>
<td>D</td>
</tr>
<tr>
<td>14K1</td>
<td>J. E. Miller</td>
<td>2,480</td>
<td>60</td>
<td>4</td>
<td>19</td>
<td>--</td>
<td>D,S &quot;Bedrock&quot; at 25 ft.</td>
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<tr>
<td>14P1</td>
<td>Glen Curtis</td>
<td>2,480</td>
<td>47</td>
<td>6</td>
<td>32</td>
<td>--</td>
<td>N</td>
</tr>
<tr>
<td>19K1</td>
<td>D. F. Lange</td>
<td>2,520</td>
<td>197</td>
<td>6</td>
<td>90</td>
<td>1940</td>
<td>N</td>
</tr>
<tr>
<td>19P1</td>
<td>... do ...</td>
<td>2,460</td>
<td>190</td>
<td>8-6</td>
<td>98</td>
<td>12- 55-55</td>
<td>D Backfilled from 237 ft. Drawdown 89 ft after 4 hrs pumping 73 gpm. L.</td>
</tr>
<tr>
<td>Materials</td>
<td>Thickness (feet)</td>
<td>Depth (feet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
<td>--------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Dirt and clay&quot;</td>
<td>35</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay and loose rock</td>
<td>35</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>&quot;Rock&quot; (basalt)</td>
<td>128</td>
<td>198</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Clay, blue and yellow</td>
<td>47</td>
<td>245</td>
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<td></td>
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</tr>
<tr>
<td>&quot;Rock&quot; (basalt), honeycombed</td>
<td>15</td>
<td>260</td>
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<td></td>
<td></td>
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<tr>
<td>Clay, blue and yellow</td>
<td>20</td>
<td>280</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>&quot;Rock&quot; (basalt), variable hardness, water-bearing</td>
<td>100</td>
<td>380</td>
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<td></td>
<td></td>
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</table>

17/45-6J1. J. C. Gwinn. Altitude about 2,480 ft. Drilled by Ralph Smith, 1946. Cased to 160 ft. (Log from owner's memory.)

<table>
<thead>
<tr>
<th>Materials</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, yellow</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>120</td>
<td>140</td>
</tr>
<tr>
<td>&quot;Quicksand&quot;</td>
<td>1</td>
<td>141</td>
</tr>
<tr>
<td>&quot;Rock&quot;</td>
<td>16</td>
<td>157</td>
</tr>
<tr>
<td>&quot;Quicksand&quot;</td>
<td>2</td>
<td>159</td>
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<tr>
<td>&quot;Rock&quot;</td>
<td>11</td>
<td>170</td>
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</tbody>
</table>

17/45-80D1. John Gwinn. Altitude about 2,530 ft. Drilled by Oliver Zinkgraf, 1946. Cased to 252 ft. (Log from owner's memory.)

<table>
<thead>
<tr>
<th>Materials</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silt (old well)</td>
<td>46</td>
<td>46</td>
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<tr>
<td>Basalt, hard</td>
<td>139</td>
<td>185</td>
</tr>
<tr>
<td>Sand, gray and yellow, water-bearing</td>
<td>21</td>
<td>206</td>
</tr>
<tr>
<td>&quot;Rock,&quot; hard, sandy</td>
<td>2</td>
<td>208</td>
</tr>
<tr>
<td>Sand, soft, yellow</td>
<td>10</td>
<td>218</td>
</tr>
<tr>
<td>Clay, green and brown</td>
<td>33</td>
<td>251</td>
</tr>
<tr>
<td>&quot;Rock,&quot; soft, porous, black</td>
<td>5</td>
<td>256</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>10</td>
<td>266</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Materials</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil and clay</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Basalt, hard, water-bearing (1 gpm at 60 ft.)</td>
<td>75</td>
<td>95</td>
</tr>
<tr>
<td>Basalt, blocky and soft small streaks of green shale</td>
<td>25</td>
<td>120</td>
</tr>
<tr>
<td>Basalt, water-bearing (73 gpm at 146 ft.)</td>
<td>45</td>
<td>165</td>
</tr>
<tr>
<td>Shale, blue and green</td>
<td>25</td>
<td>190</td>
</tr>
<tr>
<td>Basalt, broken shale</td>
<td>30</td>
<td>220</td>
</tr>
<tr>
<td>Basalt</td>
<td>17</td>
<td>237</td>
</tr>
</tbody>
</table>

Extracted from Walters and Glancy (1969)
MAL GWINN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 4, 2016

Well Log ID: 156250  Elev (ft): 2600 ±10  Depth (ft): 370  7.5’ Quad: Elberton

Latitude: 46.972800  Longitude: -117.182494  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 18, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
Lange Road, Garfield, Wash., on north side of road (abandoned farm yard); east of Elberton

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map. Elberton quadrangle Well 6 of Bush others (2005 [2006]). Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 — 1</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>1 — 85</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>85 — 94</td>
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<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>94 — 96</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>96 — 168</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>168 — 170</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>170 — 237</td>
</tr>
<tr>
<td>Roza Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>237 — 263</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>263 — 265</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>265 — 281</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue, green</td>
<td>281 — 303</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
</tbody>
</table>
N2 magnetostratigraphic unit
Sentinel Bluffs Member

<table>
<thead>
<tr>
<th>Type</th>
<th>Age (Ma)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt and clay</td>
<td>303 – 339</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>339 – 368</td>
</tr>
<tr>
<td>Clay(?) blue</td>
<td>368 – 370</td>
</tr>
</tbody>
</table>

Comments:

Whitman County Tax Parcel 200004517182100, 00 LANGE RD, NW NE1/4 & LT 1-RD 3.87 A C, owner is now LANGE FARM LLC, C/O DAVE LANGE, 908 VALLEYVIEW, COLFAX WA; 82.00 acres; grantors were GWINN REV TRUST, MACLAY to GWINN, DEBORAH J, on 07/07/09; then GWINN, DEBORAH J to LANGE, BURGESS/MAXINE on 04/21/10; and then LANGE, BURGESS/MAXINE to LANGE FARM LLC, on 04/13/11.

Left, well house is to right of trees.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: MAC O. GILLEN
Address: 431 THORNTREE JACKSON MEYER 49801

LOCATION OF WELL: County: WHITMAN

PROPOSED USE: Domestic □ Industrial □ Municipal □
Irrigation □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one):
New well □ Method: Dug □ Bored □ Deepened □ Reconstr. □
Cable Driven □ Rotary □ Jetted □

(5) DIMENSIONS:
Drilled: Depth of completed well: Diameter of well 370 ft. 8 inches.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 1/2 in. Type of perforator used: SKILL SAW
Threading □ Welded □ Perforations:
" Diameter from...to..." ft. to... ft.
" Diameter from...to..." ft. to... ft.
Perforations from... to... ft. to... ft.
Perforations from... to... ft. to... ft.
Perforations from... to... ft. to... ft.

Screen: Yes □ No □ Manufacturer's name:
Type: Model No.:

Gravel packed: Yes □ No □ Size of gravel:
Gravel placed from... to... ft. to... ft.

Surface seal: Yes □ No □ To what depth: 100 ft.
Material used in seal:
Did any strata contain unusable water: Yes □ No □
Type of water: Depth of strata:
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: H.P.:

(8) WATER LEVELS:
Land-surface elevation: 235 ft. above mean sea level. 2279 ft.
Static level: Date: 4-4-77
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by:

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom?
Yield: gal/min. with... ft. drawdown after... hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Water test: 4-4-77
Yield: gal/min. with... ft. drawdown after... hrs.
Artesian flow: g.p.m. Date:
Temperature of water: Was a chemical analysis made? Yes □ No □

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of strata and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
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<tbody>
<tr>
<td>SOILS</td>
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</tr>
<tr>
<td>CLAY BROWN</td>
<td>0</td>
<td>1</td>
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<tr>
<td>CLAY BLUE</td>
<td>1</td>
<td>85</td>
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<tr>
<td>BASALT BROWN</td>
<td>85</td>
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<td>BASALT BLACK HARD</td>
<td>95</td>
<td>168</td>
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<tr>
<td>ROCK BROWN</td>
<td>168</td>
<td>237</td>
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<td>BASALT BLACK HARD</td>
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<td>CLAY GRAY</td>
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<tr>
<td>CLAY GRAY</td>
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<td>405</td>
</tr>
</tbody>
</table>

RECEIVED
MAY 29 1979
DEPARTMENT OF ECOLGY
SPOKANE REGIONAL OFFICE

Work started: 4-1-77 Completed: 4-30-77

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: RAY MILTON
Address: BOX 136, WASH, WASH 99161
License No: 0302

(Signed) Ray Milton
(Well Driller)

Date: 5-24-79

617
## DUANE HAHN WELL

**Geologic Interpretation of Water Well Driller's Log**

By John H. Bush, December 19, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>152040</th>
<th>Elev (ft):</th>
<th>2660 ±10</th>
<th>Depth (ft):</th>
<th>205</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Viola</th>
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<tbody>
<tr>
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<td>46.865928</td>
<td>Longitude:</td>
<td>-117.046462</td>
<td>decimal degrees (WGS84)</td>
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</table>

<table>
<thead>
<tr>
<th>Well Address and (or) Other Location Information:</th>
<th>3502 Palouse Cove Road, Palouse, Wash., on northeast side of road</th>
</tr>
</thead>
</table>

### Location Method:

Location is for large travel trailer; Whitman County Assessor; Google Earth imagery; topographic map. Black mailbox at driveway entrance is labeled "3502" (Google Earth imagery). PLSS subdivisions incorrect on driller's report.

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
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<tbody>
<tr>
<td>Overburden</td>
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<td>Clay</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Latah Formation</td>
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<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
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<td></td>
</tr>
<tr>
<td>Sand and clay, black and white</td>
<td>6</td>
<td>27</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>27</td>
<td>151</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>151</td>
<td>179</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>179</td>
<td>199</td>
</tr>
<tr>
<td>Sand</td>
<td>199</td>
<td>205</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004616202190, NW1/4 PT N1/2 OF NE N OF RD & 1AC ADJ IN SW 17; owner is HAHN, DUANE (3502 PALOUSE COVE RD); 5.0 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name. Dianne HAHN
Address.

(2a) LOCATION OF WELL: County. Whitman

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
DeWater [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New well [ ] Method: Dug [ ] Bored [ ]
Deepened [ ] Reconditioned [ ] Cable [ ] Driven [ ]
Rotary [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well. 8" inches.
Drilled 205 feet. Depth of completed well 205 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: Yes [ ] No [ ]
Diam. from 6 ft. to 80 ft.
Welded [ ] Liner Installed [ ]
Threaded [ ]
Perforations: Yes [ ] No [ ]
Type of perforator used. 1/8" torch
Perforations from 180 ft. to 200 ft.
30 perforations from 180 ft. to 200 ft.

Screens: Yes [ ] No [ ]
Type of Manufacturer's Name
Model No.

(7) PUMP: Manufacturer's Name
Type. H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level
Static level: 3.2 ft. below top of well. Date 8-5-94
Artesian pressure: lbs. per square inch. Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ]
If yes, by whom?
Yield: gal. / min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test:

Bail test gal. / min. with ft. drawdown after hrs.
Airest test 20 gal. / min. with stem set at 1800 ft. for hrs.
Artesian flow g.p.m. Date 8-5-94
Temperature of water. Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Granite - Decomp. - Blk/White</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Sand &amp; Clay</td>
<td>39</td>
<td>151</td>
</tr>
<tr>
<td>Basalt - Red</td>
<td>179</td>
<td>199</td>
</tr>
<tr>
<td>Quartz Sand</td>
<td>199</td>
<td>305</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

McPHerson & Wright Drilling
2240 Burrell
Lewiston, Idaho 83501
(208) 743-7295

(Signed) David Wright License No. 0523
(WELL DRILLER)

Contractor's Name
Regulation No.

MCPH 6351 Date 8-21-94

(USE ADDITIONAL SHEETS IF NECESSARY)
TOM HANDY WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 5, 2018

Well Log ID: 1599941   Elev (ft): 2560 ±10   Depth (ft): 198   7.5’   Quad: Pullman

Latitude: 46.719217°   Longitude: -117.147133°   decimal degrees (WGS84)

Well Address and (or) Other Location Information:
4505 State Route 270, Pullman, Wash.; on south side of highway, on hill at end of long drive

Location Method:
Location is for well (latitude and longitude from driller’s report); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>40</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>176</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black, green</td>
<td>178</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514044389 is for 4501 SR 270, PULLMAN, SE SW 1/4 S OF RD; owners are HANDY, J THOMASJR/DEBORAH; 5.0 acres;

*House (pictured below) on county assessor Web page is for home just south of the Bill Chipman Palouse Trail by the highway.

References Cited:
Notice of Intent Number: 364083
Property Owner Last Name: Handy
First Name: Tom

Well Tag ID Number (e.g., AAA-001): APN 170
Variance Granted? (Circle One): No
Water Right Permit Required? (Circle One): Yes or No
If Yes, enter Water Right Permit Here (Required):

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Domestic
- Individual Irrigation
- Parks and Recreation
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Hydrofracturing
- Jetted
- Other

Drilling Start Date: 8/7/16
Drilling Completion Date: 8/15/16

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):
Well Street Address: 4505 SR 470
Well City: Pullman
Well County: Whitman

Tax Parcel Number: 2000245140414389

If claiming tax parcel exemption (Circle One):
- Tribal
- Federal Property
- Right of Way
- Railroad Land

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: 8 in, Drilled 198 ft in, Depth of Completed Well 198 ft in

Casings (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered):
Type (Circle One): Concrete, Plastic, Steel, Other
Diameter: inches
Stickup: 12" inches
Depth: 44 ft in, TO ft in

Type (Circle One): Concrete, Plastic, Steel, Other
Diameter: inches
Stickup: inches
Depth: ft in, TO ft in

Liners? Circle One: Yes or No (If yes, then complete the below fields that apply):
Type 1 (Circle One): PVC, Steel, Other
Diameter: in, From ft in TO ft in
Type 2 (Circle One): PVC, Steel, Other
Diameter: in, From ft in TO ft in

Perforations? Circle One: Yes or No (If yes, then complete the below fields that apply):
Type of Perforator (Circle One): Drill, Mills Knife, Saw cut, Star, Torch Cut, Other
Perforation size: in by in
Total Perforations
Perforation 1 from ft in, TO ft inches
Perforation 2 from ft in, TO ft inches

Screens? (Circle One): Yes or No (If yes, then complete the below fields that apply):
Mfr 1: Type
- Diameter in
- Slot Size
- From ft in TO ft in
Mfr 2: Type
- Diameter in
- Slot Size
- From ft in TO ft in

ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.
If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
<table>
<thead>
<tr>
<th>Field Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand/Gravel Packing? (Circle One)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>Packing Material 1</td>
<td>10-20</td>
</tr>
<tr>
<td>Packing Material 2</td>
<td>20-40</td>
</tr>
<tr>
<td>Surface Seal</td>
<td>Was there an existing surface seal? Yes or No (Circle One)</td>
</tr>
<tr>
<td>Depth of Seal</td>
<td>44 ft in</td>
</tr>
<tr>
<td>Type of Seal Material</td>
<td>Bentonite</td>
</tr>
<tr>
<td>Pump Installed? (Circle One)</td>
<td>Yes (No)</td>
</tr>
<tr>
<td>Static Water Level</td>
<td>Measured Level (Below top of well)</td>
</tr>
<tr>
<td>Date Measured</td>
<td>8/15/16</td>
</tr>
<tr>
<td>General Well Tests</td>
<td>Bailer Test</td>
</tr>
<tr>
<td>Air Test</td>
<td>Date of test</td>
</tr>
<tr>
<td>Pump Test</td>
<td>Date of test</td>
</tr>
<tr>
<td>Note: Drawdown</td>
<td>The amount the water level is lowered below the static level</td>
</tr>
<tr>
<td>Layer Lithology Details</td>
<td>Overburden</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>40 ft 176 in</td>
</tr>
<tr>
<td>Fract. basalt</td>
<td>176 ft 178 in</td>
</tr>
<tr>
<td>Black &amp; Green shale</td>
<td>178 ft 195 in</td>
</tr>
<tr>
<td>Clay</td>
<td>195 ft 198 in</td>
</tr>
</tbody>
</table>

CERTIFICATION — I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

Driller/Engineer Name | Print | Roger WITT
Drilling Company | WITT WELL DRILLING
Address | 13554 North Branch Rd
City, State, Zip | Kendrick, OR 98337
Phone Number | 206-284-3245
Email Address | 

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
CHRISTINE HANSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August, 2016

Well Log ID: 931033  Elev (ft): 2540 ±10  Depth (ft): 153  Quad: Moscow West

Latitude: 46.707450  Longitude: -117.122247  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 10, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
2102 Old Moscow Road, Pullman, Wash., on north side of road; well is east of house and driveway parking area, nearly in field.

Location Method:
Location is for well; Whitman County Tax Assessor; Google Earth imagery; topographic map; latitude and longitude provided on driller’s report. Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0 To 17</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>17 From 17 To 59</td>
</tr>
<tr>
<td>Basalt, soft, with clay</td>
<td>59 From 59 To 77</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>77 From 77 To 97</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>97 From 97 To 114</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>114 From 114 To 134</td>
</tr>
<tr>
<td>Basalt, with clay</td>
<td>134 From 134 To 145</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>145 From 145 To 152</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>152 From 152 To 153</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514104469, SE SE1/4 N OF ROAD, owner is STRATTON, JOHN F; 10.0 acres; grantor was STRATTON ESTATE, HERBERT on 11/06/13; 1½ story residence built in 2016.

Mr. Herbert Stratton died in 2012, aged 93; John F. Stratton is his son (Kimball Funeral Home and Crematory, 2012). Christine Stratton-Hanson is likely related to John F Stratton (Palouse Conservation District, 2016).

References Cited:


WATER WELL REPORT

Notice of Intent Number: WE18136

Property Owner Last Name: Hansen
First Name: Christine

Organization Name:

Well Tag ID Number (e.g., AAA-001): APN 1275

Variance Granted? (Circle One): No

Water Right Permit Required? (Circle One): Yes or No

Well Use (Circle All That Apply):
- Domestic
- Agricultural Irrigation
- Group Domestic
- Individual Irrigation
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Deepened Well
- Hydrofracturing
- Replacement
- New
- Other

Method (Circle One):
- Cable
- Dug
- Jetted
- Hydroyfracturing
- Rotary

Method: Rotary

Drilling Start Date: 5/4/14
Drilling Completion Date: 5/12/14

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):
Well Street Address: 3277 Old Moscow Rd.
Well City: Pullman
Well County: Whitman
Well Zip Code: 99163

Tax Parcel Number: 20000 451 410 469

If claiming tax parcel exemption (Circle One):
- Tribal
- Federal Property
- Right of Way
- Railroad Land
- Other

Township: 14 N
Range: 45 E

Circle One - East or West
Section: 10

Latitude: 46 41.442

Decimal Degrees; Longitude: 117 07.332

West Decimal Degrees

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: 153 ft 8 in, Drilled 153 ft 8 in

Depth of Completed Well: 153 ft 8 in

Casings (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered):

Type (Circle One):
- Concrete
- Plastic
- Steel
- Other

Diameter: 8 inches Stickup: 12 inches Depth: 25 ft in TO: 25 ft in

Type (Circle One):
- Concrete
- Plastic
- Steel
- Other

Diameter: Inches Stickup: inches Depth: ft in TO: ft in

Liners? (Circle One)
- Yes
- No

If yes, then complete the below fields that apply:

Type 1 (Circle One):
- PVC
- Steel
- Other

Diameter: 6 in, From: 5 ft in TO: 153 ft in

Type 2 (Circle One):
- PVC
- Steel
- Other

Diameter: In, From: ft in TO: ft in

Perforations? (Circle One)
- Yes
- No

If yes, then complete the below fields that apply:

Type of Perforator (Circle One):
- Drill Mills Knife Saw cut
- Star Torch Cut
- Other

Perforation size: 1/8 in by 1/8 in Total Perforations: 24

Perforation 1 from: ft in TO: ft in

Perforation 2 from: ft in TO: ft in

Screens? (Circle One)
- Yes
- No

If yes, then complete the below fields that apply:

Mfr 1
- Type
- Dia: in
- Slot Size
- From: ft in TO: ft in

Mfr 2
- Type
- Dia: in
- Slot Size
- From: ft in TO: ft in

ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the data and/or information on this Well Report. If you need this document in an alternate format, please call the Water Resources Program at 360-407-6672. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes ☐ No ☐ (If yes, then complete the below fields that apply)

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _____ ft _____ in TO _____ ft _____ in

Packing Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _____ ft _____ in TO _____ ft _____ in

Surface Seal Was there an existing surface seal? Yes of ☐ No ☐ Depth of Seal _____ ft _____ in

Type of Sealing Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes ☐ No ☐ If yes, Mfr Name ______ Pump Type ______ HP _____

Static Water Level (Circle One and fill in the blanks)

Yes ☐ Measured Level (Below top of well) _____ ft _____ in Date Measured 5/17/14

Flowing Artesian (Circle One) Greater Than or Equal To _____ GPM _____ PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)

Dry Hole

Unusable Water Strata? (Circle One) Yes ☐ No ☐ If Yes is circled, method of sealing strata off:

Strata 1 (Specify Unusable Water Type) From _____ ft _____ in TO _____ ft _____ in

Strata 2 (Specify Unusable Water Type) From _____ ft _____ in TO _____ ft _____ in

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test Date of test 5/17/14 (Circle One) Greater Than or Equal To _____ GPM, with Drawdown after _____ hrs _____ min

Air Test Date of test 5/17/14 (Circle One) Greater Than or Equal To _____ GPM, with stem set at _____ ft _____ in

Pump Test Date of test Test performed by

Note: Drawdown=the amount the water level is lowered below the static level

Yield _____ gpm, with _____ ft _____ in; Drawdown after _____ hrs _____ min Yield _____ gpm, with _____ ft _____ in; Drawdown after _____ hrs _____ min

Yield _____ gpm, with _____ ft _____ in; Drawdown after _____ hrs _____ min Yield _____ gpm, with _____ ft _____ in; Drawdown after _____ hrs _____ min

Note: Recovery=The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording

Time _____ hrs _____ min; Water Level _____ ft _____ In Time _____ hrs _____ min; Water Level _____ ft _____ In

Time _____ hrs _____ min; Water Level _____ ft _____ In Time _____ hrs _____ min; Water Level _____ ft _____ In

Time _____ hrs _____ min; Water Level _____ ft _____ In Time _____ hrs _____ min; Water Level _____ ft _____ In

Time _____ hrs _____ min; Water Level _____ ft _____ In Time _____ hrs _____ min; Water Level _____ ft _____ In

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>17</td>
<td>59</td>
</tr>
<tr>
<td>Soft Basalt with Clay</td>
<td>59</td>
<td>77</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>77</td>
<td>97</td>
</tr>
<tr>
<td>Fract Basalt</td>
<td>97</td>
<td>114</td>
</tr>
<tr>
<td>Hard Basalt</td>
<td>114</td>
<td>134</td>
</tr>
<tr>
<td>Soft Basalt with Clay</td>
<td>134</td>
<td>145</td>
</tr>
<tr>
<td>Soft Basalt + Watery</td>
<td>145</td>
<td>152</td>
</tr>
<tr>
<td>Green Shale</td>
<td>152</td>
<td>153</td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Material used and the information reported within the Well Report are true to my best knowledge and belief.

Circle One: Driller, Trainee Engineer Name (Print) ________ Signature: ________ Drilling Company: ________ Address: ______ City, State, Zip: ______

If Trainee, Mentor Driller License No. ______ Mentor Driller Signature: ______ Phone Number: ______ Email Address: ______
DICK HARDEN WELL 2

[Drilled prior to 1972]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, April 10, 2018

Well Log ID: NA Elev (ft): 2682 Depth (ft): 376 7.5’ Quad: Moscow West

Latitude: 46.747586° Longitude: -117.009638° decimal degrees (WGS84)

NE ¼, SW ¼, SE ¼, Sec. 6, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1251 Mix Road, Moscow, Idaho; on southwest side of road

Location Method:
Location is for house; location, elevation and driller's log from Crosthwaite (1975, p. 11 and p. 35, 39N-5W-6dca1 (d=SE¼, c=SW¼, a=NE¼¼); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation*</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill Clay and sand</td>
<td>0 – 190</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member Basalt of Lolo</td>
<td>190 – 358</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member Sand, black</td>
<td>358 – 376</td>
</tr>
</tbody>
</table>

*Includes soil and modern sediments
Comments:

Latah County Tax Parcel RP39N05W068620, owner now is CLARK, JOSHUA; 1251 MIX RD, 3.53 AC TAX 7374 NWSE & SWSE, S OF COUNTY RD, 6 39 5.


References Cited:


### 39N-SW-5adcl. Jack Marineau

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, yellow</td>
<td>158</td>
<td>158</td>
</tr>
<tr>
<td>Shale, blue</td>
<td>10</td>
<td>169</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>18</td>
<td>186</td>
</tr>
<tr>
<td>Basalt, very hard</td>
<td>170</td>
<td>356</td>
</tr>
<tr>
<td>Clay, blue, soft</td>
<td>34</td>
<td>390</td>
</tr>
<tr>
<td>Quartz sand, water</td>
<td>15</td>
<td>403</td>
</tr>
</tbody>
</table>

Note: Two logs on file for this well. The other log is similar to this log.

### 39N-SW-5bb2. John Wallen

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Granite, decomposed, and clay</td>
<td>37</td>
<td>97</td>
</tr>
<tr>
<td>Granite, coarse, decomposed, water</td>
<td>19</td>
<td>116</td>
</tr>
<tr>
<td>Clay, white</td>
<td>2</td>
<td>118</td>
</tr>
</tbody>
</table>

### 39N-SW-5bcdl. Bill Smith

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Granite, decomposed; hit two logs at 95 ft</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>165</td>
<td>265</td>
</tr>
</tbody>
</table>

### 39N-SW-5bdbl. Robert McGahan

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Granite, decomposed, water</td>
<td>14</td>
<td>74</td>
</tr>
</tbody>
</table>

### 39N-SW-5bdcl. Gerald Rich

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
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<tbody>
<tr>
<td>Clay, brown</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Sand and gravel, water</td>
<td>29</td>
<td>87</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>9</td>
<td>96</td>
</tr>
<tr>
<td>Scoria, dark</td>
<td>46</td>
<td>142</td>
</tr>
<tr>
<td>Scoria, seamed, water</td>
<td>22</td>
<td>164</td>
</tr>
<tr>
<td>Scoria, solid</td>
<td>8</td>
<td>172</td>
</tr>
</tbody>
</table>

### 39N-SW-6dcal. Dick Harden

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediments</td>
<td>190</td>
<td>190</td>
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<tr>
<td>Basalt</td>
<td>168</td>
<td>358</td>
</tr>
<tr>
<td>Sand, black</td>
<td>18</td>
<td>376</td>
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</tbody>
</table>

### 39N-SW-6dcdl. Dr. E. L. Boas

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>115</td>
<td>120</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>253</td>
<td>373</td>
</tr>
<tr>
<td>Sand, water</td>
<td>3</td>
<td>376</td>
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</tbody>
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### 39N-SW-7bdal. City of Moscow #7

<table>
<thead>
<tr>
<th>Material</th>
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<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, yellow</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Clay, brown, and sand</td>
<td>9</td>
<td>43</td>
</tr>
<tr>
<td>Clay, yellow, and quartz sand</td>
<td>27</td>
<td>70</td>
</tr>
<tr>
<td>Clay, yellow, and sand</td>
<td>35</td>
<td>105</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>20</td>
<td>125</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>5</td>
<td>130</td>
</tr>
<tr>
<td>Clay, medium brown</td>
<td>15</td>
<td>145</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>10</td>
<td>155</td>
</tr>
<tr>
<td>Clay, gray, some yellow clay</td>
<td>4</td>
<td>159</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>4</td>
<td>163</td>
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<tr>
<td>Basalt</td>
<td>5</td>
<td>168</td>
</tr>
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<td>Clay, brown</td>
<td>7</td>
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</tr>
<tr>
<td>Basalt, water bearing</td>
<td>91</td>
<td>266</td>
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<tr>
<td>Basalt</td>
<td>17</td>
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<tr>
<td>Basalt, soft</td>
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<tr>
<td>Basalt, medium</td>
<td>55</td>
<td>360</td>
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<tr>
<td>Basalt</td>
<td>6</td>
<td>366</td>
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<tr>
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<td>386</td>
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<tr>
<td>Sand</td>
<td>38</td>
<td>464</td>
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<tr>
<td>Sand, gray, muddy</td>
<td>11</td>
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<td>Clay, brown, sticky</td>
<td>4</td>
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<tr>
<td>Clay, green</td>
<td>3</td>
<td>482</td>
</tr>
<tr>
<td>Clay, gray, sticky</td>
<td>11</td>
<td>493</td>
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<tr>
<td>Shale, dark, hard</td>
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<td>520</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>27</td>
<td>633</td>
</tr>
<tr>
<td>Basalt</td>
<td>29</td>
<td>667</td>
</tr>
</tbody>
</table>

Extracted from Crosthwaite (1975)
KIRK HARDEN WELL
[DRILLED IN 1988]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 10, 2018

Well Log ID: NA
Elev (ft): 2630 ±10
Depth (ft): 65
Quad: Moscow West

Latitude: 46.748585° Longitude: -117.010665° decimal degrees (WGS84)

⅛, NW ¼, SE ⅛, Sec. 6, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1420 Harden Road, Moscow, Idaho; on north side of road, at northwest corner of Mix and Harden Roads

Location Method:
Location is for well, in graveled area at northeast corner of long shed; Latah County Assessor; Google Earth imagery; topographic map; driller misspelled name "Kurt Hardin;" site visit March 20, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>59</td>
</tr>
</tbody>
</table>

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill Sand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>59</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N05W068130, owner is HARDEN, KIRK R, 1420 HARDEN RD, 0.93 AC OF TAX #4544 LESS TAX #7184 NWSE, MH, 6 39 5.

Well is at far right corner of white shed, by orange cones.


References Cited:

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Kurt Hardin
Address: Moscow
Owner's Permit No.: 87-88-N-19

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED

☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Diameter</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>inches</td>
<td>feet</td>
<td>feet</td>
</tr>
</tbody>
</table>

Was casing drive shoe used? ☐ Yes  ☐ No
Was a packer or seal used? ☐ Yes  ☐ No
Perforated? ☐ Yes  ☐ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Number perforations: From | To

Size of perforation: inches by inches

Well screen installed? ☐ Yes  ☐ No
Manufacturer's name:

Diameter Slot size: Set from feet to feet
Diameter Slot size: Set from feet to feet
Gravel packed? ☐ Yes  ☐ No  ☐ Size of gravel
Placed from feet to feet
Surface seal depth: feet
Material used in seal: ☐ Cement grout
Bentonite ☐ Puddling clay ☐  Temp. surface casing
Sealing procedure used: ☐ Sturpy pit ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld

Describe access port

6. LOCATION OF WELL

Sketch map location must agree with written location.

N

W

E

S

Subdivision Name
Lot No. Block No.

County Latah

7. WATER LEVEL

Static water level: 35 feet below land surface.
Flowing? ☐ Yes  ☐ No
G.P.M. flow:
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature:
Quality:
Describe artesian or temperature zones below.

8. WELL TEST DATA

Discharge G.P.M.: Pumping Level: Hours Pumped: approx. 30

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Diam. From</th>
<th>Diam. To</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>inches</td>
</tr>
</tbody>
</table>

Material: Yes  No

Water

10. Work started 8/6/88  finished 8/9/88

11. DRILLERS CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: [Redacted]  Well Driller's Permit No.: [Redacted]
Address: [Redacted]  License/Cert Date: 9/16/88

Signed by (Firm Official) [Redacted]
and (Operator) [Redacted]

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
R.E. HARDEN WELL 1
[DRILLED PRIOR TO 1972]

Location Description
Site visit, March 20, 2018

Well Log ID: NA Elev (ft): 2630 Depth (ft): 150 Quad: Moscow West

Latitude: 46.748328° Longitude: -117.011184° decimal degrees (WGS84)

SW ¼, NW ¼, SE ¼, Sec. 6, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1400 Harden Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well, at southeast corner of house; also described in Crosthwaite (1975, p. 11, elevation 2630 ft; p. 35, 39N-5W-6dbc1 (d=SE, b= NW, c=SW); Latah County Assessor; Google Earth imagery; topographic map; site visit March 20, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>

Well log not provided in Crosthwaite (1975) for the well at this house on Harden Road
Comments:

Latah County Tax Parcel RP39N05W068140, owner now is HARDEN, KIRK R; 1400 HARDEN RD, 1.89 AC TAX #7184 NWSE, 6 39 5.


References Cited:


ED HARKINS WELL
Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 3, 2016; November 9, 2017

Well Log ID: 616828  Elev (ft): 2650 ±10  Depth (ft): 478  Quad: Moscow West

Latitude: 46.718258  Longitude: -117.112543  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 11, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
Sunshine Road, Pullman, Wash.; north side of road, undeveloped land in northwest corner of subdivided area.

Location Method:
Location is for end of driveway; Whitman County Assessor; Google Earth imagery, topographic map. No need to field check since there are so many other wells in the immediate vicinity.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>0 – 94</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>94 – 235</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>235 – 266</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>266 – 304</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>304 – 355</td>
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<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
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<tr>
<td>Basalt, weathered</td>
<td>355 – 401</td>
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<tr>
<td>Basalt, hard</td>
<td>401 – 455</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>455 – 466</td>
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<tr>
<td>Basalt, hard</td>
<td>466 – 478</td>
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</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514112194, LOT 4 SUNSHINE HILLS 6.45 ACRES, owners are HARKINS, EDWARD/THERESA, no improvements (2016); grantors were MUNSON, JOHN/MARY on 01/01/08.

References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

[ ] Decommission ORIGINIAL INSTALLATION [ ] Decommission NOTICE OF NUMBER

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
[ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: [ ] Owner’s number of well (if more than one) ________
[ ] New well [ ] Reconditioned Method: [ ] Dug [ ] Bored [ ] Driven
[ ] Deepened [ ] Cable [ ] Rotary [ ] Jetted

DIMENSIONS: Diameter of well [ ] inches, drilled [ ] ft. Depth of completed well [ ] ft.

CONSTRUCTION DETAILS

Casing: [ ] Welded [ ] Diameter ft. Diam. from [ ] ft. to [ ] ft. Installed: [ ] Liner installed [ ] Diameter ft. Diam. from [ ] ft. to [ ] ft.
[ ] Threaded [ ] Diameter ft. from [ ] ft. to [ ] ft.

Perforations: [ ] Yes [ ] No [ ] Type of perforator used [ ] SAW [ ] No. of perf. [ ] ft. [ ] Diam. [ ] ft.

Screen: [ ] Yes [ ] No [ ] K-Pac [ ] Location [ ] Screen [ ] Diam. [ ] ft. to [ ] ft.

Manufacturer’s Name [ ] Type [ ] Model No. [ ]

Diam. [ ] ft. to [ ] ft. [ ] Slot size [ ] ft. to [ ] ft.

Gravel/Filter packed: [ ] Yes [ ] No [ ] Size of gravel/sand [ ] ft.

Materials placed from [ ] ft. to [ ] ft.

Surface Seal: [ ] Yes [ ] No [ ] To what depth? [ ] ft.

Material used in seal [ ] BENTONITE

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water? [ ] Depth of strata [ ] ft.

Method of sealing strata off [ ]

PUMP: Manufacturer’s Name [ ] Type [ ] H.P.

WATER LEVELS: Land-surface elevation above mean sea level [ ] ft.

Static level [ ] ft. below top of well Date [ ]

Artesian pressure [ ] lbs. per square inch Date [ ]

Artesian water is controlled by [ ] (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? [ ] Yes [ ] No If yes, by whom [ ]

Yield: [ ] gal/min. with ft. drawdown after [ ] hrs.

Yield: [ ] gal/min. with ft. drawdown after [ ] hrs.

Yield: [ ] gal/min. with ft. drawdown after [ ] hrs.

Recovery data taken as zero when pump turned off (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

[ ] ft. [ ] ft. [ ] ft. [ ] ft. [ ] ft. [ ] ft.

Date of test [ ]

Boiler test: [ ] gal/min. with ft. drawdown after [ ] hrs.

Airstest: [ ] gal/min. with stem set at [ ] ft.

Artesian flow [ ] g.p.m. Date [ ]

Temperature of water [ ] Was a chemical analysis made? [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainee Name (print) TED WRIGHT

Driller/Engineer/Trainee Signature [ ]

Driller or trainee License No. [ ]

IF TRAINEE: Driller’s License No. [ ]

Driller’s Signature [ ]

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6690.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

CURRENT

Notice of Intent No. [ ]

Unique Ecology Well ID Tag No. [ ]

Water Right Permit No. [ ]

Property Owner Name ED HARKINS

Well Street Address [ ]

City [ ] County [ ]

Location [ ] NE1/4 [ ] NW1/4 Sec [ ] Township [ ] Range [ ]

Lat/Lon [ ] Lat Deg ___ [ ] Lat Min/Sec ___

Long Deg ___ [ ] Long Min/Sec ___

Tax Parcel No. (Required) [ ]

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY YELLOW BROWN STIFF</td>
<td>94</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>304</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>286</td>
</tr>
<tr>
<td>BASALT WEATHERED WEAK</td>
<td>545</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>455</td>
</tr>
</tbody>
</table>

SEP 11 2009

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Drilling Company: MCFHERSON & WRIGHT DRILLING

Address: 2246 BURRELL

City, State, Zip [ ] [ ] ID, 83501

Contractor’s Registration No. MCPHWD135N1 Date 8/18/09

Start Date 2/15/08 Completed Date 2/15/08
Merle Harlow Well
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 2016

Well Log ID: 170662  Elev (ft): 2396  Depth (ft): 180  Quad: Albion

Latitude: 46.755090  Longitude: -117.238260  decimal degrees (WGS84)

| ¼, NE ¼, SW ¼, Sec. 26 | T. 15 N | R. 44 E |

Well Address and (or) Other Location Information:
24701 U.S. Highway 195, Pullman, Wash., on east side of highway; just north of Enman-Kincaid Road

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-14); Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 19 of Bush and Garwood (2005 [2006]). PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>Soil and clay</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
</tr>
<tr>
<td></td>
<td>Basalt (reported on driller's log as black shale)</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Unnamed interbed</td>
</tr>
<tr>
<td></td>
<td>Clay, blue</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>*Roza Member</td>
</tr>
<tr>
<td></td>
<td>Basalt, weathered</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
</tr>
</tbody>
</table>
Comments:

*Chips with plagioclase phenocrysts were observed from this interval (by John Bush in August of 1992).

Whitman County Tax Parcel 200004415263900, 24701 SR 195; owner is HARLOW CREDIT SHELTER TRUST, DORIS; MERLE HARLOW TRUSTEE; 116.0 acres; one story residence built in 1956.

Mrs. Merle Harlow died in 2011 (Kimball Funeral Home and Crematory, 2011).

References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Name: Mark Harlow
Address: 27-2 Boy 80 Delmonte

LOCATION OF WELL: County: Whitman
Sec. 26, T. 15 N., R. 44 E., W.M.

STREET ADDRESS OF WELL: (or nearest address)

PROPOSED USE: Domestic 
Industrial 
Municipal

DEWATER

TYPE OF WORK: Owner’s number of well
(if more than one)
Abandoned 
New well
Reconditioned
Deepened
Drilled
Rotary
Jetted

Method: Dug
Cable
Driven

DIMENSIONS: Diameter of well 8 1/2 inches.
Drilled 180 feet. Depth of completed well 180 ft.

CONSTRUCTION DETAILS:
Casing installed: 8 1/2 ft. to 24 ft.
Welded casing 
Linier installed
Threaded casing
Perforations: Yes 
No

SIZE of perforations
Type of perforator used

SCREENS: Yes 
No

Manufacturer’s Name

Type 
Model No.

Diam. Slot size
Diam. Slot size

Gravel packed: Yes 
No

Size of gravel

Gravel placed from
To what depth?

SURFACE SEAL: Yes 
No

Did any strata contain unusable water?

Type of water?

Method of sealing strata off

PUMP: Manufacturer’s Name

Type: H.P.

WATER LEVELS:
Land-surface elevation
above mean sea level

Static level: 52
ft. below top of well
Date: 8-20-92

Artesian pressure
lbs. per square inch
Date

Artesian water is controlled by
(Cap, valve, etc.)

WELL TESTS:
Drawdown is amount water level is lowered below static level

Was a pump test made? Yes 
No

Yield: gal./min. with
ft. drawdown after
hhrs.

Recovery data (time taken as zero when pump turned off) (water level measured
down top to water level)

Date of test:

Bailer test
Airest 20
Artesian flow

Temperature of water ___________. Was a chemical analysis made? Yes 
No

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well,
and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best
knowledge and belief.

McPherson & Wright Drilling
24202 Creek
Lewiston, Idaho 83501

Contractor’s Registration No. 1351
Date 9-26-19

(USE ADDITIONAL SHEETS IF NECESSARY)
### Appendix D. Well Logs

#### Well Log Summary Table

<table>
<thead>
<tr>
<th>Well ID</th>
<th>Well Log Name</th>
<th>Current Owner</th>
<th>latitude (WGS84)</th>
<th>longitude (WGS84)</th>
<th>Elev. (ft) (USGS)</th>
<th>Location</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>DW-01</td>
<td>Morgan</td>
<td>Morgan</td>
<td>46.73848</td>
<td>-117.19266</td>
<td>2326°</td>
<td>yes</td>
<td>* missing well log; as reported by Sinclair et al. (2009)</td>
</tr>
<tr>
<td>DW-02</td>
<td>Wesson</td>
<td>Wesson</td>
<td>46.73791</td>
<td>-117.19317</td>
<td>2333</td>
<td>yes</td>
<td>near survey marker @ DW-01</td>
</tr>
<tr>
<td>DW-03</td>
<td>Wyatt</td>
<td>Wyatt</td>
<td>46.73836</td>
<td>-117.19394</td>
<td>2334</td>
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<tr>
<td>DW-04</td>
<td>Cohen</td>
<td>Cohen</td>
<td>46.74985</td>
<td>-117.20507</td>
<td>2374</td>
<td>yes</td>
<td>near Grande Ronde sample</td>
</tr>
<tr>
<td>DW-05</td>
<td>Newman</td>
<td>Anderson</td>
<td>46.75798</td>
<td>-117.22117</td>
<td>2340</td>
<td>yes</td>
<td></td>
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<tr>
<td>DW-06</td>
<td>Brayton</td>
<td>Brayton</td>
<td>46.75941</td>
<td>-117.22636</td>
<td>2288</td>
<td>yes</td>
<td>H. Brayton Farm well</td>
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<tr>
<td>DW-07</td>
<td>--*</td>
<td>Zerbe</td>
<td>46.75977</td>
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<td>--</td>
<td>approximate</td>
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<tr>
<td>DW-08</td>
<td>Robbins</td>
<td>Robbins</td>
<td>46.75846</td>
<td>-117.23057</td>
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<td>yes</td>
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<tr>
<td>DW-09</td>
<td>Duft</td>
<td>Duft</td>
<td>46.76195</td>
<td>-117.22430</td>
<td>2383</td>
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<td>Duft irrigation well</td>
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<td>DW-10</td>
<td>Phelps</td>
<td>Phelps</td>
<td>46.78093</td>
<td>-117.24854</td>
<td>2259</td>
<td>yes</td>
<td></td>
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<tr>
<td>DW-11</td>
<td>--*</td>
<td>Moxley</td>
<td>46.82835</td>
<td>-117.33268</td>
<td>--</td>
<td>yes</td>
<td>* missing well log</td>
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<td>CS-01</td>
<td>Albion 3</td>
<td>Albion</td>
<td>46.78557</td>
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<td>2392</td>
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<tr>
<td>CS-02</td>
<td>Peterson</td>
<td>Peterson</td>
<td>46.77443</td>
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<td>2259</td>
<td>approximate, does not affect elevation</td>
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<tr>
<td>CS-03</td>
<td>Old</td>
<td>Old</td>
<td>46.77181</td>
<td>-117.23849</td>
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<tr>
<td>CS-04</td>
<td>Beasley</td>
<td>shared well</td>
<td>46.76967</td>
<td>-117.22250</td>
<td>2392</td>
<td>approximate, may affect elevation; Stahl’s well (shared)</td>
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<tr>
<td>CS-05</td>
<td>Brayton</td>
<td>Brayton</td>
<td>46.76400</td>
<td>-117.22383</td>
<td>2390</td>
<td>approximate, affects elevation; Bobo’s new house</td>
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<tr>
<td>CS-06</td>
<td>Brayton</td>
<td>--</td>
<td>46.76295</td>
<td>-117.22448</td>
<td>2363</td>
<td>approximate, affects elevation; Bobo’s old house (new well)</td>
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<tr>
<td>CS-07</td>
<td>Duft</td>
<td>Duft</td>
<td>46.76208</td>
<td>-117.22335</td>
<td>2406</td>
<td>yes</td>
<td>Duft’s old well - abandoned in ~2000</td>
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<tr>
<td>CS-08</td>
<td>Brayton</td>
<td>Brayton</td>
<td>46.76081</td>
<td>-117.22373</td>
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<td>yes</td>
<td>Brayton rental</td>
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<tr>
<td>CS-09</td>
<td>Miller</td>
<td>--</td>
<td>46.75661</td>
<td>-117.21303</td>
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<td>approximate, may affect elevation</td>
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</tr>
<tr>
<td>CS-10</td>
<td>Pullman Disposal</td>
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<td>46.74595</td>
<td>-117.19918</td>
<td>2311</td>
<td>approximate, does not affect elevation</td>
<td></td>
</tr>
<tr>
<td>CS-11</td>
<td>Olfs</td>
<td>Olfs</td>
<td>46.74109</td>
<td>-117.19976</td>
<td>2340</td>
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<tr>
<td>CS-12</td>
<td>Holstad</td>
<td>Holstad</td>
<td>46.74179</td>
<td>-117.19439</td>
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<td>CS-13</td>
<td>Holstad</td>
<td>Holstad</td>
<td>46.74033</td>
<td>-117.19101</td>
<td>2339</td>
<td>approximate, does not affect elevation; SYG Nursery</td>
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<tr>
<td>CS-14</td>
<td>Harlow</td>
<td>--</td>
<td>46.75509</td>
<td>-117.23826</td>
<td>2396</td>
<td>approximate, does not affect elevation</td>
<td></td>
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<tr>
<td>CS-15</td>
<td>Smalinski Mobile Park</td>
<td>--</td>
<td>46.77311</td>
<td>-117.20775</td>
<td>2420</td>
<td>approximate, does not affect elevation; Sunset Mobile Home Park</td>
<td></td>
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<tr>
<td>CS-16</td>
<td>Pullman 3</td>
<td>Pullman</td>
<td>46.73200</td>
<td>-117.18059</td>
<td>2339</td>
<td>yes</td>
<td></td>
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<tr>
<td>Priest Rapids / Sand Contact basalt-1 (Tpr)</td>
<td>--</td>
<td>46.76979</td>
<td>-117.22789</td>
<td>2276</td>
<td></td>
<td></td>
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<td>46.76251</td>
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<td></td>
<td>46.73346</td>
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<td>46.74915</td>
<td>-117.20517</td>
<td>2306</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*From Moxley (2012, p. 73)*
Figure 22. Approximate Extent of Roza Basalts through the Study Area

From Moxley (2012); Merle Harlow well is labeled CS-14.
HAWKINS COMPANIES WELL 1

[DRILLED NOVEMBER 4, 2008]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 7, 2016

Well Log ID: 594211  Elev (ft): 2590 ±10  Depth (ft): 675  Quad: Moscow West

Latitude: 46.7416  Longitude: -117.04028  decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 32, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
WA 270, Pullman, Wash., on north side of highway, about 0.6 mi up long lane

Location Method:
Latitude and longitude from driller's report; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions and tax parcel are incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 45</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured in places</td>
<td>45 – 240</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray, green</td>
<td>240 – 265</td>
</tr>
<tr>
<td>Sand</td>
<td>265 – 275</td>
</tr>
<tr>
<td>Sand, with clay</td>
<td>275 – 352</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>352 – 531</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
</tbody>
</table>
Basalt, with fractures

Grouse Creek member or Wapshilla Ridge Member(?)

<table>
<thead>
<tr>
<th></th>
<th>531 – 655</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, brown seams</td>
<td>655 – 663</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>663 – 675</td>
</tr>
</tbody>
</table>

**Comments:**

The identification of the Meyer Ridge Member near the bottom of the well was made by Conrey and others (2013).

There are two wells here: Hawkins Companies well 1 (Unique Ecology Well ID Tag No. APC-932) and Hawkins Companies well 2 (Unique Ecology Well ID Tag No. APC-931, drilled December 12, 2008).

Whitman County Tax Parcel 200004615324900, SE LTS 3-4, owner now is FAE HOLDINGS LLC (855 BROAD ST STE 300, BOISE ID), 47.0 acres.

Mr. Gary Hawkins, 855 Broad Street, Suite 300, Boise, Idaho, is listed as Governor of Hawkins Companies LLC (Washington Secretary of State, 2016). The wells were for a planned shopping center property for lease (Hawkins Companies, 2016) just west of the Washington-Idaho state border.
References Cited:


WATER WELL REPORT
Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)
☐ Construction
☐ Decommission
☐ ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☒ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: ☐ Owner's number of well (if more than one) ☐
☐ New well ☐ Reconditioned Method: ☐ Deg ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well ______ inches, drilled ______ ft.
Depth of completed well ______ ft.

CONSTRUCTION DETAILS
Casing: ☐ Welded 8" Diam. from ______ ft. to ______ ft.
Installed: ☐ Liner installed ______ Diam. from ______ ft. to ______ ft.
☐ Threaded ______ Diam. From ______ ft. to ______ ft.

Perforations: ☐ Yes ☐ No
Type of perforator used ___________

SIZE of perfora. in. by in. and no. of perfora. from ______ ft. to ______ ft.

Screens: ☐ Yes ☐ No ☐ K-Plug Location ___________

Manufacturer's Name ___________

Type ___________ Selection ___________
Diam. ______ Slot size ______ from ______ ft. to ______ ft.
Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand ______ ft.
Materials placed from ______ ft. to ______ ft.

Surface Seal: ☐ Yes ☐ No To what depth ______ ft.
Material used in seal ___________

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? ☐ Top Water Depth of strata ______ ft. & ______
Method of sealing strata off ___________

PUMP: Manufacturer's Name ___________
Type ___________ H.P. ___________

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level ______ ft. below top of well Date 11/03/2008
Artesian pressure ______ lbs. per square inch Date ___________

Artesian water is controlled by ___________

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom? ___________

Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test ___________

Bailer test: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Airstest: ______ gal/min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date ___________

Temperature of water ______ Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (min.) LOUIE HANNER
Driller/Engineer/Trainee Signature ___________

Driller or trainee License No. 1472

IF TRAINEE: Driller's License No: ___________

Driller's Signature: ___________

ECY 596 (Rev 4/07)

CURRENT
Notice of Intent No. WE08739
Unique Ecology Well ID Tag No. APC-932
Water Right Permit No. 5197-A (B)

Property Owner Name HAWKINS COMPANIES
Well Street Address N KA

City ______ County WHITMAN
Location SE1/4-1/4 NE1/4 Sec 32 Twn 15 R 46E

Lat/Long Lat Deg 46 Lat Min/Sec 44.496
Long Deg 117 Long Min/Sec 02.417

Tax Parcel No. (Required) 2-0000-46-15-32-3900

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO
Top Soil 0 3
Brown Clay 3 45
Basalt w/ Occasional Layers 45 110
Black Med. Basalt 110 170
Basalt w/ Small Fracs 170 185
Black Hard Basalt 185 195
Med. Black Basalt 195 230
Frac Basalt w/ Brown Clay 230 240
Gray/Green Clay 240 265
Silica Sand 265 275
Sand w/ Water & Clay 275 352
Clay & Sand 352 531
Gray Basalt 531 655
Gray Med. Basalt w/ Broken 655 663
Brown Seams 663 675
Frac. Basalt w/ Water 683 683

Revised Lithologic 11/14/08
Revised depth 11/25/08

Start Date 8/18/2008 Completed Date 11/04/2008

RECEIVED
JUN 18 2009
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Drilling Company H2O WELL SERVICE INC.
Address 582 W. HAYDEN AVE.
City, State, Zip HAYDEN, ID, 83835
Contractor's Registration No. H2OWES101DW Date 11/04/2008

Ecology is an Equal Opportunity Employer
Figure 12. Stratigraphy of the Butte Gap DOE test well compared with WSU #6, Palouse #3, and the Hawkins development wells. Brown is sediment overburden, yellow is between-flow sediment. Flow designations are given in Table 1. Elevation scale is in feet. The Palouse #3 well is poorly logged and the “sediment” interbedded in the R2 Meyer Ridge lavas may be vesiculated flow top. The identification of Meyer Ridge in that well is based upon three analyses from the lowermost portion of the hole. The bottom of the Hawkins well is not known, only a single analysis at the top of the R2 Meyer Ridge was made. Estimated contact with possibly underlying R2 Grouse Creek or Wapshilla Ridge lava is based upon interpretation of the drillers log. WSU #6 flow IDs are from Conrey & Wolff (2010).

The R2 Meyer Ridge in the Butte Gap well is about 140 feet thick and contains only one internal vesicular flow top (Fig. 12). In contrast with all of the other test wells, no weathered vesicular flow top was penetrated at the top of the R2 Meyer Ridge in this well. Presumably that is due to erosion of the flow top prior to deposition of the fluvial sand layers. The R2 Meyer Ridge is underlain by 25 feet of R2 Grouse Creek lava in the bottom of the hole.

The stratigraphy of the Butte Gap well is strikingly similar to that of the Palouse City Well #3 (Fig. 12). The latter is more poorly known, but three analyses in the lowest section of the hole confirm the presence of the R2 Meyer Ridge member (see Appendix 1). It is possible to interpret the Palouse #3 drillers log such that the top of the Meyer Ridge is about at the same elevation in the Palouse well as it is in the Butte Gap well. It seems likely that the same paleo-channel is present in both wells. The direction and outlet of that channel farther west is of interest, certainly wells located along its axis would be well supplied with water. The presence of a typical vesicular flow top on the Priest Rapids flow in the Butte Gap well suggests that the Lolo flow choked this channel and forced it to move elsewhere. It is likely the pre-Lolo channel was formed by drainage derangement due to emplacement of preceding CRB lavas, in this case
<table>
<thead>
<tr>
<th>Butte Gap</th>
<th>depth in hole elevations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wx’d flow top PR</td>
<td>40 2475</td>
</tr>
<tr>
<td>base wx’d top PR</td>
<td>60 2455</td>
</tr>
<tr>
<td>color change to fg gm PR</td>
<td>140 2375</td>
</tr>
<tr>
<td>PR-sand cont</td>
<td>203 2312</td>
</tr>
<tr>
<td>Sand-MR contact</td>
<td>342 2173</td>
</tr>
<tr>
<td>top ves zone in MR</td>
<td>385 2130</td>
</tr>
<tr>
<td>bot ves zone</td>
<td>395 2120</td>
</tr>
<tr>
<td>MR-GC cont</td>
<td>460 2055</td>
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<tr>
<td>bottom in GC</td>
<td>485 2030</td>
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<table>
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<th>Hawkins well</th>
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<td>sed-PR cont</td>
<td>110 2480</td>
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<tr>
<td>PR-sed base cont</td>
<td>235 2355</td>
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<tr>
<td>sed-MR top cont</td>
<td>531 2059</td>
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<tr>
<td>poss base MR</td>
<td>655 1935</td>
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<tr>
<td>poss top R2 GC or WR</td>
<td>663 1927</td>
</tr>
<tr>
<td>bott hole</td>
<td>695 1895</td>
</tr>
</tbody>
</table>
HAWKINS COMPANIES WELL 2

[DRILLED DECEMBER 12, 2008]

Location Information
By Pamela Dunlap, December 3, 2016

Well Log ID: 594210    Elev (ft): 2590 ±10    Depth (ft): 587    Quad: Moscow West

Latitude: 46.741417    Longitude: -117.040350    decimal degrees (WGS84)

Sec. ¼, NE ¼, SE ¼, Sec. 32, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
WA 270, Pullman, Wash., on north side of highway, about 0.6 mi up long lane (south of Hawkins Companies well 1)

Location Method:
Latitude and longitude from driller's report. Google Earth imagery; topographic map. PLSS subdivisions and tax parcel are incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
</tbody>
</table>

Interpretation not provided; it similar to Hawkins Companies well 1.
Comments:

There are two wells here: Hawkins Companies well 1 (Unique Ecology Well ID Tag No. APC-932, drilled November 4, 2008) and Hawkins Companies well 2 (Unique Ecology Well ID Tag No. APC-931).

Whitman County Tax Parcel 200004615324900, SE LTS 3-4, owner now is FAE HOLDINGS LLC (855 BROAD ST STE 300, BOISE ID), 47.0 acres.

Mr. Gary Hawkins, 855 Broad Street, Suite 300, Boise, Idaho, is listed as Governor of Hawkins Companies LLC (Washington Secretary of State, 2016). The wells were for a planned shopping center property for lease (Hawkins Companies, 2016) just west of the Washington-Idaho state border.

References Cited:


WATER WELL REPORT

Construction/Decommission (“x” in circle)

☐ Construction
☐ Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☒ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner’s number of well (if more than one) 1b
☐ New well ☐ Recommissioned Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 10" inches, drilled 587 ft.

Depth of completed well 587 ft.

CONSTRUCTION DETAILS

Casing ☐ Welded □ 10" Diam. from 0 ft. to 550 ft.

Installed: ☐ Liner installed □ 10" Diam. from 0 ft. to 550 ft.

☐ Threaded □ Diam. from 0 ft. to 550 ft.

Perforations: ☐ Yes ☒ No

Type of perforator used ____________________________

SIZE of perfor openings in. by in. and no. of perfor openings from ft. to ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location ____________________________

Manufacturer’s Name ____________________________

Type ____________________________ Model No. ____________________________

Diam. Slot size from ft. to ft.

Diam. Slot size from ft. to ft.

Gravel/Filter pack: ☐ Yes ☐ No Size of gravel/sand __________

Materials placed from ft. to ft. __________

Surface Seal: ☐ Yes ☐ No To what depth? 550 ft.

Material used in seal ____________________________

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? ____________________________

Method of sealing strata off ____________________________

PUMP: Manufacturer’s Name ____________________________

Type ____________________________ H.P. ____________________________

WATER LEVELS: Land-surface elevation above mean sea level __________ ft.

Static level 345 ft. below top of well Date 12/10/2008

Artesian pressure __________ lbs. per square inch Date ____________________________

Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom ____________________________

Yield: __________ gal./min. with __________ ft. drawdown after __________ hrs.

Yield: __________ gal./min. with __________ ft. drawdown after __________ hrs.

Yield: __________ gal./min. with __________ ft. drawdown after __________ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time __________ Water Level __________

Time __________ Water Level __________

Time __________ Water Level __________ Date ____________________________

Date of test ____________________________

Boiler test, gal./min. with __________ ft. drawdown after __________ hrs.

Airest 200+ gal./min. with stem set at __________ ft. for 2 hrs.

Artesian flow __________ g.p.m. Date ____________________________

Temperature of water: __________ Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (Eye) LOUIE HANN

Driller/Engineer/Trainee Signature ____________________________

Driller or trainer License No. 1472 ____________________________

IF TRAINEE: Driller’s License No: ____________________________

Driller’s Signature ____________________________

Drilling Company H2O WELL SERVICE INC.

Address 582 W. HAYDEN AVE.

City, State, Zip HAYDEN, WA, 83835

Contractor’s Registration No. H2OWSS101DW Date 12/16/2008

653

ECY 950-1-20 (Rev 4/07)

The Department of Ecology does NOT warrant the Data and/or the Information on this Form.

ECOLOGY

CURRENT

Notice of Intent No. WE08740

Unique Ecology Well ID Tag No. APC-931

Water Right Permit No. 1997-6 (B)

Property Owner Name HAWKINS COMPANIES

Well Street Address NKA

City ____________________________ County WHITMAN

Location SE1/4 SW1/4 NE1/4 Sec 22 Twp 15 R 66E WM 2

(s, t, r Still REQUIRED)

Lat/Long Lat Deg 46 Lat Min/Sec 44.486

Long Deg 117 Long Min/Sec 02.421

Tax Parcel No. (Required) 2-0000-46-15-32-3900

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO

Top Soil & Fill Gravel 0 2

Basalt w/ layers of Clay 2 44

Basalt Layers 44 233

Green & Tan Clays 238 265

Sand w/ Clay Silica 265 278

Sand & Clay w/ Water 278 350

Sediment 350 530

Med, Hard Basalt Layers-water 530 585

Med, Hard Basalt Layers 585 587

RECEIVED

JUN 18 2009

DEPARTMENT OF ECOLOGY

EASTERN REGIONAL OFFICE

Start Date 10/31/2008 Completed Date 12/12/2008

Ecology is an Equal Opportunity Employer
**JIM HAYES WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 4, 2016

Well Log ID: 293005  Elev (ft): 2040 ±10  Depth (ft): 257  7.5’ Quad: Colfax North

Latitude: 46.917413  Longitude: -117.337396  decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 1, T. 16 N, R. 43 E

**Well Address and (or) Other Location Information:**
4001 N Palouse Road, Colfax, Wash., on west side of road, is only house that fits driller’s description and graphic (100 ft S and 450 ft E of NW ¼ corner of Sec. 1).

**Location Method:**
Location is as described on driller’s report (as opposed to location provided for Colfax North quadrangle Well 7 of Bush and others (2005 [2006])); Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 14, 2016); red barn has JH on it and a horse head silhouette.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Basalt (loose boulder?)</td>
<td>2 – 5</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>5 – 42</td>
</tr>
<tr>
<td>Sand, gravel</td>
<td>42 – 46</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>46 – 103</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>103 – 133</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>133 – 194</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>194 – 214</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>214 – 257</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004316011901, 4001 N PALOUSE RD, NE 1.62 AC, owners are now KLOS, PAUL/KATHY; 2.0 acres; 1 story residence built in 1900.

Mr. Jim C. Hayes is believed to have died in 2002; he was 84 in 1998 and used to board horses (Kelley, 1998).

References Cited:
STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

WELL LOG

Record by: Driller
Source: Driller's Record

Location: State of WASHINGTON
  County: Whitman
  Area: 100' S and 450' E of
  Map: N\A corner of Sec. 1
Lot: 2, Sec. 1, T16 N, R43 E
Diagram of Section

Drilling Co.: Zinkgraf's Well Drilling
  Address: E. 1606 Sharp Avenue, Spokane
Method of Drilling: Date: Sept. 14, 1966
Owner: Jim C. Hayes
Address: Box 143, Colfax, Washington

Land surface, datum: \ ft above

SWL: 43' Date: Sept. 14, 1966 Dims: 6'x257'

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
</table>
| Domestic use
  Topsoil | 0 | 2 |
  Basalt, med. hard broken | 2 | 4\frac{1}{2} |
  Clays, hard brown | 42 | 42 |
  Sand, loose; gravel
    and rock | 42 | 46 |
  Hardside; basalts,
    slightly fractured,
    black and brown | 46 | 50 |
  Basalt, hard black | 50 | 70 |
  Basalt, hardside,
    fractured black, brown | 70 | 70\frac{1}{2} |
  Basalt, hard black | 70\frac{1}{2} | 79 |
  Basalt, hard black | 79 | 103 |
  Basalt, fractured (5 gpm flow) | 103 | 133 |

Turn up (over) Sheet of sheets

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
### WELL LOG—Continued

<table>
<thead>
<tr>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalts, hard black</td>
<td>133</td>
<td>180</td>
</tr>
<tr>
<td>Basalt, hardside fractured black</td>
<td>180</td>
<td>180½</td>
</tr>
<tr>
<td>Basalts, hard black</td>
<td>180½</td>
<td>194½</td>
</tr>
<tr>
<td>Hardside: basalts, fractured black and brown</td>
<td>194½</td>
<td>214½</td>
</tr>
<tr>
<td>Basalt, hard black</td>
<td>214½</td>
<td>257</td>
</tr>
</tbody>
</table>

**Casing installed from 0 to 47\':**

**Pump: submersible**
QUINTON HELLINGER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 4, 2016


Latitude: 46.965025   Longitude: -117.052209   decimal degrees (WGS84)

____ ¼,  SW ¼,  SE ¼,  Sec. 18,  T. 17 N,  R. 46 E

Well Address and (or) Other Location Information:
1951 Grinnell Road, Palouse, Wash., on south side of road

Location Method:
Located in yard of only house in SE¼ of sec. 18 on Grinnell Road; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>22</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>199</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>211</td>
</tr>
<tr>
<td>Sand, white</td>
<td>222</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004617184789, 1951 GRINNEL RD, SE1/4 PT W1/2 QUINTON HELLINGER SHPLT, now owned by HELLINGER, DONOVAN M; 2.0 acres; grantors were HELLINGER, QUINTON/MARIE, on 08/19/10.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Quilton Hellinger
Address: Rf. 1 Box 1A, Pullman, ID 99163

LOCATION OF WELL: County: Whitman

STREET ADDRESS OF WELL (if nearest address):

PROPOSED USE:
- Domestic
- Irrigation
- Dr/Well

TYPE OF WORK:
- Owner's number of well
- Abandoned
- New well
- Deepened
- Method: Dug
- Drilled
- Reconditioned
- Rotary
- Jettied

DIMENSIONS:
- Diameter of well: 84.0 inches
- Depth of completed well: 230 ft.

CONSTRUCTION DETAILS:
- Diam. from 41 ft. to 28 ft.
- Liner installed:
  - Diameter: from 41 ft. to 28 ft.
- Type of perforator used:
  - Spacing: in.
  - Perforations from:
    - Diameter: from 41 ft. to 28 ft.

MANUFACTURER:
- Manufacturer's Name: N.
- Model No.:
- Dia.: Slot size:
  - Diameter: from 41 ft. to 28 ft.

- Gravel placed:
  - Diameter: from 41 ft. to 28 ft.

- Surface seal:
  - Method: Bonded
  - Depth:

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No If yes, by whom?

WELL CONSTRUCTOR CERTIFICATION:

McKenzie's Well Drilling
2235 Burrell

NAME: Larry Mathews, Idaho 99624

ADDRESS: 9924-1728

LICENSE NO.: 9924-1728

USE ADDITIONAL SHEETS IF NECESSARY.
HAROLD HERMAN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 4, 2016

Well Log ID: 153608 Elev (ft): 2290 ±10 Depth (ft): 188 7.5’ Quad: Colfax North

Latitude: 46.947845 Longitude: -117.335225 decimal degrees (WGS84)

¼, ¼, SW ¼, Sec. 24, T. 17 N, R. 43 E

Well Address and (or) Other Location Information:
42502 WA 195, Colfax, Wash., on west side of highway, south of Danaher Road, across the highway from Harold Knopes’ house.

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 13 of Bush and others (2005 [2006]) is incorrectly plotted north of Danaher Road in middle of cultivated field; owner’s first name mispelled on driller’s report. Site visit (September 16, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>No description</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt, alternating fractured and hard</td>
<td>9</td>
<td>80</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Unnamed interbed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay, yellow, white, and brown</td>
<td>80</td>
<td>88</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Roza Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt, alternating fractured and hard</td>
<td>88</td>
<td>188</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004317243903, 42502 SR 195, SW1/4 PT S1/2 W OF HWY, owner is now FKH, LLC, C/O JULIE SMITH; 4.0 acres; 1 story residence, built in 1943; grantors were HERMAN, HARVEY/LEONA to SMITH, EDWARD /JULIE H, on 02/17/12.

Mr. Harold Herman died in 2011; Julie Smith is his daughter; Harvey Herman is his brother (The Spokesman-Review, 2011).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Harriald Herman
Address: Colfax

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: ☐ Domestic ☐ Irrigation ☐ Industrial ☐ Municipal ☐ DeWater ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
☐ Abandoned ☐ New well ☐ Method: Dug ☐ Cable ☐ Bored ☐ Reconditioned ☐ Rotary ☐ Driven ☐ Jetted

(5) DIMENSIONS: Diameter of well: 8 inches
Drilled: 0 feet. Depth of completed well: 188 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 8' Diam. from +1 ft. to 30 ft.
Welded: ☑ 6' Diam. from -10 ft. to 188 ft.
Liner installed: ☐ 6' Diam. from -10 ft. to 188 ft.
Perforations: Yes ☐ No ☐
Type of perforator used: Skilling saw
SIZE of perforations: 8" in. by 8" in.

Screens: Yes ☐ No ☐
Manufacturer: Name:
Type: Model No:
Diam. Slot size: from ft. to ft.
Diam. Slot size: from ft. to ft.
Gravel packed: Yes ☐ No ☐ Size of gravel:
Gravel placed from: ft. to ft.
Surface seal: Yes ☐ No ☐ To what depth? ft.
Material used in seal: bentonite slurry
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata:
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type:

(8) WATER LEVELS: Land-surface elevation above mean sea level:
Static level: 35 ft. below top of well Date: 3/22/93 ft.
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by:

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐
Yield: gal./min. with ft. drawdown after hra.
Recovery date (time taken as zero when pump turned off) (water level measured from well top to water level):
Time Water Level Time Water Level Time Water Level

Date:

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL
FROM TO
overburden 0 9
FracT. basalt 9 23
basalt, firm 23 33
basalt, firm 33 43
basalt, firm 43 53
basalt, firm 53 63
basalt, firm 63 73
clay, yellow, white, 89 89
soft FracT. basalt 89 99
FracT. basalt 99 109
basalt, firm 110 129
basalt, firm 129 169
basalt, firm 169 189

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: Wilt Well Drilling
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address: 619 Powers Ave.
(Signed) Respectfully
Licene No. 0629
Owner's Name:
Contractor's Name:
Registration No. 137 B3
Date: 4/17/93

(USE ADDITIONAL SHEETS IF NECESSARY)
IVAN HERRICK WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 25, 2016

Well Log ID: 168062  Elev (ft): 2480 ±10  Depth (ft): 87  7.5’  Quad: Albion

Latitude: 46.779470  Longitude: -117.190914 decimal degrees (WGS84)

SW ¼, SW ¼, SE ¼, Sec. 18, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
2854 Banner Road, Pullman, Wash., about 0.1 mi east of road on south side of lane

Location Method:
Location is for house; bearing and distance on driller’s report; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Clay</td>
<td>5 – 45</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, vesicular 45 – 60</td>
</tr>
<tr>
<td></td>
<td>Basalt 60 – 70</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured 70 – 83</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured 83 – 87</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515184906, 2854 BANNER RD PULLMAN, SE PT SW, owner is HERRICK, IVAN W, 12.0 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: IVAN W. HERRICK
Address: NV344 HARRISON, PULLMAN 99163

(2) LOCATION OF WELL: County: WHITMAN
T-1½ S, W-1¼ Sec. 18, T-45 N, R-13 W.

(3) PROPOSED USE: Domestic ☑ Industrial □ Municipal □ Irrigation □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one)... New well ☑ Method: Dug □ Bored □ Deepened □ Cable □ Driven □ Recommissioned □ AIR Rotary □ Jetted □

(5) DIMENSIONS: Diameter of well: 8½ inches. Depth of completed well: 8½ ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 0 to 4½ ft. Threaded □ Welded □
Perforations: Yes □ No □
Screens: Yes □ No □
Gravel packed: Yes □ No □
Surface seal: Yes □ No □

(7) PUMP: Manufacturer's Name: SEARS
Type: Submersible, H.P. 3/4

(8) WATER LEVELS: Land-surface elevation above mean sea level: 2,480 ft.
Static level: 33 ft. below top of well Date: 03-15-72
Artesian pressure: lbs. per square inch Date: 
Artesian water is controlled by: (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes □ No □ If yes, by whom? HERRICK
Yield: 12 gal./min. with 15 ft. drawdown after 1 hour
8 ft. 20
Recovery time (time taken as zero when pump turned off) (water level measured from well top to water level):
Time Water Level Time Water Level Time Water Level
Not Determined

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Soil</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Clay</td>
<td>5</td>
<td>45</td>
</tr>
<tr>
<td>Blue Basalt - Light Scoria</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>Blue Basalt</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>Clay and Mineral Deposits</td>
<td>70</td>
<td>83</td>
</tr>
<tr>
<td>In fractured Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water in high sap root</td>
<td>83</td>
<td>87</td>
</tr>
<tr>
<td>Fractured highly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Driller: Detray Drilling Co.
Clarkston, WA 99103

Work started: 20 July, 1972
Completed: 22 July, 1972

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Driller: Detray Drilling Co.
Date: 22 July, 1972

[Signed] (Well Driller)

License No. Date 19...
MICK HESS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: D0013641   Elev (ft): 2730   Depth (ft): 305   7.5’   Quad: Robinson Lake

Latitude: 46.772420°   Longitude: -116.958287°   decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 34, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3109 West Twin Road, Moscow, Idaho; on northwest side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Candel, 2014, p. 164, well sample 24); Latah County Assessor; Google Earth imagery; topographic map; driller recorded incorrect Section and subdivisions

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>1 – 199</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>199 – 279</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>279 – 305</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W343284, owner is HESS, MICHAEL S; 3109 WEST TWIN RD, .91 AC TAX #6628 NWNW, 34 40 5.

References Cited:

RECEIVED
JAN 08 2001
Form 238-7
11/97 JGE
IDAH0 DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>280</td>
<td>1 HR</td>
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</tbody>
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Water Temp: 53
Bottom hole temp:
Depth first Water Encounter: 107

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore DIA</th>
<th>From</th>
<th>To</th>
<th>Marks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
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<tbody>
<tr>
<td>14</td>
<td>0</td>
<td></td>
<td>SOIL</td>
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<tr>
<td>14</td>
<td>1</td>
<td>172 SAND &amp; CLAY</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>172</td>
<td>199 SAND &amp; CLAY</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>199</td>
<td>213 BASALT MEDIUM BLACK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>213</td>
<td>279 BASALT MEDIUM BLACK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>279</td>
<td>305 SAND</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

4. USE:
• Domestic
• Municipal
• Monitor
• Irrigation
• Thermal
• Injection
• Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
• New Well
• Modify
• Abandonment
• Other

6. DRILL METHOD:
• Air Rotary
• Cable
• Mud Rotary
• Other

7. SEALING PROCEDURES:

<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>0</td>
<td>172</td>
</tr>
</tbody>
</table>

Was drive shoe used? • Y □ N
Shoe Depth(s): 172 & 213
Was drive shoe seal tested? • Y □ N
How?: 300 PSI

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Guage</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
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<tr>
<td>6</td>
<td>+1</td>
<td>172</td>
<td>1/4</td>
<td>STEEL</td>
<td>□ □</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>213</td>
<td>1/4</td>
<td>STEEL</td>
<td>□ □</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Length of Headpipe
Length of Tailpipe

9. PERFORATIONS/SCREENS:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

197 ft. below ground
Artesian pressure: 17 lb.
Depth flow encountered: 172 ft. Describe access port or control devices: WELL CAP

Firm Official
Date: 12/17/00
Driller or Operator
Date: 12/17/00

13. DRILLER'S CERTIFICATION:
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCPHERSON & WRIGHT DRILLING

669
ESTHER HIBBS WELL
Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 3, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 166116</th>
<th>Elev (ft): 2440 ±10</th>
<th>Depth (ft): 254</th>
<th>7.5′</th>
<th>Quad: Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.695120</td>
<td>Longitude: -117.126425 decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>¼, SE ¼, SE ¾, Sec. 15, T. 14 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
1302 Sand Road, Pullman, Wash.; on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic maps. Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>23</td>
</tr>
<tr>
<td>Latah Formation</td>
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<tr>
<td>Vantage Member</td>
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<td>Clay</td>
<td>72</td>
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<tr>
<td>Sand</td>
<td>153</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>160</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004514154700, 1302 SAND RD, SE W 1/2 EXCEPT SHORT PLAT, owner now is SAND ROAD LAND CO (3) (C/O NORM DRUFFEL, 2653 SAND ROAD), 72.9 acres; one story residence built in 1926; grantor was HIBBS, ESTHER L, on 07/09/10.


Mr. Earl Francis Hibbs, a longtime Pullman area cattle rancher, died in 1992, aged 86 (The Lewiston Morning Tribune, 1992).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Edward Hilt Address 1302 2nd Ave

LOCATION OF WELL: County Whitman
LOCATION: 

(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: Domestic  Irrigation  Test Well

(4) TYPE OF WORK: Owner's number of well (If more than one)
- Abandoned
- New well
- Deepened
- Reconditioned
- Method: Dug
- Roded
- Cable
- Driven
- Rotary
- Jetted

(5) DIMENSIONS: Diameter of well G  inches.
- Drilled feet Depth of completed well 200 ft.

(6) CONSTRUCTION DETAILS:
- Casing Installed: 1 1/2 ft.
- Liner installed: 2 1/2 ft.
- Threaded: 2 1/2 ft.
- Perforations: Yes No
- Type of perforator used
- Size of perforations
- Screens: Yes No
- Manufacturer's Name
- Type
- Model No
- Diam. Slot size from ft. to ft.
- Diam. Slot size from ft. to ft.
- Gravel packed: Yes No
- Size of gravel
- Gravel placed from ft. to ft.
- Surface seal: Yes No
- To what depth? 100 ft.
- Material used in seal
- Did any strata contain unusable water? Yes No
- Depth of strata
- Method of sealing strata off

(7) PUMP: Manufacturer's Name
- Type
- H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
- Static level 180 ft. below top of well Date Aug 3 97
- Artesian pressure lbs. per square inch Date
- Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No
- If yes, by whom?
- Yield gal. min.
- ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

- Date of test
- Bailer test gal. min.
- ft. drawdown after hrs.
- Artesian flow gpm Date
- Temperature of water Was a chemical analysis made? Yes No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
- Dirt
- Clay
- Salt

RECEIVED SEP 14 1998
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME
(PERSON, FIRM, OR CORPORATION) (TYPE OF PRINT)
Address
WELL DRILLER License No. 1478
(Signed)
Contractor's Registration No.
Date Sept 9 98

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.
BRAD HILL WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 26, 2016

Well Log ID: 1062770   Elev (ft): 2570 ±10   Depth (ft): 207   Quad: Palouse

Latitude: 46.917246   Longitude: -117.103047   decimal degrees (WGS84)

Well Address and (or) Other Location Information:
15001 WA 272, Palouse, Wash., on west side of highway; well is in side yard south of Franzen Road

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Tax parcel number and PLSS subdivision incorrect on driller’s report. Site visit (November 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 33</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>33 – 207</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516021690, 15001 SR 272, NE1/4 LT 2, owner is HILL, BRADLEY W; 4.0 acres; one story residence built in 1897.

Above, note open trench to new well (drilled June 24, 2015; date of imagery is June 30, 2015).

References Cited:
WATER WELL REPORT

DEPARTMENT OF ECOLOGY

ECOLOGY Construction/Decommission ("x" in circle)
☑ Construction
☐ Decommission ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Dog ☐ Bored ☐ Driven
☐ Despended ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS:
- Diameter of well: 8 inches, drilled: 207 ft.
- Depth of completed well: 207 ft.

CONSTRUCTION DETAILS
- Casing: ☐ Welded 8" Dia. from +2 ft. to 34 ft.
- Installed: ☐ Liner installed 8" Dia. from -5 ft. to 207 ft.
- ☐ Thredded 8" Dia. From _ ft. to _ ft.
- Perforations: ☐ Yes ☐ No
- Type of perforator used: Silacow
- Size of perfor: 1/4 in. by 8 in. and no. of perfor: 48 from 167 ft. to 207 ft.
- Screened: ☐ Yes ☐ No ☐ X-Pac
- Location

Manufacturer's Name
- Type: __________
- Model No.: __________
- Diam. Slot size: __________
- Diam. Slot size: __________
- Gravel/Filter packed: ☐ Yes ☐ No
- Size of gravel/sand: __________
- Materials placed from __________ to __________
- Surface Seal: ☐ Yes ☐ No To what depth? __________
- Material used in seal: Bentonite
- Did any strata contain usable water? ☐ Yes ☐ No
- Type of water: __________
- Depth of strata: __________
- Method of sealing strata off:

PUMP: Manufacturer's Name
- Type: __________

WATER LEVELS: Land-surface elevation above mean sea level __________ ft.
- Static level: __________ ft. below top of well Date __________
- Artesian pressure __________ lbs per square inch Date __________
- Artesian water is controlled by __________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
- Was a pump test made? ☐ Yes ☐ No
- If yes, by whom:
- Yield: gal/min. with ______ ft. drawdown after ______ hrs.
- Yield: gal/min. with ______ ft. drawdown after ______ hrs.
- Yield: gal/min. with ______ ft. drawdown after ______ hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Start Date 6/22/15 Completed Date 6/24/15

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.
Persons with hearing loss can call 711 for Washington Relsel Service. Persons with a speech disability can call 877-333-6341.

ECOLOGY Construction/Decommission ("x" in circle)

Drilling Company: H2O Well Service Inc.
Driller/Engineer/Trainee License No. 2871
Driller/Engineer/Trainee Name: __________
Registration No. __________
Date: __________

ECOLOGY Construction/Decommission ("x" in circle)

Driller: __________
Driller's Signature: __________

ECOLOGY Construction/Decommission ("x" in circle)

Property Owner Name: Brad Hill
City: Palouse
EWM: County Whitman
Tax Parcel No. (Required): 20000451602166G

CONSTRUCTION OR DECOMMISSION PROCEDURE:
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (Use ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL

<table>
<thead>
<tr>
<th>Top Soil</th>
<th>Brown Clay</th>
<th>Black Med. Basalt</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>33</td>
</tr>
<tr>
<td>0</td>
<td>33</td>
<td>207</td>
</tr>
</tbody>
</table>

RECEIVED
JUL 2 2015
Department of Ecology
Eastern Washington Office
Latitude: 46.85849  Longitude: -117.116732  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 23, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
601 L West Road, Palouse, Wash.; on south side of road

Location Method:
Location is for only house in NW¼, SW¼, sec. 23 on L West Road (and nearest the description of location "one mile east off State Route 27 on L West Road" per driller’s report); Whitman County Assessor Google Earth imagery; topographic map. Site visit (May 17, 2016), but did not see a well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
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</tr>
<tr>
<td>Dirt</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>2</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>159</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>166</td>
</tr>
<tr>
<td>Latah Formation</td>
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<tr>
<td>Vantage Member</td>
<td></td>
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<tr>
<td>Sand</td>
<td>185</td>
</tr>
</tbody>
</table>
Comments:

Note that this well ends in the top of the Vantage Member and is a good producer 0.5 mi west of the DOE Butte Gap Well which encountered considerable water in the sand sequence of the Vantage (Conrey and others, 2013).

Whitman County Tax Parcel 200004516233792; 601 L WEST RD PALOUSE, SW11/4 W1/2 N OF RR, owners now are CULLEY, ROGER W/AMY L; 40.0 acres; no grantors listed.

Left, house was built by June 2005.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER Name: Bruce Hill
Address: 3202 Vista Rd, Palouse, WA

(2) LOCATION OF WELL County: Whitman
Section: 23, T14N, R2W, Sec. 23

(2a) STREET ADDRESS OF WELL (or nearest address): 1 mile E off SR 27 ON 6 West Rd

(3) PROPOSED USE Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐
DeWater ☐

(4) TYPE OF WORK Owner's number of well (if more than one):
Abandoned ☐ New well ☐ Method Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS Diameter of well: 6 inches
Drilled: 195 feet
Depth of completed well: 185 ft

(6) CONSTRUCTION DETAILS Casing Installed: 8
Welded: 2
Liner inserted: 4
Threaded: 0

Perforations Yes ☐ No ☐
Type of perforator used

Size of perforations: 3/16 in by 140 in
perforations from 140 ft to 180 ft
perforations from ft to ft
perforations from ft to ft

Screens Yes ☐ No ☐
Manufacturer's Name

Type
Model No
Dia: from ft to ft
Dia: from ft to ft

Gravel packed Yes ☐ No ☐
Size of gravel:
Gravel placed from ft to ft

Surface seal Yes ☐ No ☐
To what depth? 18
Material used in seal:

Did any strata contain unstable water? Yes ☐ No ☐
Type of water:
Depth of strata:
Method of sealing strata off:

(7) PUMP Manufacturer's Name

Type

(8) WATER LEVELS Land surface elevation above mean sea level:
Static level: 64 feet
Artesian pressure: lbs per square inch
Artesian water is controlled by:

(9) WELL TESTS Drawdown is amount water level is lowered below static level
Table:

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Was a pump test made? Yes ☐ No ☐ If yes by whom?

Yield: gal/min before ft drawdown after ft

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):

Time | Water Level |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Artesian test:

Data of test

<table>
<thead>
<tr>
<th>Test</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Artesian flow:

Temperature of water:

Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

MATERIAL
FROM | TO
--- | ---

Formation
Description

DEPARTMENT OF ECOLOGY
RECEIVED
APR 28 2001

MAY 3 2004

WELL CONSTRUCTOR CERTIFICATION

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: Wloderek, Bill
Address: 20A Farm Rd

(Signed) Wloderek, Bill
Well Driller

Contractor's Registration No: 1140

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600 The TDD number is (206) 407-6006
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August 2016

Well Log ID: D0035278
Elev (ft): 2660 ±10
Depth (ft): 350
7.5’ Quad: Viola

Latitude: 46.758871
Longitude: -117.014841 decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 31, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1001 Compton Court, Moscow, Idaho; well on south side of cul de sac, northwest of the house and close to western property line.

Location Method:
Location is for well; Latah County Assessor; Google Earth imagery; topographic map. PLSS section subdivisions incorrect on driller’s report. Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>200</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>300</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>320</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP016160010010, 1001 COMPTON CT; owner is HILL, JACOB B; CANTERWOOD ESTATES, BLK 1 LOT 1 (2.30 AC).

Well is to right of post (near center of photo).

References Cited:
IDaho Department of Water Resources
Well Driller's Report

1. WELL TAG NO. D-35278
   Water Right or Injection Well No.

2. OWNER:
   Name: Jake Hill
   Address: 1001 Compton Ct.
   City: Moscow
   State: ID
   Zip: 83842

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well.
   Twp. 40 N
   Rge. 5 E
   Sec. 31
   Gov't Lot 160 acres
   County
   Lat.: 
   Long.: 
   Address of Well Site: 1001 Compton Ct.
   City: Moscow
   (Give all legal names of lots + Distances to Plotted or Centerline)
   Lt.: 
   Blk.: 
   Sub. Name:

4. USE:
   □ Domestic  □ Municipal  □ Monitor  □ Irrigation
   □ Thermal  □ Injection  □ Other

5. TYPE OF WORK check all that apply
   □ New Well  □ Modify  □ Abandonment  □ Other
   (Replacement etc.)

6. DRILL METHOD:
   □ Air Rotary  □ Cable  □ Mud Rotary  □ Other

7. SEALING PROCEDURES
   Seal Material: Bentonite
   From: 0
   To: 20
   Weight / Volume: 450
   Seal Placement Method: Top Sour
   Was drive shoe used? □ Y  □ N
   Shoe Depth(s):
   Was drive shoe seal tested? □ Y  □ N
   How:

8. CASING/LINER:
   Diameter: 6"
   From: 0
   To: 350
   Gauge: 250
   Material: Steel
   Casing Liner: □ Welded  □ Threaded
   Length of Headpipe: Length of Tailpipe
   Packer □ Y  □ N  □ Type

9. PERFORATIONS/SCREENS PACKER TYPE
   Perforation Method: Saw
   Screen Type & Method of Installation

10. FILTER PACK
    Filter Material: 
    From: 
    To: 
    Weight / Volume: 
    Placement Method:

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    1/2 ft. below ground
    Artesian pressure __ lb.
    Depth flow encountered __ ft. Describe access port or control devices:

12. WELL TESTS:
    □ Pump  □ Bailer  □ Air  □ Flowing Artesian
    Yield gal./min.: 60
    Drawdown
    Pumping Level: 1.5
    Time:
    Water Temp.: 
    Bottom hole temp.:
    Water Quality test or comments: Good
    Depth first Water Encounter 320

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
    10 0 20  Sand, Clay
    7 20 200  
    6 320 220  Med. Alt. Basalt
    6 300 320  Green Shale
    6 320 350  Course Sand

14. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Linekoff Drilling
    Firm No.: 125
    Principal Driller: Andrew Linekoff
    Date: 9-13-04
    Driller or Operator I:
    Date: 9-19-04
    Operator II:
    Principal Driller and Rig Operator Required
    Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
JEFF HILL WELL

[DRILLED IN 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 19, 2016

Well Log ID: 617232  Elev (ft): 2530 ±10  Depth (ft): 305  Quad: Moscow West

Latitude: 46.737438  Longitude: -117.061944  decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 31, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
8683 WA 270, Pullman, Wash., on south side of highway; Toyota of Pullman dealership. Well is near southwest corner of dealership parking lot; silver tag on well is labeled AHR727 (DOE Well ID Tag Number).

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions and tax parcel number are incorrect on driller's report. Site visit (April 12, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>0 – 15</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>Clay, green</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>*R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>Basalt, weathered</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
</tbody>
</table>
Comments:

*The identification of the specific Grande Ronde flow is an interpretation. Thickness changes of the Vantage between this well and the DOE Pullman Observation and Test well to the west and the nearby PAC West Pre-Mix well show rapid changes in this area. The N2 flows are thinning out and the upper R2 flows are also thinning, so unit determinations are difficult.

Whitman County Tax Parcel 200004615314790, 8683 SR 270, Pullman, LOT 1 TIME WARNER SHORT PLAT, owner is now SPARTAN PULLMAN REAL ESTATE, grantor was JAMES AUTO LLC on 09/13/13, and previous to that FOUNTAIN, RON ET AL on 02/01/08 to HILL, JAMES M.
Well, above with green cap, is in foreground near a stack of wood pallets.

James Auto LLC is active (Washington Secretary of State, 2016); governor is James Hill (Vail, Ariz.)
Jeff Hill was manager of Toyota of Pullman in 2013 (Moscow Chamber of Commerce, 2013, p. 13).

References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction

Decommission ORIGINAL INSTALLATION

358194

Notice of Intent Number W218053

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)

☐ New well ☐ Reconditioned ☐ Method ☐ Drilled ☐ Bored ☐ Driven

DIMENSIONS: Diameter of well 9 inches, drilled 305 ft.

Depth of completed well 305 ft.

CONSTRUCTION DETAILS

Casing ☐ Welded 8" Diam. from +1 ft. to 25 ft.

Installed: ☐ Liner installed 8" Diam. from 15 ft. to 305 ft.

Threshold _______ Diam. From _______ ft. to _______ ft.

Perforations: ☐ Yes ☐ No

Type of perforation used SAW

SIZE of perfor 10 ft. by 12 in. and no. of perfo 90 from 235 ft. to 305 ft.

Screens: ☐ Yes ☐ No K-Pac Location

Manufacturer's Name _______________________

Type __________________ Model No. _______

Diam Slot size from _______ ft. to _______ ft.

Diam Slot size from _______ ft. to _______ ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand

Materials placed from _______ ft. to _______ ft.

Surface Seal: ☐ Yes ☐ No To what depth? 25 ft.

Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water __________________ Depth of strata

Method of sealing strata off ________________________

PUMP: Manufacturer's Name _______________________

Type H.P.

WATER LEVELS: Land-surface elevation above mean sea level _______ ft.

Static level 41 ft. below top of well Date 6/9/07

Artesian pressure _______ lbs. per square inch Date

Artesian water is controlled by ________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield _______ gal./min. with _______ ft. drawdown after _______ hrs.

Yield _______ gal./min. with _______ ft. drawdown after _______ hrs.

Yield _______ gal./min. with _______ ft. drawdown after _______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

_______ ___________ _______ ___________ _______ ___________

Date of test __________________________

Bailer test _______ gal./min. with _______ ft. drawdown after _______ hrs.

Airtest 80 gal./min. with stem set at _______ ft. for _______ hrs.

Artesian flow _______ g.p.m. Date

Temperature of water _______ Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (Print) TED WRIGHT

Driller/Engineer/Trainee Signature __________________________

Driller or trainee License No.

IF TRAINEE: Driller's License No.

Driller's Signature __________________________

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
SCOTT HILL WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, April 30, 2018

Well Log ID: D0013742  Elev (ft): 2680 ±10  Depth (ft): 250  Quad: Robinson Lake

Latitude: 46.774354°  Longitude: -116.973455° decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3301 Mountain View Road, Moscow, Idaho; on north side of Idlers Rest Road

Location Method:
Location is for well, in field near power line tower, north of Idlers Rest Road and west of intersection of Mountain View Road; Latah County Assessor; Google Earth imagery; topographic map; site visit March 20, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>From 0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>To 2</td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 2</td>
</tr>
<tr>
<td>Sand</td>
<td>To 9</td>
</tr>
<tr>
<td>Sand and clay, brown layers</td>
<td>From 56</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>To 179</td>
</tr>
<tr>
<td></td>
<td>From 179</td>
</tr>
<tr>
<td></td>
<td>To 250</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W286608, owner now is MILLS, JOHN; 3301 MTN VIEW RD; 39.30 AC TAX #5925 (SESW), 28 40 5.

Well is to right of power line tower, west and down hill from residence.

Scott Hill once lived at 3301 Mountain View Road, Moscow, Idaho (Spokeo.com, 2018).

References Cited:

1. WELL TAG NO. D 0013742
2. OWNER: Scott Hill
3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.
   [Map with location details]
4. USE:
   Domestic □  Municipal □  Monitor □  Irrigation □
   Domestic □  Industrial □  Injection □  Other □
5. TYPE OF WORK check all that apply
   □  New Well □  Modify □  Abandonment □  Other □
6. DRILL METHOD
   □  Air Rotary □  Cable □  Mud Rotary □  Other □
7. SEALING PROCEDURES
   SEAL/FILTER PACK From To Sacks or Pounds
   [Details of sealing procedure]
8. CASING/LINER:
   Diameter From To Gauge Material Casing Liner Welded Threaded
   [Details of casing and liner]
9. PERFORATIONS/SCREENS
   X Perforations Method SAW
   Screens Screen Type
   [Details of perforations and screens]
10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    15 ft. below ground Artesian pressure lb.
    [Details of static water level or artesian pressure]
11. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at
    the time the rig was removed.
    Company Name: [Signature]
    Firm Official: [Signature] Date 11/3/00
    Driller or Operator: [Signature] Date 11/3/00
TOM HOCKETT WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 24, 2016

Well Log ID: 876261  Elev (ft): 2360 ±10  Depth (ft): 100  Quad: Colfax North

Latitude: 46.931245  Longitude: -117.314043  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 31, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
336 Red Tail Ridge Road, Colfax, Wash., on northeast side of road; well is north of northeast corner of garage

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller’s report. Site visit (April 18, 2016), spoke with owner.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>To 21</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating solid and broken</td>
<td>From 21</td>
</tr>
</tbody>
</table>
Comments:

Contact with Roza is 120 ft below house on Red Tail Ridge Road is dry (contact mapped at 2240 ft elevation), but Hockett's well produced 50 gallons per minute (gpm). The contact confirms the basalt is the Lolo flow.

Whitman County Tax Parcel 101420000120000, 336 REDTAIL RIDGE RD, CX RED TAIL RIDGE SUBD, Lot 12 5.09AC, owners are HOCKETT, WILLIAM/CHERRILL; one story residence built in 2013.

References Cited:
WATER WELL REPORT

Notice of Intent: WE 16358

Property Owner Last Name: Hackett
First Name: Tom

Organization Name:

Well Tag ID Number (e.g., AAA-001): BCP 052

Variance Granted? (Circle One): Yes No

Water Right Permit Required? (Circle One): Yes or No

If Yes, enter Water Right Permit Here (Required):

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Commercial
- Domestic
- Individual Irrigation
- Municipal
- Parks and Recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Deepened Well
- Replacement
- Other

Method (Circle One):
- Cable
- Driven
- Dug
- Jetted
- Hydrofracturing
- Rotary

Drilling Start Date: 12/12/2013
Drilling Completion Date: 12/13/13

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):
Well Street Address: Not 12 Red Tail Ridge
Well City: Colfax
Well County: Whitman
Well Zip Code: 99111

Tax Parcel Number: 101420000012000

If claiming tax parcel exemption (Circle One): Tribal Federal Property Right of Way Railroad/Land

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: 10 ft, Drilled 60 ft, Depth of Completed Well: 92 ft

Casings (At least one casing must have 6 in stickup and all fields must be filled out for each casing entered):
- Type (Circle One): Concrete Plastic Steel Other Diameter: 12 inches Stickup: 24 inches Depth: 76 ft
- Type (Circle One): Concrete Plastic Steel Other Diameter: 12 inches Stickup: 24 inches Depth: 76 ft

Liners? Circle One: Yes No (If yes, then complete the below fields that apply):
- Type 1 (Circle One): PVC Steel Other Diameter: 4 1/2 in, From: 12 ft, TO: 92 ft
- Type 2 (Circle One): PVC Steel Other Diameter: 4 1/2 in, From: 12 ft, TO: 92 ft

Perforations? Circle One: Yes No (If yes, then complete the below fields that apply):
- Type of Perforator (Circle One): Drill Mills Knife Saw cut Star Torch Cut Other Perforation Size: 1/8 in by 4 in Total Perforations: 5 ft
- Perforation 1 from: 52 ft, TO: 92 ft, inches
- Perforation 2 from: , TO: , inches

Screens? (Circle One): Yes No (If yes, then complete the below fields that apply):
- Mfr 1, Type, Diameter: in Slot Size: From: ft, TO: ft
- Mfr 2, Type, Diameter: in Slot Size: From: ft, TO: ft

ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the Data and/or Information on this Well Report. If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes No (If yes, then complete the below fields that apply)

Packaging Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From ft in TO ft in
Packaging Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From ft in TO ft in

Surface Seal Was there an existing surface seal? Yes or No
Depth of Seal ft in
Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes No
If yes, Mfr Name Pump Type HP

Static Water Level (Circle One and fill in the blanks if needed)

Yes Measured Level (Below top of well) ft in Date Measured 4/13/13
Flowing Artesian (Circle One) Greater Than or Equal To GPM PSI Artesian Water Controllable by (e.g. Cap, Valve, etc.)
Dry Hole

Usable Water Strata? (Circle One) Yes No
If Yes is circled, method of sealing strata off
Strata 1 (Specify Usable Water Type) From ft in TO ft in
Strata 2 (Specify Usable Water Type) From ft in TO ft in

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test Date of test (Circle One) Greater Than or Equal To GPM, with Drawdown after hrs min
Air Test Date of test 4/13/13 (Circle One) Greater Than or Equal To GPM, with stem set at ft in
Test Duration hrs min

Pump Test Date of test Test performed by

Note: Drawdown—the amount the water level is lowered below the static level

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min
Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min
Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Note: Recovery—The time taken at zero when the pump is turned off. Water level is measured from the well top to—Ask Lars for wording

Time hrs min; Water Level ft in Time hrs min; Water Level ft in Time hrs min; Water Level ft in
Time hrs min; Water Level ft in Time hrs min; Water Level ft in Time hrs min; Water Level ft in
Time hrs min; Water Level ft in Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Well Lithology Details—Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Mad Broken Bentonite</td>
<td>21</td>
<td>43</td>
</tr>
<tr>
<td>Mad Black Bentonite</td>
<td>43</td>
<td>62</td>
</tr>
<tr>
<td>Ratty Brown Bentonite</td>
<td>62</td>
<td>75</td>
</tr>
<tr>
<td>Ratty Black w/white seams</td>
<td>75</td>
<td>90</td>
</tr>
<tr>
<td>Water at 88'</td>
<td>90</td>
<td>100</td>
</tr>
</tbody>
</table>

Comments—Enter any other important well construction and/or location details here. Hole called to 92'.

CERTIFICATION—I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

(Circle One) Driller Trainee Engineer Name of Firm
Driller/Engineer Name of Firm
Driller/Trainee PE License No.

If TRAINEE, Mentor Driller License No.
Mentor Driller Signature

Drilling Company
Address
City, State, Zip Phone Number Email Address
HODSON WELL

[DRILLED PRIOR TO 1996]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018


[Not in WA DOE database]

Latitude: 46.913704° Longitude: -117.068075° decimal degrees (WGS84)

¼, ¼, ¼, Sec. 6, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
610 North Myott Street, Palouse, Wash., on east side of road

Location Method:
Location is for house; location and elevation from Duncan and Bush (1999, Well 59); Whitman County Assessor; Google Earth imagery; topographic map. Site plots in Government Lot 3 (which is north of NE¼, NW¼, section 6); log for well is from Ralston (1996).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>22</td>
</tr>
<tr>
<td>Basalt</td>
<td>63</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>206</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 107350009050001, 610 N MYOTT ST, PALOUSE BREEDINGS ADD E OF F ST, owner now is WRIGHT, MILTON ANTHONY; one story residence built in 1979.

Metsker Maps (1957) showing sec. 6, T. 16 N, R. 46 E.

References Cited:


16/46 5 se/nw Siebert
0 - 3 soil
3 - 63 basalt
63 - 64 clay
64 - 136 basalt
136 - 165 clay
165 - 185 shale, brown, water

16/46 6 ne/nw Hodson
0 - 1 soil
1 - 22 clay
22 - 63 basalt, soft, water
63 - 206 basalt
206 - 220 sand, no water

16/46 6 sw/ne Mike Carlson
0 - 2 soil
2 - 20 clay
20 - 73 basalt
73 - 91 basalt, weathered
91 - 105 basalt

16/46 6 north 1/2 Bruce Reiber
0 - 2 soil
2 - 25 clay
25 - 62 basalt
62 - 72 basalt, fractured
72 - 188 basalt
188 - 205 sand, white

16/46 6 lot 2 Tom Boone
0 - 14 clay
14 - 160 basalt
160 - 180 sand, white

16/46 6 nw/se Al Bruns
0 - 2 soil
2 - 83 clay
83 - 209 basalt
209 - 210 basalt, fractured
210 - 212 basalt

16/46 17 se/se Duane Hahn
0 - 2 soil
2 - 6 clay
6 - 27 granite, decomposed
27 - 151 sand and clay
151 - 179 basalt
179 - 199 clay
199 - 205 sand, quartz

DTW = ??  Q = 30 gpm

DTW = ??  Q = 7 gpm

DTW = 43'  Q = 30 gpm

DTW = 172'  Q = .12 gpm

DTW = 120  Q = 15 gpm

DTW = 92'  Q = 30 gpm

DTW = 82'  Q = 20 gpm
**Geologic Interpretation of Water Well Driller’s Log**

By John H. Bush, April 27, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>883111</th>
<th>Elev (ft):</th>
<th>2560 ±10</th>
<th>Depth (ft):</th>
<th>300</th>
<th>Quad:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Elberton</td>
</tr>
<tr>
<td>Latitude:</td>
<td>46.881507</td>
<td>Longitude:</td>
<td>-117.149509</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SE ¼, SE ¼, SW ¼, Sec. 9, T. 16N, R. 45E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
3224 Fugate Road, Palouse, Wash., on north side of road opposite entrance to Kamiak Butte County Park

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions and section are incorrect on driller’s report

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
<td>3</td>
<td>89</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating weathered and hard</td>
<td></td>
<td>89</td>
<td>272</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, blue green</td>
<td></td>
<td>272</td>
<td>300</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516093790, 3224 FUGATE RD 99161, LOT A JOHNSON FUGATE RD SHPLT, owners are HODSON, JEREMY/JACKLYN; 5.50 acres; grantors were JOHNSON, JOHN N/ LILA J, on 06/14/11.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission** (/"x" in circle)
- **Construction**
- **Decommission ORIGINAL INSTALLATION**

**Notice of Intent Number**

<table>
<thead>
<tr>
<th>PROPOSED USE</th>
<th>Domestic</th>
<th>Industrial</th>
<th>Municipal</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeWater</td>
<td>Irrigation</td>
<td>Test Well</td>
<td>Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF WORK</th>
<th>Owner's number of well (if more than one)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New well</td>
<td>Recommissioned</td>
</tr>
<tr>
<td>Drilled</td>
<td>Condensed</td>
</tr>
<tr>
<td>Diameter</td>
<td>6 in.</td>
</tr>
<tr>
<td>Depth</td>
<td>30 ft.</td>
</tr>
</tbody>
</table>

**CONSTRUCTION DETAILS**
- **Casing**
  - Welded
  - Diam. from 12 in. to 36 in.
- **Installed**
  - Liner installed
  - Diam. from 12 in. to 36 in.
- **Perforations**
  - Yes | No

**CONSTRUCTION OF DECOMMISSION PROCEDURE**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CLAY BROWN</td>
<td>3</td>
<td>89</td>
</tr>
<tr>
<td>BASALT HARD BLACK</td>
<td>89</td>
<td>163</td>
</tr>
<tr>
<td>BASALT WEATHERED BROWN</td>
<td>163</td>
<td>167</td>
</tr>
<tr>
<td>BASALT HARD BLACK</td>
<td>167</td>
<td>267</td>
</tr>
<tr>
<td>BASALT WEATHERED</td>
<td>267</td>
<td>272</td>
</tr>
<tr>
<td>CLAY BLUE GREEN</td>
<td>272</td>
<td>300</td>
</tr>
</tbody>
</table>

**WELL LEVELS**
- **Land-surface elevation above mean sea level** 7 ft.
- **Static level**
  - Date: 6/23/14
  - Artesian pressure: 10 lbs. per square inch
  - Artesian water controlled by (cap, valve, etc.)

**WELL TESTS**
- **Drawdown**
  - Water level is lowered below static level
  - Yield: gal/min.
  - Drawdown after hrs.

**Drill Date**
- Date of test: 6/23/14

**Artesian Analysis**
- Yield: gal/min.
- Stem set at 200 ft. for 1 hrs.
- Artesian flow: g.p.m.
- Date:

**WELL CONSTRUCTION CERTIFICATION**
- Driller
- Engineer
- Trainee
- Name (mon): TED WRIGHT

**Driller/Engineer/Trainee Signature**

**Driller or trainee License No.**

**IF TRAINEE: Driller's License No.**

**Driller's Signature:**

**ECY 050-1-20 (Rev 06/08)**

If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
# Geologic Interpretation of Water Well Driller’s Log

**By John H. Bush, August 4, 2016; November 9, 2017**

**STEPHEN HOLSTAD WELL 1**

[Drilled in 2002]

Geologic Interpretation of Water Well Driller’s Log

Well Log ID: 619757  Elev (ft): 2447  Depth (ft): 280  Quad: Pullman

Latitude: 46.741790  Longitude: -117.194390  decimal degrees (WGS84)

| ¼,  NE ¼,  SW ¼,  Sec. 31,  T. 15 N,  R. 45 E |

Well Address and (or) Other Location Information:

2782 Brayton Road, Pullman, Wash.; on east side of road; on hill above basalt quarry

**Location Method:**
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-12) are for house at this address; Whitman County Assessor; Google Earth imagery; topographic map. PLSS range, street number, city, and tax parcel are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 – 2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, hard 2 – 103</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>Clay (shale), black 103 – 106</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, weathered 106 – 151</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard 151 – 233</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td>Basalt, broken 233 – 280</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 121700007160000, 2782 BRAYTON RD, PULLMAN FARRS 3RD; owners are HOLSTAD, STEPHEN/DONNA.

References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle) Decommission ORIGINAL INSTALLATION

PROPOSED USE:  Domestic  Industrial  Municipal
               DeWater  Irrigation  Test Well  Other

TYPE OF WORK: Owner's number of well (if more than one)
               New well  Reconditioned  Method:  Dog  Drilled
               Deepened  Cable  Rotary  Jetted

DIMENSIONS: Diameter of well 8 inches, drilled 280 ft.
Depth of completed well 280 ft.

CONSTRUCTION DETAILS

Casing:  Yes  No

Installed:  Yes  No  K-Pac

Manufacturer's Name ____________________________

Type ____________________________  Model No. ____________________________

Dia. Dia.  from  from
Slot size Slot size

Gravel/Filter packed:  Yes  No  Size of gravel/sand

Materials placed from  to  ft.

Surface Seal:  Yes  No  To what depth? 20 ft.

Material used in seal BENTONITE

Did any strata contain unusable water?  Yes  No

Type of strata ____________________________  Depth of strata ____________________________

Method of sealing strata off ____________________________

PUMP:  Manufacturer's Name ____________________________

Type: ____________  H.P. ____________________________

WATER LEVELS: Land-surface elevation above mean sea level ____________ ft.
Static level 209 ft. below top of well  Date 5/26/02
Artesian pressure ____________ lbs. per square inch  Date ____________________________
Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made?  Yes  No

If no, by whom? ____________________________

Yield: gal/min. with ____________ ft. drawdown after ____________ hrs.

Yield: gal/min. with ____________ ft. drawdown after ____________ hrs.

Yield: gal/min. with ____________ ft. drawdown after ____________ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test ____________________________

Bailer test: gal/min. with ____________ ft. drawdown after ____________ hrs.

Arties 40 gal./min. with stem set at 275 ft. for 1 hrs.

Artesian flow 11 g.p.m. Date ____________________________

Temperature of water ____________ Was a chemical analysis made?  Yes  No

WELL CONSTRUCTION CERTIFICATION:  I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.  Materials used and the information reported above are true to my best knowledge and belief.

Driller  Engineer  Trainee  Name (print) TED WRIGHT

Driller or trainee License No.

If trainee: Driller's License No.

Driller's Signature ____________________________

Drilling Company MCPHERSON & WRIGHT DRILLING

Address 2246 BURRELL

City, State, Zip LEWISTON, ID, 83501

Contractor's Registration No. MCPFWD1351  Date 8/23/09

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL: FROM TO

SOIL BLACK 0 2

BASALT STRONG BLACK 2 103

SHALE BLACK SOFT 103 106

BASALT WEATHERED WEAK 106 151

BASALT STRONG BLACK 151 233

BASALT BROKEN MODERATE 233 280

Start Date 5/23/02  Completed Date 5/26/02

SEP 11 1909

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

701
STEPHEN HOLSTAD WELL 2

[DRILLED IN 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August, 2016; November 9, 2017

Well Log ID: 510955  Elev (ft): 2339  Depth (ft): 125  7.5’ Quad: Pullman

Latitude: 46.740330  Longitude: -117.191010  decimal degrees (WGS84)

¼, NW ¼, SE ¼, Sec. 31, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
3252 Brayton Road, Pullman, Wash.; on northeast side of road (opposite Hayward Road); SYG Nursery and Landscaping, Inc.

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-13). Whitman County Assessor; Google Earth imagery; topographic map. PLSS township and tax parcel are incorrect on driller’s report.

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Overburden and Latah Formation Clay</td>
</tr>
<tr>
<td>Grande Ronde Basalt NZ magnetostratigraphic unit Sentinel Bluffs Member Basalt, hard</td>
</tr>
<tr>
<td>Basalt, fractured</td>
</tr>
</tbody>
</table>
Comments:

A poorly exposed outcrop of the Spokane Falls unit (Outcrop 17) occurs up the hill (in ditch along north side of road) about 900 ft west of the well site.

Whitman County Tax Parcel 121700008020000, PULLMAN FARRS 3RD BAL SYG NURSERY 8.453 AC, owners are HOLSTAD, STEPHEN/DONNA.

References Cited:

WATER WELL REPORT
Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle)

☐ Construction
☐ Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned ☐ Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 75 ft.
Depth of completed well 125 ft.

CONSTRUCTION DETAILS

Casing: Welded 6" diam. from +2 ft. to +18 ft.
Installed: Liner installed 4.5" diam. from +5 ft. to +125 ft.
☐ Threaded: " diam. from +2 ft. to +18 ft.

Perforations: ☐ Yes ☐ No

Type of perforator used: SAW

SIZE of perfs 1/8", by 4 in. and no. of perfs 22 from 5 ft. to 125 ft.

Screens: ☐ Yes ☐ No ☐ K-Pac

Manufacturer's Name

Type: __________________________
Model No. _______________________

Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel/Filter packed: ☐ Yes ☐ No

Size of gravel/sand _______

Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No

To what depth? +18 ft.

Material used in seal: BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water: __________________________

Depth of strata _______

Method of sealing strata off _______

PUMP: Manufacturer's Name N/A

Type: __________________________
H.P. __________________________

WATER LEVELS: Land-surface elevation above mean sea level _______ ft.

Static level 85 ft. below top of well Date 12/04/07

Artesian pressure lbs. per square inch Date _______

Artesian water is controlled by _______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No

If yes, by whom? __________________________

Yield:_________ gal./min. with ______ ft. drawdown after hrs.

Yield:_________ gal./min. with ______ ft. drawdown after hrs.

Yield:_________ gal./min. with ______ ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Date of test _______

Bailer test:_________ gal./min. with ______ ft. drawdown after hrs.

Airest:_________ gal./min. with stem set at 125 ft. for 1.5 hrs.

Artesian flow _______ g.p.m. Date _______

Temperature of water 55. Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee

Name (print) BRETT UHLENKOTT

Driller/Engineer/Trainee Signature __________________________

Driller or trainee License No. 2697

IF TRAINEE: Driller's License No: __________________________

Driller's Signature: __________________________

CURRENT

Notice of Intent No. W 244003

Unique Ecology Well ID Tag No. AHF 616

Water Right Permit No.

Property Owner Name STEPHAN HOLST AD

Well Street Address 1252 BRAIDY RD

City PULLMAN County WHITMAN

Location NW 1/4 SE 1/4 Section 11 Township 41 Range 45

Lat/Lon Lat Deg ______ Long Min/Sec ______

Long Deg ______ Long Min/Sec ______

Tax Parcel No. (Required) 1-2170-00-08-01-000-56

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>BROWN CLAY</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>MED HARD BASALT</td>
<td>15</td>
<td>98</td>
</tr>
<tr>
<td>FRACTURED BLACK BASALT</td>
<td>98</td>
<td>125</td>
</tr>
</tbody>
</table>

RECEIVED

JAN 07 2007

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

RECEIVED

JAN 10 2008

DEPARTMENT OF ECOLOGY
EASTERN REGION OFFICE

Drilling Company TWO U DRILLING, LLC
Address PO BOX 104
City, State, Zip COTTONWOOD, ID, 83522
Contractor's Registration No. RAYUILOPO770A Date 12-28-07

ECY 050-1-20 (Rev. 6/07)
MARY HONNEF WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 4, 2016


Latitude: 46.773482   Longitude: -117.128030 decimal degrees (WGS84)

Location: ¼, SE ¼, NW ¼, Sec. 22, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
2351 Whelan Road, Pullman, Wash., on southeast side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 18</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>18 – ?</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>? – 350</td>
</tr>
</tbody>
</table>
Comments:

This well begins in clay, then encounters the Lolo flow, and ends in the Grande Ronde, but driller's log shows no indication of where the contact might be between the two units.

Whitman County Tax Parcel 200004515222490, 2351 WHELAN RD, NW1/4 PT SE1/4 WEXLER SHRT PLT #2, owner is HONNEF, MARY E; 1.1 acres.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

- Construction
- Decommission
- ORIGINAL INSTALLATION
- Notice of Intent Number

**Proposed Use:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**Type of Work:**
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Drilled
- Deepened
- Diameter
- Drilled
- Diameter
- Drilled
- Diameter
- Drilled

**Dimensions:**
- Diameter of well 6 in., drilled 350 ft.
- Depth of completed well

**Construction Details:**
- Casing: Welded 6" Diameter from 2 ft. to 18 ft.
- Installed: 4 1/2" Diameter from 10 ft. to 350 ft.
- Threaded: 4 1/2" Diameter from to ft.

**Perforations:**
- Yes: No
- Type of perforator used: SAW

**Screen:**
- Yes: No
- No X-loc Location

**Manufacturer's Name:**

**Type:**

**Material:**

**Gravel/Filter packed:**
- Yes: No
- Size of gravel/sand
- Materials placed:

**Surface Seal:**
- Yes: No
- To what depth: 10 ft.

**Material used in seal:**

**Did any strata contain unusable water:**
- Yes: No

**Type of water:**

**Method of sealing strata off:**

**Pump:**

**Manufacturer's Name:**

**Type:**

**Water Levels:**
- Land surface elevation above mean sea level
- Static level:
- Top of well:
- Date:

**Artesian pressure:**
- lbs. per square inch
- Date:

**Artesian water is controlled by:**
- (cap, valve, etc.)

**Well Tests:**
- Drawdown at a constant water level is lowered below static level
- Was a pump test made?
- Yes: No
- If yes, by whom:

**Yield:**
- gal/min. with ft. drawdown after hrs.
- gal/min. with ft. drawdown after hrs.
- gal/min. with ft. drawdown after hrs.

**Recovery date (time taken as zero when pump turned off):**
- Water level measured from well top to water level

**Time:**
- Water Level:
- Time:
- Water Level:
- Time:
- Water Level:

**Date:**
- Test:
- Water Level:
- Date:

**Boiler test:**
- gal/min. with ft. drawdown after hrs.
- Test:
- gal/min. with steam set at hrs. for 1.5 hrs.
- Artesian flow:
- g.p.m.
- Date:

**Temperature of water:**
- 55
- Was a chemical analysis made?
- Yes: No

**WELL CONSTRUCTION CERTIFICATION:**
- I, constructed and/ or accept responsibility for construction of this well, and its compliance with all Washington well construction and installation. Materials used and the information reported above are true to the best of my knowledge and belief.

- Driller: 
- Engineer: 
- Trainer: 
- Name: BRETTUHLENKORT

**Driller/Engineer/Trainer Signature:**

**Driller or Trainer License No.:**
- 2697

**IF TRAINEE:**
- Driller's License No.: 

**WELL CONSTRUCTION REPORT:**

**Drilling Company:** 
- TWO U DRILLING, LLC

**Address:**
- PO BOX 104

**City, State, Zip:**
- COTTONWOOD, ID, 83522

**Contractor's Registration No.:**
- RAYUHLP0770A

**Date:**
- 09/30/08

**Drilling Company:**

**Ecology is an Equal Opportunity Employer**
RICK HOOD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 12, 2016

Well Log ID: 810055    Elev (ft): 2480 ±10    Depth (ft): 80    7.5’    Quad: Ewartsville

Latitude: 46.695383    Longitude: -117.326210    decimal degrees (WGS84)

____ ¼,  NE ¼,  SW ¾,  Sec. 18,  T. 14 N,  R. 44 W

Well Address and (or) Other Location Information:
2152 Kamerrer Road, Pullman, Wash., on south side of road

Location Method:
Assumed location is for new house on hill south of farm house; Whitman County Assessor; Google Earth imagery; topographic map.

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Saddle Mountains Basalt(?)</td>
<td>Asotin Member(?)</td>
<td>Basalt</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td></td>
<td>35 – 40</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td>Clay, green</td>
</tr>
<tr>
<td>Wanapum Basalt(?)</td>
<td></td>
<td>Basalt of Lolo(?)</td>
</tr>
<tr>
<td>Priest Rapids Member(?)</td>
<td></td>
<td>Basalt, hard</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004414183900, 2152 KAMERRER RD, SW LTS 3-4 & PT SE 1/4, owner is HOOD, RICKY; 115.0 acres.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

**Proposed Use:**
- Domestic
- Industrial
- Municipal
- Water Right Permit No
- Recommission
- Original Installation
- Notice of Intent Number

**Type of Work:**
- Owner's number of well (of more than one)
- New well
- Reconditioned
- Method
- Drilling
- Deepened
- Cable
- Rotary
- Jetted
- Diameter of well
- Depth of completed well
- Diameter of well
- Depth of completed well

**Construction Details:**
- Casing
- Welded
- Diameter from to
- Installed
- Diameter from to
- Threading
- Diameter from to

**Perforations:**
- Yes
- No
- Type of perforator used
- SAW

**Screening:**
- Yes
- No
- K-Pac
- Location

**Manufacturer's Name:**
- Type
- Model No
- Diameter from to
- Diameter from to

**Gravel/Filter packed:**
- Yes
- No
- Size of gravel/sand

**Surface Seal:**
- Yes
- No
- To what depth

**Material used in seal:**
- BENTONITE

**Did any strata contain unusable water?**
- Yes
- No

**Type of water:**
- Depth of strata

**Method of sealing strata off:**

**Pump:**
- Manufacturer's Name
- Type

**Water Levels:**
- Land-surface elevation above mean sea level
- Static level below top of well
- Date
- Artesian pressure
- Artesian water is controlled by

**Well Tests:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- No
- If yes, by whom?
- Yield
- With feet
- Drawdown after hours

**Recovery data (time taken as zero when pump turned off):**
- Water level measured from well top to water level

**Well Construction Certification:** I constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

**Driller:**
- Name (first)
- TED WRIGHT

**Contractor's:**

**Drilling Company:**
- MCPHERSON & WRIGHT DRILLING
- Address
- City, State, Zip
- ID

**Persons with hearing loss can call 711 for Washington Relay Service.**

**Persons with a speech disability can call 877-833-6341.**
ALLEN HOOD WELL 1

[DRILLED IN 1975]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 12, 2016

Well Log ID: 162969
Elev (ft): 2500 ±10
Depth (ft): 202
7.5' Quad: Moscow West

Latitude: 46.683336
Longitude: -117.092159
decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 24, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
3302 Sand Road, Pullman, Wash., on north side of road

Location Method:
Assumed location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect and owner's first name misspelled on driller's report. Site drive by (April 12, 2016), John Deere mailbox.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>8 – 68</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>68 – 69</td>
</tr>
<tr>
<td>Basalt</td>
<td>69 – 122</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>122 – 124</td>
</tr>
<tr>
<td>Sand, white</td>
<td>124 – 202</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004514242800, HAYNES NW1/4 S1/2 RICKY HOOD-ETAL; owner now is HOOD, RICKY ETAL (3103 STALEY RD); 80.0 acres.

Ricky Hood is likely the son of Allen Hood (Kimball Funeral Home and Crematory, 2010).

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: ALAN HOOD Address: PULLMAN WASH.

(2) LOCATION OF WELL: County - WASHINGTON

(3) PROPOSED USE: Domestic [x] Industrial [] Municipal []

(4) TYPE OF WORK: New Well [x] Method: Dug [] Bored []
Deepered [] Cable [] Driven []
Reconditioned [] Rotary [] Jetted []

(5) DIMENSIONS: Diameter of well 6 inches
Drilled: ft. Depth of completed well: 202 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: Diam. from 4.2 ft. to 18 ft.
Threaded [] Diam. from ft. to ft.
Welded [] Diam. from ft. to ft.

Perforations:
Yes [x] No []
Type of perforator used:

SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens:
Yes [x] No []
Manufacturer's Name:

Type:
Model No:

Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed:
Yes [x] No []
Size of gravel:
Gravel placed from ft. to ft.

Surface seal:
Yes [x] No []
To what depth? 15 ft.
Material used in seal: BENTONITE SLURRY
Did any strata contain unusable water? Yes [] No []
Type of water:
Depth of strata:
Method of sealing strata off:

(7) PUMP:
Manufacturer's Name:
Type:

(8) WATER LEVELS:
Land-surface elevation above mean sea level . 2500.1 ft.
Static level: 18 ft. below top of well Date: 5/25/76
Artesian pressure lbs. per square inch Date:
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [x] No [] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test
Collector test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water °F. Was a chemical analysis made? Yes [] No []

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO

CLAY 6 8
BASALT GRAY 8 68
BASALT GRAY FRAGMENTS 68 69
WATER BEARING 69 124
BASALT GRAY 124 124
SHALE BLACK 124 202
SAND - DRY WHITE 202

SAND AREA 124-202 ASBORD THE WATER - PUT IN A BENTONITE SLURRY TO MAKE THE WATER COME BACK UP.
HOLE SEEM IT COULD BE USED AS OWNER DID NOT WANT TO CASE HOLE.

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME BURNS & WITT
(Person, firm, or corporation) (Type or print)
Address 200 POWERS AVE, LEWISTON, IDAHO
53501
(Signed) B. R. Burns
(Well Driller)
License No. 00 97 Date: 6/15/76

S. F. No. 7356-05 (Rev. 4-71)

18/75

(USE ADDITIONAL SHEETS IF NECESSARY)
**Allen Hood Well 2**

[Drilled August 30, 2011]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, December 12, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 810067</th>
<th>Elev (ft): 2495 ±10</th>
<th>Depth (ft): 230</th>
<th>7.5’ Quad: Moscow West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.682590</td>
<td>Longitude: -117.079893</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:

3902 Sand Road, Pullman, Wash., on north side of road.

**Location Method:**
Assumed location is for manufactured home built in 2011 in SE¼, NE¼, sec. 24; Whitman County Assessor; Google Earth imagery; topographic map. Street number, tax parcel number, and PLSS subdivision are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>
| Overburden
| Clay, brown | 0 | 15 |
| Wanapum Basalt
| Priest Rapids Member
| Basalt of Lolo
| Basalt, hard | 15 | 96 |
| Latah Formation
| Vantage Member
| Clay, tan | 96 | 127 |
| Clay, brown, and sand | 127 | 154 |
| Clay, green | 154 | 195 |
| Grande Ronde Basalt
| N2 magnetostratigraphic unit(?)
| Basalt, hard | 195 | 222 |
| void | 222 | 225 |
| Basalt, hard | 225 | 230 |
Comments:

There are two wells on this property: Allen Hood well 2, and Allen Hood well 3 (drilled September 8, 2011).

Whitman County Tax Parcel 200004514241001, 3902 SAND RD, IMPROVEMENT ONLY ON HOOD LAND (MOBILE HOME); owner of mobile home is TAYLOR, TOM/GLORIA; Manufactured housing, single wide, 40x10 ft, built in 2011; FLEETWOOD WESTON XT.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Notice of Intent Number

PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS Diameter of well 8 inches, drilled 230 ft
Depth of completed well 230 ft

CONSTRUCTION DETAILS

Casing ☐ Welded 8" Diam from 1 ft to 20 ft
Installed: ☐ Liner installed 8" Diam from ft to ft
☐ Threaded 8" Diam from ft to ft

Perforations: ☐ Yes ☐ No

Type of perforator used

SIZE OF perforations in ft and no. of perforations from ft to ft

SCREENS: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name

Type Model No
Diam Slot size from ft to ft
Diam Slot size from ft to ft

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand

Materials placed from ft to ft

Surface Seal: ☐ Yes ☐ No To what depth? 20 ft

Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type HP

WATER LEVELS: Land-surface elevation above mean sea level ft

Static level 155 ft below top of well Date 8/30/11

Artesian pressure lbs per square inch Date

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield gal/min with ft drawdown after hrs
Yield gal/min with ft drawdown after hrs
Yield gal/min with ft drawdown after hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal/min with ft drawdown after hrs

Artesian 7 gal/min with stem set at 225 ft for hrs

Artesian flow gpm Date

Temperature of water 54 Was a chemical analysis made? ☐ Yes ☐ No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation Describe color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY BROWN</td>
<td>0</td>
</tr>
<tr>
<td>BASALT HARD</td>
<td>15</td>
</tr>
<tr>
<td>CLAY TAN</td>
<td>96</td>
</tr>
<tr>
<td>CLAY BROWN &amp; SAND</td>
<td>127</td>
</tr>
<tr>
<td>CLAY GREEN</td>
<td>154</td>
</tr>
<tr>
<td>BASALT HARD</td>
<td>195</td>
</tr>
<tr>
<td>VOID</td>
<td>222</td>
</tr>
<tr>
<td>BASALT HARD</td>
<td>225</td>
</tr>
</tbody>
</table>

Start Date 8/29/11 Completed Date 8/30/11

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☒ Engineer ☐ Trainee Name (Print) TED WRIGHT
Driller/Engineer/Trainee Signature
Driller or Trainee License No. 0532
IF TRAINEE, Driller's License No.
Driller's Signature

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872
Persons with hearing loss can call 711 for Washington Relay Service Persons with a speech disability can call 877-833-6341
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 12, 2016

Well Log ID: 810065
Elev (ft): 2495 ±10
Depth (ft): 105
Quad: Moscow West

Latitude: 46.682590
Longitude: -117.079893
decimal degrees (WGS84)

Well Address and (or) Other Location Information:
3902 Sand Road, Pullman, Wash., on north side of road

Location Method:
Assumed location is for manufactured home built in 2011 in SE¼, NE¼, sec. 24; Whitman County Assessor; Google Earth imagery; topographic map. Street number, tax parcel number, and PLSS subdivision are incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 19</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>19 – 25</td>
</tr>
<tr>
<td>Basalt</td>
<td>25 – 93</td>
</tr>
<tr>
<td>Basalt, weathered, soft</td>
<td>93 – 96</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay, tan</td>
<td>96 – 105</td>
</tr>
</tbody>
</table>
Comments:

There are two wells on this property: Allen Hood well 2 (August 30, 2011), and Allen Hood well 3.

Whitman County Tax Parcel 200004514241001, 3902 SAND RD, IMPROVMENT ONLY ON HOOD LAND (MOBILE HOME); owner of mobile home is TAYLOR, TOM/GLORIA; Manufactured housing, single wide, 40x10 ft, built in 2011; FLEETWOOD WESTON XT.

References Cited:
WATER WELL REPORT
Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller
ECoLlY
Construction/Decommission ("x" in circle)
☐ Construction ☐ Decommission
ORIGINAL INSTALLATION Notice of Intent Number
PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other
TYPE OF WORK: Owner’s number of well (if more than one)
☒ New well ☐ Reconditioned Method ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted
DIMENSIONS: Diameter of well 8 inches, drilled 105 ft
Depth of completed well 105 ft
CONSTRUCTION DETAILS
Casing ☒ Welded 8” Diameter from 11 ft to 30 ft
Installed: ☒ Lauer installed 8” Diameter from 25 ft to 105 ft
☐ Threaded ☐ Drilled From 8” Diameter to ______ ft
Perforations: ☒ Yes ☐ No
Type of perforator used SAW
SIZE of perfor 1/16” by 12 in and ao of perfor 60 ft from 90 ft to 130 ft
Screens ☒ Yes ☐ No ☐ K-Fac Location __________
Manufacturer’s Name __________
Type __________ Model No __________
Diam __________ Slot size __________ from ________ ft to ________ ft
Diam __________ Slot size __________ from ________ ft to ________ ft
Gravel/Filter packed: ☒ Yes ☐ No Size of gravel/sand __________
Materials placed from ________ ft to ________ ft
Surface Seal: ☒ Yes ☐ No To what depth? 30 ft
Material used in seal __________
Did any strata contain unsuitable water? ☐ Yes ☐ No
Type of water? __________ Depth of strata __________
Method of sealing strata off __________
PUMP: Manufacturer’s Name __________
Type __________ H P __________
WATER LEVELS: Land-surface elevation above mean sea level __________ ft
Static level 33 ft below top of well Date 9/9/11
Artesian pressure lbs per square inch Date __________
Artesian water is controlled by __________ (cap, valve, etc.)
WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom __________
Yield gal/min with ______ ft drawdown after ______ hrs
Yield gal/min with ______ ft drawdown after ______ hrs
Yield gal/min with ______ ft drawdown after ______ hrs
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
____ ______ ______ ______ ______
Date of test __________
Baier test gal/min with ______ ft drawdown after ______ hrs
Arttest 7 1/2 gal/min with stem set at 100 ft for 1 hrs
Artesian flow ______ gpm Date __________
Temperature of water 54 Was a chemical analysis made? ☒ Yes ☐ No
WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief
☒ Driller ☐ Engineer ☐ Trainee Name (Prm.) __________
Driller/Engineer/Trainee Signature __________
Driller or trainee License No __________
If TRAINEE Driller’s License No __________
Driller’s Signature __________

CURRENT
Notice of Intent No. W272986
Unique Ecology Well ID Tag No AHR777
Water Right Permit No __________
Property Owner Name ALLEN HOOD __________
Well Street Address 2600 SAND ROAD __________
City PULLMAN County WHITMAN __________
Location NW1/4-1/4 NE1/4 Sec 24 Twn 14N R 45 EWM __________
(s, t. r. Still REQUIRED) __________
Lat/Long Lat Deg ______ Lat Min/Sec ______
Long Deg ______ Long Min/Sec ______
Tax Parcel No (Required) 20004514242100 __________

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information (USE ADDITIONAL SHEETS IF NECESSARY)
MATERIAL FROM TO

CLAY BROWN 0 19
BASALT BROKEN 19 25
BASALT HARD 25 93
BASALT WEATHERED SOFT 93 96
SAND & CLAY TAN 96 105

Start Date 9/6/11 Completed Date 9/8/11

Drilling Company MCPHERSON & WRIGHT DRILLING
Address 2246 BURRELL
City, State, Zip LEWISTON, ID, 83501
Contractor’s Registration No mcphed135nl Date 10/3/11

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6672
Persons with hearing loss can call 711 for Washington Relay Service Persons with a speech disability can call 877-833-6347
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 31, 2018

Well Log ID: 318107
Elev (ft): 2510 ±10
Depth (ft): 305
7.5’
Quad: Albion

Latitude: 46.797422°
Longitude: -117.137888°
decimal degrees (WGS84)

SW ¼, NW ¼, SW ¼, Sec. 10, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1871 Rose Creek Road, Pullman, Wash.; on southwest side of Rose Creek Road and northwest side of State Route 27, at corner of intersection

Location Method:
Location is for well, at northeast corner of large tan outbuilding and west of smaller tan well house; Whitman County Assessor; Google Earth imagery; topographic map; driller reported incorrect section and ¼-¼ section; tan well house is in driveway area; site visit March 27, 2018

GEOLOGIC UNITS — DESCRIPTION

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<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 To 1</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>From 1 To 8</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 8 To 127</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black and green</td>
<td>From 127 To 149</td>
</tr>
<tr>
<td>Sand</td>
<td>From 149 To 155</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered brown</td>
<td>From 155 To 295</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>From 295 To 299</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 299 To 305</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515103901, 1871 ROSE CREEK RD 99163, SW 1 AC, owner now is DENTLER, BRIAN; 1.0 acre; 08/01/08: grantors were HORNING, LANCE/KIM to DENTLER, BRIAN/CHERYL; 4/10/2014: building permit for NEW 1120SF GARAGE WITH A 891 SF RESIDENCE ABOVE; one story residence built in 1909.

Well appears to be just to left of garbage can by large brown outbuilding; small tan structure is well house.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON
Notice of Intent
W124216
UNIQUE WELL I.D. # AFE 137

(1) OWNER: Name LANCE HORMING
Address PO BOX 118, ALBION, WA 99102

(2) LOCATION OF WELL: County WHITMAN
(2a) STREET ADDRESS OF WELL (or nearest address) 7232 SR 27 PULLMAN WA, 99163

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one) [X] New Well Method:
[ ] Deepened [ ] Dug [ ] Bored [ ] Reconditioned [ ] Cable [ ] Driven [ ] Decommission [ ] Rotary [ ] Jetted

(5) DIMENSIONS: Diameter of well 8 & 6 inches. Drilled 255 feet. Depth of completed well 255 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: [X] Welded 8" Diam. from +1 ft. to 20 ft.
Liner installed 6" Diam. from 15 ft. to 180 ft.
Threaded 6" Diam. from 15 ft. to 180 ft.

Perforations: [ ] Yes [X] No
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: [X] Yes [ ] No [ ] K-Pac Location
Manufacturer's Name
Type
Model No.
Diam. from ft. to ft.
Slot size from ft. to ft.
Diam. from ft. to ft.
Slot size from ft. to ft.

Gravel/Filter packed: [X] Yes [ ] No [ ] Size of gravel/sand
Material placed from ft. to ft.

Surface seal: [X] Yes [ ] No To what depth? 20 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? [ ] Yes [X] No
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level ft.
Static level 203 ft. below top of well Date 8/24/2001
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No if yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Water Level

Boiler test gal./min. with ft. drawdown after hrs.
Air test 15 gal./min. with stem set at 280 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water
Was a chemical analyses made? [ ] Yes [X] No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation, Describe by color, character, size of material and structure, and kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL FROM TO
SOIL
CLAY BROWN 0 1
BASALT HARD GRAY 8 127
SHALE BLACK 127 134
CLAY GREEN 134 149
SAND 149 155
BASALT WEATHERED BROWN 155 295
BASALT BROKEN GRAY 295 299
BASALT HARD GRAY 299 305


WELL CONSTRUCTION CERTIFICATION:
I, the undersigned, do hereby certify that the materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name TED WRIGHT
(Licensed Driller/Engineer)
Trainee Name GARY WRIGHT
License No. 2596T
Drilling Company MCPHERSON & WRIGHT DRILLING
(Signed) (Licenced Driller/Engineer)
Address 2246 BURRELL, LEWISTON ID,83501
Contractor's Registration No. MCPHEWD135N1 Date 1/1/02 19

(USE ADDITIONAL SHEETS IF NECESSARY)
Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6800. The TDD number is (360) 407-6006.
ANDREW AND ANDREA HOWELL WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 4, 2016; November 9, 2017

Well Log ID:  617100  Elev (ft):  2480 ±10  Depth (ft):  305  7.5’
            Quad:  Albion

Latitude:  46.777674  Longitude:  -117.220789  decimal degrees (WGS84)

           ¼,  NW  ¼,  NW  ¼,  Sec.  24,  T.  15 N,  R.  44 E

Well Address and (or) Other Location Information:
1992 Pullman-Albion Road, Pullman, Wash, on north side of road, at end of a long driveway (~0.3 mi long)

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Owners' last name and well address incorrect on driller's report, but PLSS and tax parcel number are okay.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>64</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>115</td>
</tr>
<tr>
<td>*Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>187</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>258</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>281</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>286</td>
</tr>
</tbody>
</table>
Comments:

*The well is less than a mile northeast of a Roza outcrop on Pullman-Albion Road. But 1.5 mi to the southeast is the DOE Banner Road well where the Roza is missing (Conrey and others, 2013). I believe the Roza is absent at this well, but there are no definitive data.

Whitman County Tax Parcel 200004415242290, 1992 PULLMAN-ALBION RD, NW1/4 PT NW1/4 N OF RD; owners are HOWELL, ANDREW/ANDREA; 35.0 acres.

References Cited:

WATER WELL REPORT

Construction/Decommission: (x” in circle)

Notice of Intent Number 358056

PROPOSED USE: ☑ Domestic ☐ Industrial ☐ Municipal

DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)

☐ New well ☐ Reconditioned Method: ☐ Deg ☐ Cable ☐ Bored ☐ Driven

Depth Diam of well 8” inches, drilled 350 ft.

Depth of completed well 3-56

CONSTRUCTION DETAILS

Casing: ☐ Welded 4” Diam. from ±1 ft. to 71 ft.

 Installed: ☐ Liner installed 6” Diam. from ±85 ft. to 350 ft.

☐ Threaded “ Diam. From ± __________ ft. to __________ ft.

Perforations: ☐ Yes ☐ No

Type of perforator used SAW

SIZE of perfs 1/8 in. by 1/2 in. and no. of perfs 90 from 245 ft. to 305 ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name

Type Model No.

Diam Slot size from ft. to ft.

Diam Slot size from ft. to ft.

Gravel/Filter packet: ☐ Yes ☐ No Size of gravel/sand __________

Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth 71 ft.

Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water __________________ Depth of strata __________

Method of sealing strata off __________________

PUMP: Manufacturer's Name

Type H.P.

WATER LEVELS: Land-surface elevation above mean sea level __________ ft.

Static level 212 ft. below top of well Date 6/6/04

Artesian pressure ___ lbs. per square inch Date __________________

Artesian water is controlled by (cap, valve, etc.) __________________

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom? __________________

Yield: _____ gal/min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal/min. with _____ ft. drawdown after _____ hrs.

Yield: _____ gal/min. with _____ ft. drawdown after _____ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test __________________

Bailer test: _____ gal/min. with _____ ft. drawdown after _____ hrs.

Airest _____ gal/min. with stem set at 3000 ft. for hrs.

Artesian flow _____ g.p.m. Date __________________

Temperature of water __________ Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (last) TED WRIGHT

Driller/Engineer/Trainee Signature ____________________

Driller or trainee License No.

IF TRAINEE: Driller's License No.

Driller's Signature ____________________

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-476-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**ROSS HOWELL WELL**

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, March 24, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>172666</th>
<th>Elev (ft):</th>
<th>2498.59</th>
<th>Depth (ft):</th>
<th>305</th>
<th>7.5’ Quad: Albion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.798545</td>
<td>Longitude:</td>
<td>-117.176587</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼, NW ¼, SW ¼, Sec. 08', T. 15 N', R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
1302 Banner Road, Howell Farms, Pullman, Wash., on south side of road

**Location Method:**
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); "1302, Howell Farms" on mailbox; Albion quadrangle Well 15 of Bush and Garwood (2005 [2006]). Site visit (April 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member Basalt</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>21</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>126</td>
</tr>
<tr>
<td>Grande Ronde Basalt N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member Basalt, hard</td>
<td>130</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?) Basalt, weathered</td>
<td>195</td>
</tr>
<tr>
<td>Basalt</td>
<td>234</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>244</td>
</tr>
</tbody>
</table>
Comments:

Correlations of contacts are based solely on comparisons to elevations and thicknesses to surrounding wells and to DOE Banner Road Well described by Conrey and others (2013). It is similar to DOE Banner Road well; however, no interbed noted.

Whitman County Tax Parcel 200004515083700, 1554 BANNER RD, PULLMAN, SW 1/2, owner now is HOWELL, JOHN; 78.0 acres; 1½ story residence built in 1899.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name ROSS HOWELL
Address 127 1st Ave 293 - Pullman, WA 99163

LOCATION OF WELL:
County WHITMAN

STREET ADDRESS OF WELL (or nearest address):

PROPOSED USE:

- Domestic
- Irrigation
- Industrial
- Municipal
- DeWater
- Test Well
- Other

TYPE OF WORK:

- Owner's number of well
- Method: Dug
- Bored
- Deepened
- Reconditioned
- Rotary
- Jetted

DIMENSIONS:

- Diameter of well: 8 x 4 inches.
- Drilled: 305 feet. Depth of completed well: 305 ft.

CONSTRUCTION DETAILS:

- Casing Installed: 9 Diam. from: 1 ft. to: 27 ft.
- Welded
- Liner Installed
- Threaded

- Perforations: Yes No

- Type of perforator used
- Size of perforations
- perforations from: in. to: in.
- Depth of strata:

- Screens: Yes No

MATERIAL

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
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<tr>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>126</td>
<td>146</td>
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<tr>
<td>126</td>
<td>130</td>
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<tr>
<td>130</td>
<td>195</td>
</tr>
<tr>
<td>175</td>
<td>234</td>
</tr>
<tr>
<td>234</td>
<td>305</td>
</tr>
</tbody>
</table>

CONSTRUCTION DETAILS:

- Type of water:
- Method of sealing strata off

PUMP:

- Manufacturer's Name
- Model No.
- Type

WATER LEVELS:

- Static level above mean sea level: 126 ft.
- Artesian pressure in lbs. per square inch: Date
- Artisan water is controlled by (Cap, valve, etc.)

WELL TESTS:

- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from top to water level)

- Temperature of water Was a chemical analysis made? Yes No

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: MCRWESON & WRIGHT DRILLING

License No. 0523

Address 2215 Buning

Contractor's Registration No. 1351

Date 7-8-90

(USE ADDITIONAL SHEETS IF NECESSARY)
DOUG HUGHES WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 25, 2016

Well Log ID: NA Elev (ft): 3260 ±10 Depth (ft): 404 7.5’ Quad: Robinson Lake

Latitude: 46.814950 Longitude: -117.000782 decimal degrees (WGS84)

1/4, NW 1/4, NW 1/4, Sec. 17, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1025 Joyce Road, Moscow, Idaho; north side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 38</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>*Sand and clay(?)</td>
<td>38 – 54</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite, mostly hard</td>
<td>54 – 404</td>
</tr>
</tbody>
</table>
Comments:

*Reported as soft granite by driller.

Latah County Tax Parcel RP017500000090, 1025 JOYCE RD, owner is HUGHES, DOUGLAS A; NEARING’S 3RD ADD, LOT 9.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Doug Hughes
Address: Moscow
Drilling Permit No.: 87-91-N-3
Water Right Permit No.: _____________________________

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other ___________________________ (specify type)

4. METHOD DRILLED

☐ Rotary  ☑ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other
Thickne of Casing Diameter: 8.50 inches
Depth: 8 inches + 1 foot 5.7 feet

Was casing drive shoe used?  ☐ Yes  ☐ No
Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No
How perforated?  ☐ Factory  ☐ Knife  ☐ Torch  ☐ Gun
Size of perforation inches by inches
Number of perforations From  To
Well screen installed?  ☐ Yes  ☐ No
Manufacturer’s name _____________________________
Type __________________ Model No. __________________
Diameter _______________ Slot size _______________ Set from _______________ feet to _______________ feet
Diameter _______________ Slot size _______________ Set from _______________ feet to _______________ feet
Gravel packed?  ☐ Yes  ☐ No  ☐ Size of gravel
Placed from _______________ feet to _______________ feet
Surface seal depth _______________ Material used in seal:  ☐ Cement grout
☐ Bentonite  ☐ Puddling clay
Sealing procedure used:  ☐ Slurry pit  ☐ Temp. surface casing
☐ Overbore to seal depth
Method of joining casing:  ☐ Threaded  ☐ Welded  ☐ Solvent Weld
☐ Cemented between strata
Describe access port _____________________________

6. LOCATION OF WELL

Sketch map location must agree with written location.

N

W

S

E

County: Latah
Lot No.: 4109
Block No.: ___________________________

7. WATER LEVEL

Static water level: 100 feet below land surface.
Flowing?  ☐ Yes  ☐ No  ☐ G.P.M. flow
Artesian closed-in pressure: ___________ p.s.i.
Controlled by:  ☐ Valve  ☐ Cap  ☐ Plug
Temperature ___________  ☐ Of  ☐ Quality
Describe artesian or temperature zones below ___________________________

8. WELL TEST DATA

☐ Pump  ☐ Bailer  ☐ Air  ☐ Other
Discharge G.P.M. ___________ Pumping Level ___________ Hours Pumped ___________
Approx. 1

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore No.</th>
<th>Depth From</th>
<th>To</th>
<th>Material</th>
<th>Water Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>0 to 38</td>
<td></td>
<td>overburden</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>38 to 54</td>
<td></td>
<td>Silt, sand</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>54 to 94</td>
<td></td>
<td>grani. Fm.</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>94 to 112</td>
<td></td>
<td>grani. Fm.</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>112 to 114</td>
<td></td>
<td>Fm.</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>114 to 116</td>
<td></td>
<td>Fm.</td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>116 to 120</td>
<td></td>
<td>Fm.</td>
<td></td>
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<tr>
<td>120</td>
<td>120 to 126</td>
<td></td>
<td>Fm.</td>
<td></td>
</tr>
<tr>
<td>126</td>
<td>126 to 132</td>
<td></td>
<td>Fm.</td>
<td></td>
</tr>
<tr>
<td>132</td>
<td>132 to 140</td>
<td></td>
<td>Fm.</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>140 to 145</td>
<td></td>
<td>Fm.</td>
<td></td>
</tr>
</tbody>
</table>

10. Work started ___________ finished ___________

11. DRILLERS CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Witt Well Drilling
Firm No.: ______
Address: ___________ Leesville Date ___________

Signed by (Firm Official) ___________________________
and (Operator) ___________________________

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
ICE PLANT WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 4, 2016

Well Log ID: NA Elev (ft): 2342.6 Depth (ft): 95
7.5’
Quad: Pullman

Latitude: 46.729266 Longitude: -117.177684 decimal degrees (WGS84)


¼, SW ¼, NW ¼, Sec. 5, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
SE Paradise Street, Pullman, Wash., west side of road and south of intersection with E Main Street, northwest of the old Nazarene Church.

Location Method:
Approximate location from map by DeMotte and Miles (1933, Map 1, Well 4); Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>10</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>15</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, some lignite</td>
<td>45</td>
</tr>
<tr>
<td>Clay, vesicular basalt*, fine sand at bottom</td>
<td>65</td>
</tr>
</tbody>
</table>
Comments:

*The vesicular basalt noted in the bottom 30 ft could be pieces of the upper Grande Ronde or lower Lolo. The elevation of the base of the well is only 10 ft below the Vantage-Grande Ronde contact in Pullman city well 7. So, in any case, the well was completed primarily in the Vantage Member.

Table 1 (following p. 8 of DeMotte and Miles, 1933) lists the Ice Plant Well (Reference No. 4) as a major artesian well. Elevation at the bottom is 2248 ft, elevation top basalt is 2328 ft, and elevation water surface is 2345.0 ft.

References Cited:

ICE PLANT WELL

Reference No. 4  
Bore 6 in.

Elevation top of casing, 2342.6 ft., plus or minus 0.1 ft.

Depth to water, plus 2.4 ft., plus or minus 0.5 ft., observed, April, 1933.

Depth of well, 95 ft.

Capacity, 30 g.p.m. supplied to pump.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Feet</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>Mud</td>
<td>10</td>
<td>Probably old Palouse channel</td>
</tr>
<tr>
<td>Mud</td>
<td>Basalt</td>
<td>5</td>
<td>Blue mud</td>
</tr>
<tr>
<td>Basalt</td>
<td>Sand</td>
<td>45</td>
<td>Basalt</td>
</tr>
<tr>
<td>Sand</td>
<td>Blue Mud</td>
<td>20</td>
<td>Granitic sand and some lignite</td>
</tr>
<tr>
<td>Blue mud</td>
<td>Porous Basalt</td>
<td></td>
<td>Light blue mud</td>
</tr>
<tr>
<td>Porous basalt</td>
<td>Fine sand</td>
<td></td>
<td>Possibly vesicular basalt</td>
</tr>
<tr>
<td>Fine sand</td>
<td>Bottom</td>
<td></td>
<td>Fine sand</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>95</td>
<td></td>
</tr>
</tbody>
</table>

Remarks:

Some water was obtained at 60 feet. The flow increased with the depth. Drilling was stopped because of excessive overflow. When drilled, estimated flow 240 g.p.m.
Extracted from DeMotte and Miles (1933).

- Wells in Use
- Capped Wells

1. New City
2. Fullman Lane
3. Standard Lane
4. Ice Plant
5. College
6. College
7. Northern Park
8. Old Palace
9. Well Across
10. Palace Hotel
11. Wells in Fring
12. Including Oil
13. Wells Back
14. Streptes
15. Well Below
16. Romay Park
17. Rosey Park
18. Stock Yard
19. Well on Roo
## TABLE I

**DRILLED WELLS IN THE VICINITY OF PULLMAN**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Name of Well</th>
<th>Bl. Top</th>
<th>Bl. of Casing</th>
<th>Bl. Top of Bottom</th>
<th>Bl. Top of Basalt</th>
<th>Bl. Top of Surface</th>
<th>MAJOR ARTESIAN WELLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New City</td>
<td>2340.3</td>
<td>2193</td>
<td>2319</td>
<td>2544.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pullman Laund.</td>
<td>2345.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mdl. Lumb. Co.</td>
<td>2341.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ice Plant</td>
<td>2342.6</td>
<td>2248</td>
<td>2328</td>
<td>2345.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Graham</td>
<td>2362.7</td>
<td>2293</td>
<td>2368</td>
<td>2345.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>College</td>
<td>2366.0</td>
<td>2129</td>
<td>2401</td>
<td>2345</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cemetery</td>
<td>2282</td>
<td>2216</td>
<td>2537</td>
<td>2347</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Koppel</td>
<td>2361</td>
<td>2243</td>
<td>2345</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>B. Z. Well</td>
<td>2345.6</td>
<td>2161</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Round Top</td>
<td>2316</td>
<td>2170</td>
<td>2522</td>
<td>2545</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MINOR ARTESIAN WELLS**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Name of Well</th>
<th>Bl. Top</th>
<th>Bl. of Casing</th>
<th>Bl. Top of Bottom</th>
<th>Bl. Top of Basalt</th>
<th>Bl. Top of Surface</th>
<th>MAJOR ARTESIAN WELLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Bell</td>
<td>2437</td>
<td>2312</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Carson</td>
<td>2504</td>
<td>2351</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Murgler</td>
<td>2529</td>
<td>2303</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>McCurdy</td>
<td>2434</td>
<td>2468</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Held</td>
<td>2410</td>
<td>2460</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Stirewalit</td>
<td>2500</td>
<td>2285</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Barclay</td>
<td>2539</td>
<td>2329</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Stratton</td>
<td>2528</td>
<td>2409</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Leonard</td>
<td>2604</td>
<td>2391</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MOSCOW CITY WELL**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Name of Well</th>
<th>Bl. Top</th>
<th>Bl. of Casing</th>
<th>Bl. Top of Bottom</th>
<th>Bl. Top of Basalt</th>
<th>Bl. Top of Surface</th>
<th>MAJOR ARTESIAN WELLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Moscow City</td>
<td>2567</td>
<td>2007</td>
<td>2513</td>
<td>2511</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OLD MAJOR ARTESIAN WELLS (1898-1900)**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Name of Well</th>
<th>Bl. Top</th>
<th>Bl. of Casing</th>
<th>Bl. Top of Bottom</th>
<th>Bl. Top of Basalt</th>
<th>Bl. Top of Surface</th>
<th>MAJOR ARTESIAN WELLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Palace Hotel</td>
<td>2340</td>
<td>2265</td>
<td>2320</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Well across st. from Palace Hotel</td>
<td>2340</td>
<td>2265</td>
<td>2311</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Old City Wells</td>
<td>2340</td>
<td>2265</td>
<td>2327</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extracted from DeMotte and Miles (1933)
**Geologic Interpretation of Water Well Driller’s Log**

By John H. Bush, February 20, 2016

**Well Log ID:** D0044825  
**Elev (ft):** 2637.25  
**Depth (ft):** 72  
**Quad:** Moscow West

**Latitude:** 46.747390  
**Longitude:** -117.019668  
**decimal degrees (WGS84)**

**¼, SW ¼, SW ¼, Sec. 6, T. 39 N, R. 5 W**

**Well Address and (or) Other Location Information:**
South side of Harden Road, at north edge of UI Campus (in Agricultural Farm area north of the Palouse Mall), Moscow, Idaho.

**Location Method:**
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden</strong></td>
<td></td>
</tr>
<tr>
<td>Soil, dark dusky brown</td>
<td>0–8</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellowish orange, silty</td>
<td>8–19</td>
</tr>
<tr>
<td>Gravel, granules (2–6 mm), mostly quartz, iron-stained, some clay</td>
<td>19–25</td>
</tr>
<tr>
<td><strong>Saddle Mountains Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt, fine-grained, occasional plagioclase phenocrysts, iron-stained</td>
<td>25–35</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, white, yellow, gray, minor silt and sand</td>
<td>35–58</td>
</tr>
<tr>
<td>Gravel, 3–5 mm, occasional pebbles, mostly quartz, some clay</td>
<td>58–70</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>70–72</td>
</tr>
</tbody>
</table>
Comments:

Description summarized from lithologic log by Bush (2006, table 1).

Latah County Tax Parcel RP39N05W065400, owner is UNIVERSITY OF IDAHO; 41.61 AC GOVT LOT 6; 41.1 AC GOVT LOT 7 6 39 5.

References Cited:

1. WELL TAG NO. D0044825
   Drilling Permit No. 840131
   Other IDWR No. 017601
2. OWNER
   Name: University of Idaho
   Address: University of Idaho
   City: Moscow
   State: ID
   Zip: 83844
3. LOCATION OF WELL by legal description
   Sketch map location must agree with written location
   Twp. 39 South
   Rge. 06 East
   Sec. 6 NE 1/4 SW 1/4
   Gov't Lot 52 County LATAH
   Address of Well Site: Harden Rd./Adams Ct.
   City: Moscow
   (Give at least name of road + Distance to Road or Landmark)
   Lt. ________ Blk. ________ Sub. Name ________________
4. USE:
   ☐ Domestic ☐ Municipal ☑ Monitor ☐ Irrigation
   ☐ Thermal ☐ Injection ☐ Other
5. TYPE OF WORK
   ☑ New Well ☐ Modify ☐ Abandonment ☐ Other
6. DRILL METHOD
   ☑ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other
7. SEALING PROCEDURES
   SEAL/FILTER PACK
   MATERIAL \n   METHOD
   BENTONITE 0 57 3800 lbs Poured dry
   Was drive shoe used? ☑ Y ☐ N Shoe Depth(s) rmvd
   Was drive shoe seal tested? ☑ Y ☐ N How?
8. CASING/LINER:
   DIAMETER \n   From To Gauge Material Casing Liner Welded Threaded
   4 2.5 60 pvc ☑ ☑ ☑ ☑ ☑
   Length of Headpipe ________________
   Length of Tailpipe ________________
9. PERFORATIONS/SCREENS
   ☐ Perforations Method
   ☑ Screens Screen Type 10 slot PVC
   From To Slot Edge Number Diameter Material Casing Liner
   60 70 10 4 PVC ☑ ☑
10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    35 ft. below ground Artesian pressure __________ lb.
    Depth flow encountered __________ ft. Describe access port or control devices:
11. WELL TESTS:
    ☑ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian
    Yield gal./min. Drawdown Pumping Level Time
    __________ __________ __________ __________
    Water Temp. cold Bottom Hole Temp. cold
    Water Quality test or comments: Depth first Water encountered __________
12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To Remark: Lithology, Water Quality, Temperature
    __________ __________ __________
    12. 0 3 Fill Course rock
    12. 3 13 Dark Brown Soil
    12. 13 19 Tan/Brown Soil clay-like
    12. 19 23 Yellow and tan clay-like with sands
    12. 23 34 Broken Basalt nod
    12. 34 45 Blue/gray clay
    12. 45 55 White and tan clay w/sand
    12. 55 70 Sand with clay and water
    12. 70 73 Yellow/tan clay
13. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Firm Name: H2B Wells Service Inc. Firm No. 448
    Firm Official __________ Date __________
    Supervisor or Operator __________ Date __________
INTRODUCTION

Four monitoring wells were established on the north edge of University of Idaho land in Moscow, Idaho during the summer of 2006. The wells are on the south side of a gravel and dirt county road. Three of the four wells are located (Figure 1) in the northwestern corner of ¼ SE., ¼ SE., Sec. 1, R. 6 W., T. 39 N. The fourth well is located approximately 1800 feet east of the three wells in Sec. 6, R. 5 W., T. 39 N. The approximate elevations of the wells are 2600 feet for the three wells and 2620 feet for the other well. The Palouse Basin Aquifer Committee (PBAC) will be establishing accurate GPS locations and elevations. The wells have been numbered 1-4 from shallowest (72 ft, MMW No. 1) to deepest (735 ft, MMW No. 4). This report focuses on wells 1 and 4.

Moscow is located along the eastern margin of the Columbia Plateau and is underlain by Miocene sediment and basalt of the Columbia River Basalt Group (CRBG) exceeding 1600 feet in total thickness. The area is surrounded on the north, east, and south by pre-Miocene igneous and metamorphic rocks that rise in elevation and make a C-shaped geologic basin open to the west were the CRBG units extend into Whitman County of Washington. Basalt flows are interlayered with sediment units that in general thicken to the east and northeast. Overall, sediment sequences makeup 60-70% of the total GRBG in the Moscow area.

Four Miocene basalt flows and four sediment sequences were encountered during drilling. Samples were analyzed using a binocular scope and lithology logs were completed for the shallowest and deepest wells (Tables 1 and 2). Major and trace element chemistry for each basalt unit was determined from rotary chips (Tables 3 and 4). Chemistry and sequence position was used to correlate the basalt flows to local wells and regional stratigraphic units (Figure 2). The sediments were drilled primarily by mud-rotary and accurate sampling was difficult for some intervals. Figure 3 illustrates the approximate position of installed screens relative to stratigraphic unit for the four wells.

A north to northeast trending cross-section using Well No. 4 as the focal point was constructed from the data obtained (Plate One). Regional correlations into the state of Washington were determined from the chemistry data and these correlations are discussed in the text.

The chemical analyses were done by the GeoAnalytical Laboratory at Washington State University.

BASALT UNITS

Basalt flows encountered are from three different formations of the Miocene Columbia River Basalt Group. From oldest to youngest these are the Grande Ronde, Wanapum and Saddle Mountains formations. The discussion of the units encountered is from the oldest to the
youngest. The deepest Grande Ronde Basalt (720-735 ft) was analyzed twice for chemistry. It is interpreted to belong to the Wapshilla Ridge flows of the Winter Water Member, R2 magnetostratigraphic unit. These flows according to Reidel and others (1989), are high silica flows characterized by low MgO (3.00 to 4.00 wt%) and high to very high TiO₂ exceeding 2.6 wt%. In Pullman, seven miles to the west, the Grande Ronde has been divided from base upward into the R1, N1, R2, and N2 sequences (Bush and Garwood, 2003). Comparisons to existing chemistry show that basalt with similar high silica and TiO₂ occurs in at least four wells. The depths of these samples are as follows: WSU No. 7 (540 ft), WSU No. 6 (525 ft), Pullman No. 5 (428 ft), and Pullman No. 7 (425 ft). These correlations are useful for understanding the geohydrology of the Moscow-Pullman basin, but must be considered tentative until additional data is available.

The only sequence chemistry data available from a deep well in Moscow comes from information presented by Brown (1976). That data was collected using outdated XRF machines by today’s standards. However, he reports analyses from the 625- to 725-foot interval in University Well No. 3 that is useful. That chemistry is similar to characteristics of the R2 unit. Other data presented by Brown (1976) suggests that the top of the R2 occurs between 532 and 585 feet in the DOE test well located approximately 2 miles west of the Idaho-Washington boundary.

The uppermost Grande Ronde was encountered between 499 and 585 feet (top at approximately 2100 ft) in MMW No 4. A review of characteristics of upper Grande Ronde flows by Reidel and others (2004) indicates that the basalt belongs to the Sentinel Bluffs Member of the N2 magnetostratigraphic unit, which consists of several flows at the top of the Grande Ronde (Reidel and others, 1989). The chemistry from this flow was also compared to existing Moscow-Pullman data. These comparisons indicate that this flow in MMW No. 4 correlates to the basalt of Stember Creek (Figure 4) described by Reidel (2005). A flow with very similar chemistry occurs at the top of the Grande Ronde in the Palouse city well at an elevation of approximately 2100 ft.

Comparisons to the DOE test well and wells in the City of Pullman indicate that at least three to four flows younger than the uppermost Grande Ronde in MMW No. 4 makeup the top of the Grande Ronde at those localities. These correlations show that the top of the N2 thins rapidly and becomes overlain by thick sediments of the Latah Formation near the state line. This change causes the top of the Grande Ronde surface to drop from approximately 2400 feet in the DOE test well in Washington to approximately 2100 feet in MMW No. 4 over a distance of less than 3 miles (Figure 5). Although the chemistry was much less precise than used for this report, Brown came to the same conclusion over 30 years ago (Brown, 1976).

One basalt flow of the Wanapum Formation was encountered from 49 to 276 feet in MMW No. 4. Three samples were analyzed and the basalt has a Lolo chemical type and belongs to the Priest Rapids Member. Outcrops of this member occur throughout the Palouse Basin and has been encountered in hundreds of wells. It is relatively consistent across the Moscow area before it thins out near to the edge of the pre-Miocene rocks that define the northern, eastern and southern boundary. Towards the west the basalt thins to less than 100 feet in thickness over Pullman, but thickens again west of the city. Outcrops and well data show that, in places, the
basalt consists of two flow units with a vesicular zone or thin interbed separating the upper and lower portions. Hopper and Webster (1982) report that the Wanapum in Pullman locally consists of the Rosalia chemical type, which also belongs to the Priest Rapids Member.

A portion of a Saddle Mountains flow was encountered in MMW No. 1. The basalt in that well is only 10 feet thick and is highly iron stained and weathered. The surface casing was loosely packed with crushed basalt and the drill sample was contaminated. Therefore, the chemical analysis was not reported. The results however, contained enough features to determine that it belongs to the Weissenfels Ridge Member-Lewiston Orchards flow. This basalt has been noted in only a few localities within the Moscow area, but it has been mapped approximately 2000 feet north of the well (Hooper and Webster, 1982; Bush and Provant, 1998a). The Lewiston Orchards flow is interlayered with the uppermost Latah sediments (sediments of Bovill). The flow does not have extensive lateral continuity and it is concluded that it comes from a local vent.

SEDIMENT UNITS

Four units of sediments totaling a stratigraphic composite thickness of 414 feet were encountered during the drilling and construction of the monitoring wells. Collectively they belong to the Latah Formation and comprise over 50% of the entire sequence encountered. Westward away from the eastern edge of the Columbia Plateau these units thin, are in places not mapable at 1:24,000, and are often considered to be part of the basalt units. However, two specific names have been applied to part of this sequence in the Moscow area.

The term “sediments of Bovill” has been applied to the uppermost Miocene sediments which overlie the Priest Rapids Member (Bush and Provant, 1998). These sediments range up to 250 ft in thickness, and in general thin from east to west (Pierce, 1998). In MMW No. 1 these sediments exceed 72 feet.

Sediments that separate the base of the Wanapum and the uppermost Grande Ronde Basalt are referred to as the Vantage Member (Bush and Provant, 1998). In MMW No. 4 this unit is 225 feet thick. The term comes from outcrops near Vantage, Washington, and was utilized in regional correlations into the Pullman area (Siems and others, 1974).

The sediments in the Moscow area were deposited primarily in response to the emplacement of basalt flows advancing from the west. The sediments consist of alternating upward fining sequences of gravel, sand, silt, and clay. The uppermost sediments also contain laterally extensive beds of peat in the southeastern portion of the basin (Fairley and others, 2006). Towards the edges of the pre-Miocene rocks the sediments grade into weathered slightly transported and non-transported weathered granitic regolith.

Estimates of sand, silt, and clay percentages were difficult to determine for the monitoring wells because of drilling methods. The sediments of Bovill consisted of approximately 20% gravel and sand. The Vantage contained approximately 25% sand and gravel. The lowermost interbed between the Grande Ronde flows contained approximately 33% sand. The larger grains of the sand and gravel intervals are well sorted in terms of size, but the sediments contain abundant
clay and silt matrix. In addition, the grains are generally not well rounded.

Hosterman and others (1960), Calvin (1964), Lin (1967), Pierce (1998), and Fairley and others (2006) provide details on much of the sediment sequence in the Moscow area.

GEOLOGIC CROSS SECTION

A geologic cross-section ABC (Plate One) was constructed in two directions from MMW No. 4 (Figure 1). Data from the Naylor farm to the northeast and outcrops to the southwest of the monitoring wells provides some base control. The AB part of the section has excellent control from city and University deep wells. However, there are no deep wells between MMW No. 4 and Naylor farm. Moscow Well No. 6, located east of the monitoring wells, indicates that there is an eastward increase in sediment content, which is consistent with previous cross-sections drawn E-W through Moscow. The increase in sediment shown on the cross-section towards the northeast is probably correct. However, the depth to pre-Miocene rocks should be considered open to interpretation.

Overall the sediment-basalt relations illustrated on Plate One are consistent with stratigraphic and geologic cross-sections in Lin (1967), Crosby and Calvin (1960), Calvin (1964), Brown (1976), Bush and Provant (1998a and b), Bush and others (1998), and Bush and others (2000). However, there are two differences that should be noted. First, the earlier geologic cross-sections show Pleistocene loess in contact with the basalt. Review of over 100 shallow test holes for construction during the past 15 years in the Moscow area show that the loess is generally thin and Miocene sediments overlie the basalt flows at all localities except along the edges of flood plains in the western part of the basin. Surficial maps of the Moscow area illustrate and discuss the relations of the unconsolidated materials (Othberg and Breckenridge, 2001a and b).

The second difference between earlier and recent cross-sections is the method of illustrating contact relations with pre-Miocene rocks. Geologic mapping of this contact throughout northern Idaho and eastern Washington has shown that basalt resting directly on pre-Miocene rocks is very rare. Therefore, the basalt flows on Plate One are shown to be separated from the pre-Miocene rocks by associated sediments.

SUMMARY

The major geologic findings from the Moscow Monitoring wells are as follows:

1) Four basalt flows belonging to three different formations of the Columbia River Basalt Group were encountered in the wells.

2) Latah Formations sediments make up over 50% of the sequence.

3) Sand and gravel make up between 20-33% of the sediment layers.

4) The entire sequence is consistent with eastward and northeastward decrease in basalt as the
sediment intervals thicken.

5) The units encountered are consistent with those described and illustrated on published geologic maps and reports.

6) Chemistry data show that the uppermost Grande Ronde flow is the basalt of Stember Creek, which is similar to the upper Grande Ronde flow in Palouse, Washington. The same data when compared to data from Washington wells show a rapid eastward thinning of 400 to 500 feet of Grande Ronde just west of the Washington-Idaho boundary.

7) The lower Grande Ronde basalt encountered in MMW No. 4 is correlated to the Wapshilla Ridge flows of the R2 magnetostratigraphic unit. Similar flows of the R2 can be tentatively located in wells located in Pullman.

REFERENCES CITED


Hooper, P.R., and C.D. Webster, 1982, Geology of the Pullman, Moscow West, Colton, and Uniontown 7 ½ minute quadrangles, Washington and Idaho: State of Washington, Department of Natural Resources, Division of Geology and Earth Resources, Geologic Map GM-26, scale 1:62,000, one sheet.


Table 1. Lithologic Log for Moscow Monitoring Well No. 1 (Bush, 26 June 2006).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Depth (feet)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td>0–8</td>
<td>Top soil, dark dusky brown (5 yr 2/2).</td>
</tr>
<tr>
<td>Latah Formation (Sediments of Bovill Member)</td>
<td>8–19</td>
<td>Clay, dark yellowish orange (10 yr 6/6), slightly silty. Granule gravel, 2mm to 6mm, average 4mm, occasional pebble 10-20mm, very angular to subangular, 99% quartz, minor muscovite and feldspar, most grains transparent, very light gray (N8) to yellowish gray (5 yr 8/1), water bearing. Samples are stained and contain yellow clay. Percent clay undetermined, but believed to be relatively high.</td>
</tr>
<tr>
<td></td>
<td>19–25</td>
<td></td>
</tr>
<tr>
<td>Saddle Mountains Basalt (Weissenfels Ridge Member, Lewiston Orchards Flow)</td>
<td>25–35</td>
<td>Basalt, fine-grained, occasional plagioclase phenocryst 3-4mm, medium dark gray (N4), Fe and Mn stains on uppermost and lowermost chips.</td>
</tr>
<tr>
<td>Latah Formation (Sediments of Bovill Member)</td>
<td>35–40</td>
<td>Clay, pale blue (5B 6/2) with white (N9) centers, when wet color changes to blue and generally recorded as blue clay by most drillers, very slick.</td>
</tr>
<tr>
<td></td>
<td>40–47</td>
<td>Clay, varied colored, yellowish gray (5 yr 7/2) to pale yellowish orange (10 yr 8/6), minor black streaks (N1), approximately 10% silt and very fine sand.</td>
</tr>
<tr>
<td></td>
<td>47–58</td>
<td>Clay, pale yellowish orange (10 yr 7/2), very slick.</td>
</tr>
<tr>
<td></td>
<td>58–70</td>
<td>Granule gravel, 3-5mm, coarser in places 6-7mm, occasional 10-15mm pebble, 99% quartz, minor muscovite and feldspar, subangular to subrounded. Samples stained yellow and contained yellow clay. Not possible to estimate percent of clay.</td>
</tr>
<tr>
<td></td>
<td>70–72</td>
<td>Clay, pale yellowish orange (10 yr 7/2).</td>
</tr>
</tbody>
</table>
Table 2. Lithologic Log for Moscow Monitoring Well No. 4 (Bush, 26 June 2006).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Depth (feet)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td>0–2</td>
<td>Top soil, dark dusky brown (5 yr 2/2).</td>
</tr>
<tr>
<td>Latah Formation (Sediments of Bovill Member)</td>
<td>2–30</td>
<td>Clay, dark yellowish brown (10 yr 4/2), slightly silty.</td>
</tr>
<tr>
<td></td>
<td>30–50</td>
<td>Clay, white (N9) to yellowish gray (5 yr 7/2).</td>
</tr>
<tr>
<td></td>
<td>50–60</td>
<td>Basalt, vesicular, fine-grained, medium-gray (N5), iridescent coatings common.</td>
</tr>
<tr>
<td></td>
<td>60–70</td>
<td>Basalt, vesicular.</td>
</tr>
<tr>
<td></td>
<td>70–110</td>
<td>Basalt, dense, fine to medium-grained, occasional plagioclase phenocryst, medium-gray (N5), fractured at 110 ft.</td>
</tr>
<tr>
<td></td>
<td>110–245</td>
<td>Basalt, dense, same as above.</td>
</tr>
<tr>
<td></td>
<td>245–247</td>
<td>Basalt gravels, 2-3cm, angular to sub-rounded, same as host rock, interpreted as non-depositional.</td>
</tr>
<tr>
<td></td>
<td>247–276</td>
<td>Basalt, dense, fine to medium-grained, occasional plagioclase phenocrysts.</td>
</tr>
<tr>
<td></td>
<td>276–278</td>
<td>Sand, coarse to very coarse (1/2mm to 2mm), 90% quartz, 10% basalt?, minor muscovite and feldspar?, subangular to subrounded, sample mixed with chips from above.</td>
</tr>
<tr>
<td></td>
<td>278–285</td>
<td>Clay, white (N9) to very light gray (N8).</td>
</tr>
<tr>
<td></td>
<td>285–290</td>
<td>Sand, very coarse (1.5-2mm), 90% quartz, 10% basalt?, minor muscovite, subrounded, fairly well sorted, rare wood fragments.</td>
</tr>
<tr>
<td></td>
<td>290–335</td>
<td>Sand, silt and clay, occasional granule of quartz and some subrounded basalt (3-5%). Abundant wood fragments and sample sticky 299-305 feet.</td>
</tr>
<tr>
<td></td>
<td>335–360</td>
<td>Sand, silt, and clay, greenish gray clay in overflow ditch, but not in samples. Sand is coarse to very coarse-grained.</td>
</tr>
<tr>
<td></td>
<td>360–370</td>
<td>Clay, brownish gray (5 yr 4/1), sandy?, abundant wood fragments.</td>
</tr>
<tr>
<td></td>
<td>370–410</td>
<td>Sand, coarse .5 to 1mm to very coarse (1.5mm), subangular to subrounded, fairly well sorted with silt and clay, minor wood fragments with some abundant intervals, color of mud is greenish gray, abundant silt in overflow ditch after drilling, occasional very fine-grained well rounded siltite granule.</td>
</tr>
<tr>
<td></td>
<td>410–423</td>
<td>Sand, slightly coarser than above.</td>
</tr>
<tr>
<td></td>
<td>485–499</td>
<td>Clay and silt, mud a grayish yellow green (5GY 7/2) in color.</td>
</tr>
<tr>
<td>Grande Ronde Basalt (N2 Member)</td>
<td>499–510</td>
<td>Basalt, vesicular with small openings, iridescent coatings.</td>
</tr>
<tr>
<td></td>
<td>510–580</td>
<td>Basalt, dark gray (N3), very fine-grained, dense.</td>
</tr>
<tr>
<td></td>
<td>580–585</td>
<td>Basalt, dark gray (N3), vesicular and iron stained, minor vesicle fillings.</td>
</tr>
<tr>
<td></td>
<td>585–620</td>
<td>Clay, grayish green (10GY 5/2), silty in places.</td>
</tr>
<tr>
<td></td>
<td>620–665</td>
<td>Sand, coarse to very coarse (1/2mm to 2mm), subangular, 95% quartz with siltite, basalt?, and minor muscovite fragments.</td>
</tr>
<tr>
<td></td>
<td>665–720</td>
<td>Clay, brownish gray (5YR 4/1), silty in places.</td>
</tr>
<tr>
<td>Grande Ronde Basalt (R2 Member)</td>
<td>720–735</td>
<td>Basalt, dark gray (N3), very fine-grained.</td>
</tr>
</tbody>
</table>
Table 3. Major Oxide Chemistry for Moscow Monitoring Well No. 4 (2006).

<table>
<thead>
<tr>
<th>Sample Depth (ft)</th>
<th>SiO₂</th>
<th>TiO₂</th>
<th>Al₂O₃</th>
<th>FeO</th>
<th>MnO</th>
<th>MgO</th>
<th>CaO</th>
<th>Na₂O</th>
<th>K₂O</th>
<th>P₂O₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>50.55</td>
<td>3.33</td>
<td>13.99</td>
<td>13.11</td>
<td>0.23</td>
<td>4.64</td>
<td>9.52</td>
<td>2.70</td>
<td>1.14</td>
<td>0.78</td>
</tr>
<tr>
<td>245</td>
<td>49.61</td>
<td>3.37</td>
<td>14.24</td>
<td>12.99</td>
<td>0.23</td>
<td>5.40</td>
<td>9.57</td>
<td>2.70</td>
<td>1.08</td>
<td>0.81</td>
</tr>
<tr>
<td>270</td>
<td>50.23</td>
<td>3.16</td>
<td>13.70</td>
<td>13.66</td>
<td>0.23</td>
<td>5.23</td>
<td>9.20</td>
<td>2.72</td>
<td>1.13</td>
<td>0.74</td>
</tr>
<tr>
<td>510</td>
<td>55.30</td>
<td>1.77</td>
<td>14.77</td>
<td>9.91</td>
<td>0.21</td>
<td>4.40</td>
<td>9.13</td>
<td>2.82</td>
<td>1.39</td>
<td>0.29</td>
</tr>
<tr>
<td>545</td>
<td>54.26</td>
<td>1.72</td>
<td>14.52</td>
<td>10.95</td>
<td>0.20</td>
<td>4.87</td>
<td>8.97</td>
<td>2.83</td>
<td>1.38</td>
<td>0.30</td>
</tr>
<tr>
<td>730</td>
<td>55.59</td>
<td>2.78</td>
<td>14.84</td>
<td>10.12</td>
<td>0.19</td>
<td>3.16</td>
<td>7.74</td>
<td>3.14</td>
<td>1.68</td>
<td>0.77</td>
</tr>
<tr>
<td>735</td>
<td>55.94</td>
<td>2.71</td>
<td>14.57</td>
<td>10.59</td>
<td>0.19</td>
<td>2.98</td>
<td>7.47</td>
<td>3.17</td>
<td>1.89</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Normalized Major Elements (Weight %)

Table 4. Trace Element Chemistry for Moscow Monitoring Well No. 4 (2006).

| Sample Depth (ft) | Ni  | Cr  | Sc  | V   | Ba  | Rb  | Sr  | Zr  | Y   | Nb  | Ga  | Cu  | Zn  | Pb  | La  | Ce  | Th  | Nd |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 75                | 45  | 101 | 39  | 376 | 620 | 28  | 290 | 190 | 43  | 14.4| 23  | 42  | 146 | 7   | 29  | 63  | 4   | 36 |
| 245               | 49  | 102 | 40  | 379 | 677 | 24  | 295 | 180 | 45  | 15.8| 23  | 43  | 150 | 7   | 30  | 65  | 4   | 42 |
| 270               | 49  | 97  | 38  | 366 | 531 | 28  | 281 | 182 | 42  | 14.7| 21  | 42  | 141 | 9   | 30  | 55  | 4   | 33 |
| 510               | 34  | 107 | 37  | 330 | 641 | 35  | 305 | 147 | 30  | 10.1| 21  | 58  | 110 | 7   | 19  | 41  | 4   | 25 |
| 545               | 38  | 109 | 36  | 318 | 512 | 34  | 292 | 145 | 30  | 10.0| 20  | 65  | 121 | 37  | 17  | 38  | 3   | 22 |
| 730               | 22  | 17  | 35  | 420 | 1087| 45  | 362 | 206 | 43  | 13.1| 24  | 31  | 130 | 11  | 28  | 66  | 5   | 37 |
| 735               | 14  | 13  | 34  | 425 | 971 | 49  | 349 | 202 | 41  | 13.3| 22  | 29  | 141 | 10  | 27  | 54  | 5   | 33 |

Unnormalized Trace Elements (ppm)
Figure 1. Location of MMW 2-4, and Geologic Cross-Section ABC.
Figure 2. Stratigraphic units of the Columbia River Basalt Group, Palouse Basin, Idaho-Washington.
Figure 3. Composite Stratigraphic Column for Moscow Monitoring Wells (2006).
Figure 4. Subdivision of the Upper Grande Ronde Basalt by Riedel (2005).

Basalt of:
- Museum
- Spokane Falls
- Stember Creek
- Airway Heights
- California Creek
- McCoy Canyon
Figure 5. Structural Contour Map of the Top of the Grande Ronde Basalt Superimposed on a Physiographic Map of the Palouse Basin (contour interval=50').
Note: Uppermost Latah contains Pleistocene loess which varies in thickness from 0 to 50 feet.

Horizontal scale: 1 inch = 2,000 feet
Vertical scale = 2x horizontal scale
MEMORANDUM

To: Helen Harrington, Idaho Department of Water Resources
From: Dale Ralston, RHS
Subject: Completion of Moscow Test Well Project
Date: February 21, 2007

The purpose of this memo is to provide a summary of well completion and geologic information from the construction of four test wells near the City of Moscow, Idaho. The memo includes three parts: 1) project description, 2) well completion information and 3) geology as interpreted by Dr. John Bush.

PROJECT DESCRIPTION

The objective of the Moscow Deep Test Well project was to construct test wells completed at four different depths at a drill site location northwest of the City of Moscow. The target stratigraphic intervals that were used to guide the drilling project, formulated by researchers from the University of Idaho and Washington State University, are listed below. The target depths and elevations were developed based on lithologic information from nearby university and city wells.

- **Shallow sediments of Bovill** – Target zone is the bottom 5 to 10 feet of sediments directly on top of the Wanapum basalt. This well will be completed only if sufficient saturated sands exist. The 5 to 10 feet of well screen should be placed in the bottom of the hole directly on the top of the Wanapum Basalt.

- **Wanapum Basalt** – Target zone is between elevations of 2390 and 2370 feet above mean sea level. Bottom of the screen should be placed about 10 feet above the base of the basalt. The screen should be placed between the target elevations of 2390 and 2370 feet unless a “major” producing zone is encountered at a higher or lower elevation (but not less than 10 feet above the base of the Wanapum Basalt). *(Screen interval depth of about 210 to 230 feet)*

- **Vantage Member** – Target zone is between the elevations of 2260 and 2200 feet above mean sea level. The target zone is a potential coarse sand layer about 80 feet below the bottom of the Wanapum Basalt. Depending on the actual thickness of the sand layer, 5 to 10 feet of well screen should be used. *(Screen interval depth of about 340 to 400 feet)*
• **Upper Grande Ronde Basalt** – Target zone is between the elevations of 1830 and 1810 feet above mean sea level. One producing zone is Moscow 9 is about 90 feet below the top of the Grande Ronde. This producing zone is the potential target unless a “major” producing zone is encountered at a shallower or deeper depth. Ideally, this well should not extend deeper than an elevation of 1750 feet above mean sea level. *(Screen interval depth of about 770 to 790 feet)*

Drilling specifications were developed based on the lithologic targets and bid documents were prepared. The University of Idaho was responsible for financial administration of the project. Project funding was from the Idaho Department of Water Resources. H2O Well Services from Coeur d’Alene was low bidder and was awarded the contract. The plan was to drill the Upper Grande Ronde Basalt well first so the lithology would be known for the remaining three wells.

A drilling site that had been selected by researchers from the UI and WSU is located on UI land near the Washington-Idaho state line (Figure 1). An unimproved farm road provides access to the site. The originally selected drill site was not available in March 2006 when the driller was ready to mobilize on site because of wet field conditions. The decision was made to move the well construction to a site located about 0.5 miles east of the initially selected site. The drill rig was moved to the East Drilling Site in early June 2006.

The sediment and basalt sequence encountered in the first 70 feet at the East Drilling Site was more like Moscow well #8 than the three wells upon which the drilling plan was developed (Moscow well #9, UI wells #3 and #4). The decision was made to complete a shallow well at the East Drilling Site and then mobilize the drilling equipment to the original drilling site, hereafter termed the West Drilling Site (Figure 1). Approval of the change in drilling location was sought and obtained from the University of Idaho. The remaining three wells were constructed at the West Drilling Site.

Drilling activities proceeded with construction of Wanapum Well, the Vantage Well and the Upper Grande Ronde Well. The greatest drilling difficulties were encountered in the Upper Grande Ronde Well when a welded joint failed down hole when casing was being pulled back. All problems were ultimately solved and the last well was completed in September 2006.

**WELL COMPLETION INFORMATION**

Well completion information is provided in this section along with the geologic information provided by the driller. The stratigraphic interpretation of the material penetrated during construction of the four wells prepared by Dr. John Bush is presented in the following section.

**Sediments of Bovill Well**

This well was constructed at the East Drilling Site to a total depth of 73 feet using an air rotary drilling rig. Twelve-inch diameter steel casing was driven to a depth of 73 feet and then removed as the permanent casing was installed. The well has 4-inch diameter PVC casing to a depth of 70 feet with 0.010-inch, factory slotted casing in the depth interval of 60 to 70 feet. A sand pack was installed around the casing in the depth
interval of 57 to 70 feet with a bentonite seal from land surface to a depth of 57 feet. Eight-inch diameter surface casing was installed to a depth of about 10 feet and equipped with a locking cap. The reported yield by the driller was 5 to 8 gpm (gallons per minute). The reported depth to water was 35 feet below ground surface. The geologic log prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Depth Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3 feet</td>
<td>fill, coarse rock</td>
</tr>
<tr>
<td>3 to 13 feet</td>
<td>dark brown soil</td>
</tr>
<tr>
<td>13 to 19 feet</td>
<td>tan/brown soil, clay-like</td>
</tr>
<tr>
<td>19 to 23 feet</td>
<td>yellow and tan clay-like with sands</td>
</tr>
<tr>
<td>23 to 34 feet</td>
<td>broken basalt, medium</td>
</tr>
<tr>
<td>34 to 45 feet</td>
<td>blue/tan clay</td>
</tr>
<tr>
<td>45 to 55 feet</td>
<td>white and tan clay with sand</td>
</tr>
<tr>
<td>55 to 70 feet</td>
<td>sand with clay and water</td>
</tr>
<tr>
<td>70 to 73 feet</td>
<td>yellow/tan clay</td>
</tr>
</tbody>
</table>

**Wanapum Basalt Well**

This well was constructed at the West Drilling Site to a total depth of 282 feet using an air rotary rig. Eight-inch diameter temporary steel casing was driven to a depth of 63 feet and then removed as the permanent casing was installed. The well has 4-inch diameter PVC casing to a depth of 280 feet with 0.010-inch, factory slotted casing in the depth interval of 270 to 280 feet. A sand pack was installed around the casing in the depth interval of 265 to 280 feet with a bentonite seal from land surface to a depth of 265 feet. Eight-inch diameter surface casing was installed to a depth of about 10 feet and equipped with a locking cap. The reported yield by the driller was 50 gpm. The reported depth to water was 170 feet below ground surface. The geologic log prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Depth Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3 feet</td>
<td>gravel fill</td>
</tr>
<tr>
<td>3 to 18 feet</td>
<td>brown clayish soil</td>
</tr>
<tr>
<td>18 to 43 feet</td>
<td>yellow clayish soil</td>
</tr>
<tr>
<td>43 to 58 feet</td>
<td>soft brown basalt with rounds</td>
</tr>
<tr>
<td>58 to 110 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>110 to 116 feet</td>
<td>basalt with water, 5 gpm</td>
</tr>
<tr>
<td>116 to 245 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>245 to 248 feet</td>
<td>basalt with rounds</td>
</tr>
<tr>
<td>248 to 277 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>277 to 282 feet</td>
<td>sand and clay, water</td>
</tr>
</tbody>
</table>

**Vantage Member Well**

This well was constructed at the West Drilling Site to a total depth of 355 feet using an air rotary rig. Twelve-inch diameter temporary steel casing was installed and driven to a depth of 60 feet. A 12-inch diameter open hole was drilled through the basalt and then 8-inch diameter temporary steel casing was advanced to a depth of 345 feet. Both sections of temporary casing were removed as the permanent casing was installed. The well has 4-inch diameter PVC casing to a depth of 350 feet with 0.010-inch, factory slotted casing in the depth interval of 345 to 355 feet. A sand pack was installed around the casing in the depth interval of 340 to 355 feet. The product “Hole Plug” was installed
from land surface to a depth of 340 feet. Eight-inch diameter surface casing was installed to a depth of about 10 feet and equipped with a locking cap. The reported yield by the driller was 50+ gpm. The reported depth to water was 140 feet below ground surface. The geologic log prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 feet</td>
<td>fill rock</td>
</tr>
<tr>
<td>2 to 10 feet</td>
<td>brown top soil</td>
</tr>
<tr>
<td>10 to 19 feet</td>
<td>loamy-tan clay</td>
</tr>
<tr>
<td>19 to 23 feet</td>
<td>yellowish-tan clay with sand</td>
</tr>
<tr>
<td>23 to 43 feet</td>
<td>broken basalt</td>
</tr>
<tr>
<td>43 to 50 feet</td>
<td>whitish tan clay</td>
</tr>
<tr>
<td>50 to 58 feet</td>
<td>honey basalt</td>
</tr>
<tr>
<td>58 to 61 feet</td>
<td>light grey soft basalt</td>
</tr>
<tr>
<td>61 to 110 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>110 to 116 feet</td>
<td>basalt with water, 5 gpm</td>
</tr>
<tr>
<td>116 to 245 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>245 to 249 feet</td>
<td>broken basalt with rounds</td>
</tr>
<tr>
<td>249 to 280 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>280 to 301 feet</td>
<td>sand, lots of water</td>
</tr>
<tr>
<td>301 to 304 feet</td>
<td>hard grey clay</td>
</tr>
<tr>
<td>304 to 345 feet</td>
<td>sand with clay seams and wood</td>
</tr>
<tr>
<td>345 to 348 feet</td>
<td>hard clay with basalt</td>
</tr>
<tr>
<td>348 to 355 feet</td>
<td>sand with water</td>
</tr>
</tbody>
</table>

Grande Ronde Well

This well was constructed at the West Drilling Site to a total depth of 735 feet using a sequence of air rotary, mud rotary, and then air rotary drilling techniques. Twelve-inch diameter temporary steel casing was installed was driven to a depth of 60 feet. A 12-inch diameter open hole was drilled through the basalt. The drilling rig was then converted for mud rotary operations. The well was drilled open hole to a depth of about 730 feet. Eight-inch diameter steel casing was placed to a depth of 730 feet and then pressure grouted in place using a cement grout. The temporary 12-inch diameter casing was removed at this time. No additional casing was installed. The 8-inch diameter casing was equipped with a locking cap. The reported yield by the driller was 300 gpm. The reported depth to water was 372 feet below ground surface. The geologic prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 feet</td>
<td>fill rock</td>
</tr>
<tr>
<td>2 to 8 feet</td>
<td>dark brown clayish soil</td>
</tr>
<tr>
<td>8 to 19 feet</td>
<td>tan clayish soil</td>
</tr>
<tr>
<td>19 to 43 feet</td>
<td>yellow clay with sand</td>
</tr>
<tr>
<td>43 to 50 feet</td>
<td>white clay with water</td>
</tr>
<tr>
<td>50 to 63 feet</td>
<td>broken basalt honey combed</td>
</tr>
<tr>
<td>63 to 110 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>110 to 115 feet</td>
<td>fractured basalt with water, 6 gpm</td>
</tr>
<tr>
<td>115 to 245 feet</td>
<td>hard basalt</td>
</tr>
</tbody>
</table>
245 to 248 feet fractured basalt with water
248 to 277 feet hard basalt
277 to 293 feet sand with water, 100+ gpm
293 to 365 feet sand with tan clay seams
365 to 371 feet sand and wood with water
371 to 422 feet clay with sand
422 to 460 feet brown clay with sands
460 to 500 feet brown hard clay
500 to 582 feet grey basalt
582 to 597 feet hard basalt
597 to 627 feet blue clay
627 to 643 feet basalt
643 to 686 feet sand, quartz with clay seams
686 to 725 feet dark brown clay with basalt chips
725 to 730 feet broken basalt with water
730 to 735 feet broken basalt with water

GEOLOGY AS INTERPRETED BY DR. JOHN BUSH

Grande Ronde Well
Depth in feet
0-2--------Top soil, dark dusky brown (5 yr 2/2).
LATAH FORMATION
Sediments of Bovill
2-30-------Clay, dark yellowish brown (10 yr 4/2), slightly silty.
35-50------Clay, white (N9) to yellowish gray (5 yr 7/2).
WANAPUM BASALT
Priest Rapids Member-Lolo chemical type
50-60-----Basalt, vesicular, fine-grained, medium-gray (N5), iridescent coatings common.
60-70-----Basalt, vesicular.
70-110----Basalt, dense, fine to medium-grained, occasional plagioclase phenocryst,
medium-gray (N5), fractured at 110 ft.
110-245---Basalt, dense, same as above.
245-247---Basalt gravels, 2-3cm, angular to sub-rounded, same as host rock, interpreted
as non-depositonal.
247-276---Basalt, dense, fine to medium-grained, occasional plagioclase phenocryst.
LATAH FORMATION
Vantage Member
276-278---Sand, coarse to very coarse (1/2mm to 2mm), 90% quartz, 10% basalt?,
minor muscovite and feldspar?, subangular to subrounded, sample mixed
with chips from above.
278-285---Clay, white (N9) to very light gray (N8).
285-290 ---Sand, very coarse (1.5-2mm), 90% quartz, 10% basalt ?, minor muscovite,
subrounded, fairly well sorted, rare wood fragments.
290-335---Sand, silt and clay, occasional granule of quartz and some subrounded basalt (3-5%). Abundant wood fragments and sample sticky 299-305 feet.

335-360---Sand, silt, and clay, greenish gray clay in overflow ditch but not in samples. Sand is coarse to very coarse-grained

360-370—Clay, brownish gray (5YR 4/1), sandy?, abundant wood fragments.

370-410---Sand, coarse .5 to 1mm to very coarse (1.5mm), subangular to subrounded, fairly well sorted with silt and clay, minor wood fragments with some abundant intervals, color of mud is greenish gray, abundant silt in overflow ditch after drilling, occasional very fine-grained well rounded siltite granule.

410-423---Sand, slightly coarser than above.

423-485---Clay and silt, mud a moderate brown (5 YR 4/4) in color.

485-499---Clay and silt, mud a grayish yellow green (5GY 7/2) in color.

499-510---Basalt, vesicular with small openings, iridescent coatings.

510-580---Basalt, dark gray (N3), very fine-grained, dense.

580-585---Basalt, dark gray (N3), vesicular and iron stained, minor vesicle fillings.

585-620---Clay, grayish green (10GY 5/2), silty in places.

620-665---Sand, coarse to very coarse (1/2mm to 2mm), subangular, 95% quartz with siltite, basalt?, and minor muscovite fragments.

665-720---Clay, brownish gray (5YR 4/1), silty in places.

Sediments of Bovill Well

Depth in feet

0-8--------Top soil, dark dusky brown (5 yr 2/2).

8-19-------Clay, dark yellowish orange (10 yr 6/6), slightly silty.

19-25------Granule gravel, 2mm to 6mm, average 4mm, occasional pebble 10-20mm, very angular to subangular, 99% quartz, minor muscovite and feldspar, most grains transparent, very light gray (N8) to yellowish gray (5y 8/1), water bearing. Samples are stained and contain yellow clay. Percent clay undetermined, but believed to be relatively high.

25-35------Basalt, fine-grained, occasional plagioclase phenocryst 3-4mm, medium dark gray (N4), Fe and Mn stains on uppermost and lowermost chips.
LATAH FORMATION
Sediments of Bovill Member

35-40-----Clay, pale blue (5B 6/2) with white (N9) centers, when wet color changes to blue and generally recorded as blue clay by most drillers, very slick.

40-47-----Clay, varied colored, yellowish gray (5yr 7/2) to pale yellowish orange (10yr 8/6), minor black streaks (N1), approximately 10% silt and very fine sand.

47-58-----Clay, pale yellowish orange (10 yr 7/2), very slick.

58-70-----Granule gravel, 3-5mm, coarser in places 6-7mm, occasional 10-15mm pebble, 99% quartz, minor muscovite and feldspar, subangular to subrounded. Samples stained yellow and contained yellow clay. Not possible to estimate percent of clay.

70-72-----Clay, pale yellowish orange (10 yr 7/2).

Figure 1 Location Map
**Geologic Interpretation of Water Well Driller’s Log**

**By John H. Bush, February, 2016**

**Well Log ID:** D0044828  **Elev (ft):** 2623.85  **Depth (ft):** 735  **7.5’**  **Quad:** Moscow West

**Latitude:** 46.747221  **Longitude:** -117.026754  **decimal degrees (WGS84)**

**Location:**

South side of Harden Road, at north edge of UI Campus (in Agricultural Farm area north of the Palouse Mall).

**Location Method:**

Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, dark brown</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow, white, gray</td>
<td>2 – 50</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>50 – 70</td>
</tr>
<tr>
<td>Basalt, dense</td>
<td>70 – 276</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>276 – 278</td>
</tr>
<tr>
<td>Clay, white and gray</td>
<td>278 – 285</td>
</tr>
<tr>
<td>Sand, coarse- to very coarse-grained, quartz with minor basalt fragments, some silt, clay, and wood fragments</td>
<td>285 – 360</td>
</tr>
<tr>
<td>Clay, gray, abundant wood fragments</td>
<td>360 – 370</td>
</tr>
</tbody>
</table>
Sand, coarse-grained, silt, clay, and wood fragments  
Clay and silt, brown to green

Grande Ronde Basalt,  
R2 magnetostratigraphic unit

<table>
<thead>
<tr>
<th>Member</th>
<th>Depth Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>499 – 510</td>
</tr>
<tr>
<td>Basalt, dense</td>
<td>510 – 580</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>580 – 585</td>
</tr>
</tbody>
</table>

Latah Formation  
Sediments of Moscow

| Clay, green, silty   | 585 – 620   |
| Sand, coarse- to very coarse-grained | 620 – 665 |
| Clay, gray, silty    | 665 – 720   |

Grande Ronde Basalt

| R2 magnetostratigraphic unit | | |
| Wapshilla Ridge Member       | | |
| Basalt, very fine-grained    | 720 – 735   |

Comments:

Lithologic log summarized from Bush (2006, table 2). Note the revision to the uppermost Grande Ronde flow from N2 magnetostratigraphic unit to R2, is based on new interpretation of chemistry by Conrey and Wolff (2010). Basalt chemistry by WSU GeoAnalytical Lab is provided in Bush (2006, tables 3 and 4).

Latah County Tax Parcel RP39N06W017203, owner is UNIVERSITY OF IDAHO; 79.18 AC E 1/2 SE 1 39 6.
References Cited:


11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
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<tbody>
<tr>
<td>300</td>
<td>100</td>
<td>735</td>
<td>2hrs</td>
</tr>
</tbody>
</table>

Water Temp. cold  Bottom Hole Temp. cold
Water Quality test or comments: clear
Depth first Water encountered 50

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Core</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality, Temperature</th>
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</thead>
<tbody>
<tr>
<td>16</td>
<td>0</td>
<td>2</td>
<td>Fill Rock</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
<td>8</td>
<td>Dark brown claysish soil</td>
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<tr>
<td>16</td>
<td>8</td>
<td>19</td>
<td>Tan clay soil</td>
</tr>
<tr>
<td>16</td>
<td>19</td>
<td>43</td>
<td>Yellow clay with sand</td>
</tr>
<tr>
<td>16</td>
<td>43</td>
<td>50</td>
<td>White clay with water</td>
</tr>
<tr>
<td>16</td>
<td>50</td>
<td>63</td>
<td>Broken basalt honeycomb</td>
</tr>
<tr>
<td>12</td>
<td>63</td>
<td>110</td>
<td>basalt hard</td>
</tr>
<tr>
<td>12</td>
<td>110</td>
<td>115</td>
<td>fractured basalt w/ water 6 GPM</td>
</tr>
<tr>
<td>12</td>
<td>115</td>
<td>245</td>
<td>Hard basalt</td>
</tr>
<tr>
<td>12</td>
<td>245</td>
<td>248</td>
<td>Fractured basalt with water</td>
</tr>
<tr>
<td>12</td>
<td>248</td>
<td>277</td>
<td>Hard basalt</td>
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<tr>
<td>12</td>
<td>277</td>
<td>293</td>
<td>sand with water 100+GPM</td>
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<td>293</td>
<td>365</td>
<td>sand with ten clay seams</td>
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<tr>
<td>12</td>
<td>365</td>
<td>371</td>
<td>sand and wood with water</td>
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<td>12</td>
<td>371</td>
<td>422</td>
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<tr>
<td>12</td>
<td>422</td>
<td>466</td>
<td>brown clay with sand</td>
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<td>12</td>
<td>466</td>
<td>501</td>
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<td>Brie clay</td>
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<td>627</td>
<td>643</td>
<td>Basalt</td>
</tr>
<tr>
<td>12</td>
<td>643</td>
<td>686</td>
<td>sand, quartz with clay seams</td>
</tr>
<tr>
<td>12</td>
<td>686</td>
<td>725</td>
<td>dark brown clay with basalt chips</td>
</tr>
<tr>
<td>12</td>
<td>725</td>
<td>730</td>
<td>broken basalt with water</td>
</tr>
<tr>
<td>8</td>
<td>730</td>
<td></td>
<td>broken basalt with water</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

Firm Name: H2O Well Service Inc.  Firm No: 448
Firm Official:  Date: 9-7-06
Supervisor or Operator:  Date: 08/30/06
Louie Hanner

Location Corrected by IDWR To: T39N R06W Sec. 1 SESE
By: bragan  2013-09-09
INTRODUCTION

Four monitoring wells were established on the north edge of University of Idaho land in Moscow, Idaho during the summer of 2006. The wells are on the south side of a gravel and dirt county road. Three of the four wells are located (Figure 1) in the northwestern corner of ¼ SE., ¼ SE., Sec. 1, R. 6 W., T. 39 N. The fourth well is located approximately 1800 feet east of the three wells in Sec. 6, R. 5 W., T. 39 N. The approximate elevations of the wells are 2600 feet for the three wells and 2620 feet for the other well. The Palouse Basin Aquifer Committee (PBAC) will be establishing accurate GPS locations and elevations. The wells have been numbered 1-4 from shallowest (72 ft, MMW No. 1) to deepest (735 ft, MMW No. 4). This report focuses on wells 1 and 4.

Moscow is located along the eastern margin of the Columbia Plateau and is underlain by Miocene sediment and basalt of the Columbia River Basalt Group (CRBG) exceeding 1600 feet in total thickness. The area is surrounded on the north, east, and south by pre-Miocene igneous and metamorphic rocks that rise in elevation and make a C-shaped geologic basin open to the west were the CRBG units extend into Whitman County of Washington. Basalt flows are interlayered with sediment units that in general thicken to the east and northeast. Overall, sediment sequences makeup 60-70% of the total GRBG in the Moscow area.

Four Miocene basalt flows and four sediment sequences were encountered during drilling. Samples were analyzed using a binocular scope and lithology logs were completed for the shallowest and deepest wells (Tables 1 and 2). Major and trace element chemistry for each basalt unit was determined from rotary chips (Tables 3 and 4). Chemistry and sequence position was used to correlate the basalt flows to local wells and regional stratigraphic units (Figure 2). The sediments were drilled primarily by mud-rotary and accurate sampling was difficult for some intervals. Figure 3 illustrates the approximate position of installed screens relative to stratigraphic unit for the four wells.

A north to northeast trending cross-section using Well No. 4 as the focal point was constructed from the data obtained (Plate One). Regional correlations into the state of Washington were determined from the chemistry data and these correlations are discussed in the text.

The chemical analyses were done by the GeoAnalytical Laboratory at Washington State University.

BASALT UNITS

Basalt flows encountered are from three different formations of the Miocene Columbia River Basalt Group. From oldest to youngest these are the Grande Ronde, Wanapum and Saddle Mountains formations. The discussion of the units encountered is from the oldest to the
youngest. The deepest Grande Ronde Basalt (720-735 ft) was analyzed twice for chemistry. It is interpreted to belong to the Wapshilla Ridge flows of the Winter Water Member, R2 magnetostratigraphic unit. These flows according to Reidel and others (1989), are high silica flows characterized by low MgO (3.00 to 4.00 wt%) and high to very high TiO₂ exceeding 2.6 wt%. In Pullman, seven miles to the west, the Grande Ronde has been divided from base upward into the R1, N1, R2, and N2 sequences (Bush and Garwood, 2003). Comparisons to existing chemistry show that basalt with similar high silica and TiO₂ occurs in at least four wells. The depths of these samples are as follows: WSU No. 7 (540 ft), WSU No. 6 (525 ft), Pullman No. 5 (428 ft), and Pullman No. 7 (425 ft). These correlations are useful for understanding the geohydrology of the Moscow-Pullman basin, but must be considered tentative until additional data is available.

The only sequence chemistry data available from a deep well in Moscow comes from information presented by Brown (1976). That data was collected using outdated XRF machines by today’s standards. However, he reports analyses from the 625- to 725-foot interval in University Well No. 3 that is useful. That chemistry is similar to characteristics of the R2 unit. Other data presented by Brown (1976) suggests that the top of the R2 occurs between 532 and 585 feet in the DOE test well located approximately 2 miles west of the Idaho-Washington boundary.

The uppermost Grande Ronde was encountered between 499 and 585 feet (top at approximately 2100 ft) in MMW No 4. A review of characteristics of upper Grande Ronde flows by Reidel and others (2004) indicates that the basalt belongs to the Sentinel Bluffs Member of the N2 magnetostratigraphic unit, which consists of several flows at the top of the Grande Ronde (Reidel and others, 1989). The chemistry from this flow was also compared to existing Moscow-Pullman data. These comparisons indicate that this flow in MMW No. 4 correlates to the basalt of Stember Creek (Figure 4) described by Reidel (2005). A flow with very similar chemistry occurs at the top of the Grande Ronde in the Palouse city well at an elevation of approximately 2100 ft.

Comparisons to the DOE test well and wells in the City of Pullman indicate that at least three to four flows younger than the uppermost Grande Ronde in MMW No. 4 make up the top of the Grande Ronde at those localities. These correlations show that the top of the N2 thins rapidly and becomes overlain by thick sediments of the Latah Formation near the state line. This change causes the top of the Grande Ronde surface to drop from approximately 2400 feet in the DOE test well in Washington to approximately 2100 feet in MMW No. 4 over a distance of less than 3 miles (Figure 5). Although the chemistry was much less precise than used for this report, Brown came to the same conclusion over 30 years ago (Brown, 1976).

One basalt flow of the Wanapum Formation was encountered from 49 to 276 feet in MMW No. 4. Three samples were analyzed and the basalt has a Lolo chemical type and belongs to the Priest Rapids Member. Outcrops of this member occur throughout the Palouse Basin and has been encountered in hundreds of wells. It is relatively consistent across the Moscow area before it thins out near to the edge of the pre-Miocene rocks that define the northern, eastern and southern boundary. Towards the west the basalt thins to less than 100 feet in thickness over Pullman, but thickens again west of the city. Outcrops and well data show that, in places, the
basalt consists of two flow units with a vesicular zone or thin interbed separating the upper and lower portions. Hopper and Webster (1982) report that the Wanapum in Pullman locally consists of the Rosalia chemical type, which also belongs to the Priest Rapids Member.

A portion of a Saddle Mountains flow was encountered in MMW No. 1. The basalt in that well is only 10 feet thick and is highly iron stained and weathered. The surface casing was loosely packed with crushed basalt and the drill sample was contaminated. Therefore, the chemical analysis was not reported. The results however, contained enough features to determine that it to belong to the Weissenfels Ridge Member-Lewiston Orchards flow. This basalt has been noted in only a few localities within the Moscow area, but it has been mapped approximately 2000 feet north of the well (Hooper and Webster, 1982; Bush and Provant, 1998a). The Lewiston Orchards flow is interlayered with the uppermost Latah sediments (sediments of Bovill). The flow does not have extensive lateral continuity and it is concluded that it comes from a local vent.

SEDIMENT UNITS

Four units of sediments totaling a stratigraphic composite thickness of 414 feet were encountered during the drilling and construction of the monitoring wells. Collectively they belong to the Latah Formation and comprise over 50% of the entire sequence encountered. Westward away from the eastern edge of the Columbia Plateau these units thin, are in places not mapable at 1:24,000, and are often considered to be part of the basalt units. However, two specific names have been applied to part of this sequence in the Moscow area.

The term “sediments of Bovill” has been applied to the uppermost Miocene sediments which overlie the Priest Rapids Member (Bush and Provant, 1998). These sediments range up to 250 ft in thickness, and in general thin from east to west (Pierce, 1998). In MMW No. 1 these sediments exceed 72 feet.

Sediments that separate the base of the Wanapum and the uppermost Grande Ronde Basalt are referred to as the Vantage Member (Bush and Provant, 1998). In MMW No. 4 this unit is 225 feet thick. The term comes from outcrops near Vantage, Washington, and was utilized in regional correlations into the Pullman area (Siems and others, 1974).

The sediments in the Moscow area were deposited primarily in response to the emplacement of basalt flows advancing from the west. The sediments consist of alternating upward fining sequences of gravel, sand, silt, and clay. The uppermost sediments also contain laterally extensive beds of peat in the southeastern portion of the basin (Fairley and others, 2006). Towards the edges of the pre-Miocene rocks the sediments grade into weathered slightly transported and non-transported weathered granitic regolith.

Estimates of sand, silt, and clay percentages were difficult to determine for the monitoring wells because of drilling methods. The sediments of Bovill consisted of approximately 20% gravel and sand. The Vantage contained approximately 25% sand and gravel. The lowermost interbed between the Grande Ronde flows contained approximately 33% sand. The larger grains of the sand and gravel intervals are well sorted in terms of size, but the sediments contain abundant
clay and silt matrix. In addition, the grains are generally not well rounded.

Hosterman and others (1960), Calvin (1964), Lin (1967), Pierce (1998), and Fairley and others (2006) provide details on much of the sediment sequence in the Moscow area.

GEOLOGIC CROSS SECTION

A geologic cross-section ABC (Plate One) was constructed in two directions from MMW No. 4 (Figure 1). Data from the Naylor farm to the northeast and outcrops to the southwest of the monitoring wells provides some base control. The AB part of the section has excellent control from city and University deep wells. However, there are no deep wells between MMW No. 4 and Naylor farm. Moscow Well No. 6, located east of the monitoring wells, indicates that there is an eastward increase in sediment content, which is consistent with previous cross-sections drawn E-W through Moscow. The increase in sediment shown on the cross-section towards the northeast is probably correct. However, the depth to pre-Miocene rocks should be considered open to interpretation.

Overall the sediment-basalt relations illustrated on Plate One are consistent with stratigraphic and geologic cross-sections in Lin (1967), Crosby and Calvin (1960), Calvin (1964), Brown (1976), Bush and Provant (1998a and b), Bush and others (1998), and Bush and others (2000). However, there are two differences that should be noted. First, the earlier geologic cross-sections show Pleistocene loess in contact with the basalt. Review of over 100 shallow test holes for construction during the past 15 years in the Moscow area show that the loess is generally thin and Miocene sediments overlie the basalt flows at all localities except along the edges of flood plains in the western part of the basin. Surficial maps of the Moscow area illustrate and discuss the relations of the unconsolidated materials (Othberg and Breckenridge, 2001a and b).

The second difference between earlier and recent cross-sections is the method of illustrating contact relations with pre-Miocene rocks. Geologic mapping of this contact throughout northern Idaho and eastern Washington has shown that basalt resting directly on pre-Miocene rocks is very rare. Therefore, the basalt flows on Plate One are shown to be separated from the pre-Miocene rocks by associated sediments.

SUMMARY

The major geologic findings from the Moscow Monitoring wells are as follows:

1) Four basalt flows belonging to three different formations of the Columbia River Basalt Group were encountered in the wells.

2) Latah Formations sediments make up over 50% of the sequence.

3) Sand and gravel make up between 20-33% of the sediment layers.

4) The entire sequence is consistent with eastward and northeastward decrease in basalt as the
sediment intervals thicken.

5) The units encountered are consistent with those described and illustrated on published geologic maps and reports.

6) Chemistry data show that the uppermost Grande Ronde flow is the basalt of Stember Creek, which is similar to the upper Grande Ronde flow in Palouse, Washington. The same data when compared to data from Washington wells show a rapid eastward thinning of 400 to 500 feet of Grande Ronde just west of the Washington-Idaho boundary.

7) The lower Grande Ronde basalt encountered in MMW No. 4 is correlated to the Wapshilla Ridge flows of the R2 magnetostratigraphic unit. Similar flows of the R2 can be tentatively located in wells located in Pullman.

REFERENCES CITED


Hooper, P.R., and C.D. Webster, 1982, Geology of the Pullman, Moscow West, Colton, and Uniontown 7 ½ minute quadrangles, Washington and Idaho: State of Washington, Department of Natural Resources, Division of Geology and Earth Resources, Geologic Map GM-26, scale 1:62,000, one sheet.


<table>
<thead>
<tr>
<th>Unit</th>
<th>Depth (feet)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td>0–8</td>
<td>Top soil, dark dusky brown (5 yr 2/2).</td>
</tr>
<tr>
<td>Latah Formation (Sediments of Bovill Member)</td>
<td>8–19</td>
<td>Clay, dark yellowish orange (10 yr 6/6), slightly silty. Granule gravel, 2mm to 6mm, average 4mm, occasional pebble 10-20mm, very angular to subangular, 99% quartz, minor muscovite and feldspar. most grains transparent, very light gray (N8) to yellowish gray (5 yr 8/1), water bearing. Samples are stained and contain yellow clay. Percent clay undetermined, but believed to be relatively high.</td>
</tr>
<tr>
<td></td>
<td>19–25</td>
<td></td>
</tr>
<tr>
<td>Saddle Mountains Basalt (Weissenfels Ridge Member, Lewiston Orchards Flow)</td>
<td>25–35</td>
<td>Basalt, fine-grained, occasional plagioclase phenocryst 3-4mm, medium dark gray (N4), Fe and Mn stains on uppermost and lowermost chips.</td>
</tr>
<tr>
<td></td>
<td>35–40</td>
<td>Clay, pale blue (5B 6/2) with white (N9) centers, when wet color changes to blue and generally recorded as blue clay by most drillers, very slick.</td>
</tr>
<tr>
<td></td>
<td>40–47</td>
<td>Clay, varied colored, yellowish gray (5 yr 7/2) to pale yellowish orange (10 yr 8/6), minor black streaks (N1), approximately 10% silt and very fine sand.</td>
</tr>
<tr>
<td></td>
<td>47–58</td>
<td>Clay, pale yellowish orange (10 yr 7/2), very slick.</td>
</tr>
<tr>
<td></td>
<td>58–70</td>
<td>Granule gravel, 3-5mm, coarser in places 6-7mm, occasional 10-15mm pebble, 99% quartz, minor muscovite and feldspar, subangular to subrounded. Samples stained yellow and contained yellow clay. Not possible to estimate percent of clay.</td>
</tr>
<tr>
<td></td>
<td>70–72</td>
<td>Clay, pale yellowish orange (10 yr 7/2).</td>
</tr>
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</table>
Table 2. Lithologic Log for Moscow Monitoring Well No. 4 (Bush, 26 June 2006).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Depth (feet)</th>
<th>Description</th>
</tr>
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<td>Top soil</td>
<td>0–2</td>
<td>Top soil, dark dusky brown (5 yr 2/2).</td>
</tr>
<tr>
<td>Latah Formation (Sediments of Bovill Member)</td>
<td>2–30</td>
<td>Clay, dark yellowish brown (10 yr 4/2), slightly silty.</td>
</tr>
<tr>
<td></td>
<td>30–50</td>
<td>Clay, white (N9) to yellowish gray (5 yr 7/2).</td>
</tr>
<tr>
<td></td>
<td>50–60</td>
<td>Basalt, vesicular, fine-grained, medium-gray (N5), iridescent coatings common.</td>
</tr>
<tr>
<td></td>
<td>60–70</td>
<td>Basalt, vesicular.</td>
</tr>
<tr>
<td></td>
<td>70–110</td>
<td>Basalt, dense, fine to medium-grained, occasional plagioclase phenocryst, medium-gray (N6), fractured at 110 ft.</td>
</tr>
<tr>
<td></td>
<td>110–245</td>
<td>Basalt, dense, same as above.</td>
</tr>
<tr>
<td></td>
<td>245–247</td>
<td>Basalt gravels, 2-3cm, angular to sub-rounded, same as host rock, interpreted as non-depositional.</td>
</tr>
<tr>
<td></td>
<td>247–276</td>
<td>Basalt, dense, fine to medium-grained, occasional plagioclase phenocrysts.</td>
</tr>
<tr>
<td>Wanapum Basalt Priest Rapids Member (Lolo chemical type)</td>
<td>276–278</td>
<td>Sand, coarse to very coarse (1/2mm to 2mm), 90% quartz, 10% basalt?, minor muscovite and feldspar?, subangular to subrounded, sample mixed with chips from above.</td>
</tr>
<tr>
<td></td>
<td>278–285</td>
<td>Clay, white (N9) to very light gray (N8).</td>
</tr>
<tr>
<td></td>
<td>285–290</td>
<td>Sand, very coarse (1.5-2mm), 90% quartz, 10% basalt?, minor muscovite, subrounded, fairly well sorted, rare wood fragments.</td>
</tr>
<tr>
<td></td>
<td>290–335</td>
<td>Sand, silt and clay, occasional granule of quartz and some subrounded basalt (3-5%). Abundant wood fragments and sample sticky 299-305 feet.</td>
</tr>
<tr>
<td></td>
<td>335–360</td>
<td>Sand, silt, and clay, greenish gray clay in overflow ditch, but not in samples. Sand is coarse to very coarse-grained.</td>
</tr>
<tr>
<td></td>
<td>360–370</td>
<td>Clay, brownish gray (5 yr 4/1), sandy?, abundant wood fragments.</td>
</tr>
<tr>
<td></td>
<td>370–410</td>
<td>Sand, coarse .5 to 1mm to very coarse (1.5mm), subangular to subrounded, fairly well sorted with silt and clay, minor wood fragments with some abundant intervals, color of mud is greenish gray, abundant silt in overflow ditch after drilling, occasional very fine-grained well rounded siltite granule.</td>
</tr>
<tr>
<td></td>
<td>410–423</td>
<td>Sand, slightly coarser than above.</td>
</tr>
<tr>
<td></td>
<td>485–499</td>
<td>Clay and silt, mud a grayish yellow green (5GY 7/2) in color.</td>
</tr>
<tr>
<td>Latah Formation (Vantage Member)</td>
<td>499–510</td>
<td>Basalt, vesicular with small openings, iridescent coatings.</td>
</tr>
<tr>
<td></td>
<td>510–580</td>
<td>Basalt, dark gray (N3), very fine-grained, dense.</td>
</tr>
<tr>
<td></td>
<td>580–585</td>
<td>Basalt, dark gray (N3), vesicular and iron stained, minor vesicle fillings.</td>
</tr>
<tr>
<td>Grande Ronde Basalt (N2 Member)</td>
<td>585–620</td>
<td>Basalt, vesicular, fine-grained, medium-gray (N5), iridescent coatings common.</td>
</tr>
<tr>
<td></td>
<td>620–665</td>
<td>Clay, dark yellowish brown (10 yr 4/2), slightly silty.</td>
</tr>
<tr>
<td></td>
<td>665–720</td>
<td>Clay, brownish gray (5YR 4/1), silty in places.</td>
</tr>
<tr>
<td>Grande Ronde Basalt (R2 Member)</td>
<td>720–735</td>
<td>Basalt, dark gray (N3), very fine-grained.</td>
</tr>
</tbody>
</table>
Table 3. Major Oxide Chemistry for Moscow Monitoring Well No. 4 (2006).

<table>
<thead>
<tr>
<th>Sample Depth (ft)</th>
<th>SiO₂</th>
<th>TiO₂</th>
<th>Al₂O₃</th>
<th>FeO</th>
<th>MnO</th>
<th>MgO</th>
<th>CaO</th>
<th>Na₂O</th>
<th>K₂O</th>
<th>P₂O₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>50.55</td>
<td>3.33</td>
<td>13.99</td>
<td>13.11</td>
<td>0.23</td>
<td>4.64</td>
<td>9.52</td>
<td>2.70</td>
<td>1.14</td>
<td>0.78</td>
</tr>
<tr>
<td>245</td>
<td>49.61</td>
<td>3.37</td>
<td>14.24</td>
<td>12.99</td>
<td>0.23</td>
<td>5.40</td>
<td>9.57</td>
<td>2.70</td>
<td>1.08</td>
<td>0.81</td>
</tr>
<tr>
<td>270</td>
<td>50.23</td>
<td>3.16</td>
<td>13.70</td>
<td>13.66</td>
<td>0.23</td>
<td>5.23</td>
<td>9.20</td>
<td>2.72</td>
<td>1.13</td>
<td>0.74</td>
</tr>
<tr>
<td>510</td>
<td>55.30</td>
<td>1.77</td>
<td>14.77</td>
<td>9.91</td>
<td>0.21</td>
<td>4.40</td>
<td>9.13</td>
<td>2.82</td>
<td>1.39</td>
<td>0.29</td>
</tr>
<tr>
<td>545</td>
<td>54.26</td>
<td>1.72</td>
<td>14.52</td>
<td>10.95</td>
<td>0.20</td>
<td>4.87</td>
<td>8.97</td>
<td>2.83</td>
<td>1.38</td>
<td>0.30</td>
</tr>
<tr>
<td>730</td>
<td>55.59</td>
<td>2.78</td>
<td>14.84</td>
<td>10.12</td>
<td>0.19</td>
<td>3.16</td>
<td>7.74</td>
<td>3.14</td>
<td>1.68</td>
<td>0.77</td>
</tr>
<tr>
<td>735</td>
<td>55.94</td>
<td>2.71</td>
<td>14.57</td>
<td>10.59</td>
<td>0.19</td>
<td>2.98</td>
<td>7.47</td>
<td>3.17</td>
<td>1.89</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Normalized Major Elements (Weight %)

Table 4. Trace Element Chemistry for Moscow Monitoring Well No. 4 (2006).

<table>
<thead>
<tr>
<th>Sample Depth (ft)</th>
<th>Ni</th>
<th>Cr</th>
<th>Sc</th>
<th>V</th>
<th>Ba</th>
<th>Rb</th>
<th>Sr</th>
<th>Zr</th>
<th>Y</th>
<th>Nb</th>
<th>Ga</th>
<th>Cu</th>
<th>Zn</th>
<th>Pb</th>
<th>La</th>
<th>Ce</th>
<th>Th</th>
<th>Nd</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>45</td>
<td>101</td>
<td>39</td>
<td>376</td>
<td>620</td>
<td>28</td>
<td>290</td>
<td>190</td>
<td>43</td>
<td>14.4</td>
<td>23</td>
<td>42</td>
<td>146</td>
<td>7</td>
<td>29</td>
<td>63</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>245</td>
<td>49</td>
<td>102</td>
<td>40</td>
<td>379</td>
<td>677</td>
<td>24</td>
<td>295</td>
<td>180</td>
<td>45</td>
<td>15.8</td>
<td>23</td>
<td>43</td>
<td>150</td>
<td>7</td>
<td>30</td>
<td>65</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>270</td>
<td>49</td>
<td>97</td>
<td>38</td>
<td>366</td>
<td>531</td>
<td>28</td>
<td>281</td>
<td>182</td>
<td>42</td>
<td>14.7</td>
<td>21</td>
<td>42</td>
<td>141</td>
<td>9</td>
<td>30</td>
<td>55</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>510</td>
<td>34</td>
<td>107</td>
<td>37</td>
<td>330</td>
<td>641</td>
<td>35</td>
<td>305</td>
<td>147</td>
<td>30</td>
<td>10.1</td>
<td>21</td>
<td>58</td>
<td>110</td>
<td>7</td>
<td>19</td>
<td>41</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>545</td>
<td>38</td>
<td>109</td>
<td>36</td>
<td>318</td>
<td>512</td>
<td>34</td>
<td>292</td>
<td>145</td>
<td>30</td>
<td>10.0</td>
<td>20</td>
<td>65</td>
<td>121</td>
<td>37</td>
<td>17</td>
<td>38</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>730</td>
<td>22</td>
<td>17</td>
<td>35</td>
<td>420</td>
<td>1087</td>
<td>45</td>
<td>362</td>
<td>206</td>
<td>43</td>
<td>13.1</td>
<td>24</td>
<td>31</td>
<td>130</td>
<td>11</td>
<td>28</td>
<td>66</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>735</td>
<td>14</td>
<td>13</td>
<td>34</td>
<td>425</td>
<td>971</td>
<td>49</td>
<td>349</td>
<td>202</td>
<td>41</td>
<td>13.3</td>
<td>22</td>
<td>29</td>
<td>141</td>
<td>10</td>
<td>27</td>
<td>54</td>
<td>5</td>
<td>33</td>
</tr>
</tbody>
</table>

Unnormalized Trace Elements (ppm)
Figure 1. Location of MMW 2-4, and Geologic Cross-Section ABC.
Figure 2. Stratigraphic units of the Columbia River Basalt Group, Palouse Basin, Idaho-Washington.
Figure 3. Composite Stratigraphic Column for Moscow Monitoring Wells (2006).
Figure 4. Subdivision of the Upper Grande Ronde Basalt by Riedel (2005).
Figure 5. Structural Contour Map of the Top of the Grande Ronde Basalt Superimposed on a Physiographic Map of the Palouse Basin (contour interval=50').
Note: Uppermost Latah contains Pleistocene loess which varies in thickness from 0 to 50 feet.
MEMORANDUM

To: Helen Harrington, Idaho Department of Water Resources
From: Dale Ralston, RHS
Subject: Completion of Moscow Test Well Project
Date: February 21, 2007

The purpose of this memo is to provide a summary of well completion and geologic information from the construction of four test wells near the City of Moscow, Idaho. The memo includes three parts: 1) project description, 2) well completion information and 3) geology as interpreted by Dr. John Bush.

PROJECT DESCRIPTION

The objective of the Moscow Deep Test Well project was to construct test wells completed at four different depths at a drill site location northwest of the City of Moscow. The target stratigraphic intervals that were used to guide the drilling project, formulated by researchers from the University of Idaho and Washington State University, are listed below. The target depths and elevations were developed based on lithologic information from nearby university and city wells.

- **Shallow sediments of Bovill** – Target zone is the bottom 5 to 10 feet of sediments directly on top of the Wanapum basalt. This well will be completed only if sufficient saturated sands exist. The 5 to 10 feet of well screen should be placed in the bottom of the hole directly on the top of the Wanapum Basalt.

- **Wanapum Basalt** – Target zone is between elevations of 2390 and 2370 feet above mean sea level. Bottom of the screen should be placed about 10 feet above the base of the basalt. The screen should be placed between the target elevations of 2390 and 2370 feet unless a “major” producing zone is encountered at a higher or lower elevation (but not less than 10 feet above the base of the Wanapum Basalt). *(Screen interval depth of about 210 to 230 feet)*

- **Vantage Member** – Target zone is between the elevations of 2260 and 2200 feet above mean sea level. The target zone is a potential coarse sand layer about 80 feet below the bottom of the Wanapum Basalt. Depending on the actual thickness of the sand layer, 5 to 10 feet of well screen should be used. *(Screen interval depth of about 340 to 400 feet)*
Upper Grande Ronde Basalt – Target zone is between the elevations of 1830 and 1810 feet above mean sea level. One producing zone is Moscow 9 is about 90 feet below the top of the Grande Ronde. This producing zone is the potential target unless a “major” producing zone is encountered at a shallower or deeper depth. Ideally, this well should not extend deeper than an elevation of 1750 feet above mean sea level. (Screen interval depth of about 770 to 790 feet)

Drilling specifications were developed based on the lithologic targets and bid documents were prepared. The University of Idaho was responsible for financial administration of the project. Project funding was from the Idaho Department of Water Resources. H2O Well Services from Coeur d’Alene was low bidder and was awarded the contract. The plan was to drill the Upper Grande Ronde Basalt well first so the lithology would be known for the remaining three wells.

A drilling site that had been selected by researchers from the UI and WSU is located on UI land near the Washington-Idaho state line (Figure 1). An unimproved farm road provides access to the site. The originally selected drill site was not available in March 2006 when the driller was ready to mobilize on site because of wet field conditions. The decision was made to move the well construction to a site located about 0.5 miles east of the initially selected site. The drill rig was moved to the East Drilling Site in early June 2006.

The sediment and basalt sequence encountered in the first 70 feet at the East Drilling Site was more like Moscow well #8 than the three wells upon which the drilling plan was developed (Moscow well #9, UI wells #3 and #4). The decision was made to complete a shallow well at the East Drilling Site and then mobilize the drilling equipment to the original drilling site, hereafter termed the West Drilling Site (Figure 1). Approval of the change in drilling location was sought and obtained from the University of Idaho. The remaining three wells were constructed at the West Drilling Site.

Drilling activities proceeded with construction of Wanapum Well, the Vantage Well and the Upper Grande Ronde Well. The greatest drilling difficulties were encountered in the Upper Grande Ronde Well when a welded joint failed down hole when casing was being pulled back. All problems were ultimately solved and the last well was completed in September 2006.

WELL COMPLETION INFORMATION

Well completion information is provided in this section along with the geologic information provided by the driller. The stratigraphic interpretation of the material penetrated during construction of the four wells prepared by Dr. John Bush is presented in the following section.

Sediments of Bovill Well

This well was constructed at the East Drilling Site to a total depth of 73 feet using an air rotary drilling rig. Twelve-inch diameter steel casing was driven to a depth of 73 feet and then removed as the permanent casing was installed. The well has 4-inch diameter PVC casing to a depth of 70 feet with 0.010-inch, factory slotted casing in the depth interval of 60 to 70 feet. A sand pack was installed around the casing in the depth
interval of 57 to 70 feet with a bentonite seal from land surface to a depth of 57 feet. Eight-inch diameter surface casing was installed to a depth of about 10 feet and equipped with a locking cap. The reported yield by the driller was 5 to 8 gpm (gallons per minute). The reported depth to water was 35 feet below ground surface. The geologic log prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3 feet</td>
<td>fill, coarse rock</td>
</tr>
<tr>
<td>3 to 13 feet</td>
<td>dark brown soil</td>
</tr>
<tr>
<td>13 to 19 feet</td>
<td>tan/brown soil, clay-like</td>
</tr>
<tr>
<td>19 to 23 feet</td>
<td>yellow and tan clay-like with sands</td>
</tr>
<tr>
<td>23 to 34 feet</td>
<td>broken basalt, medium</td>
</tr>
<tr>
<td>34 to 45 feet</td>
<td>blue/tan clay</td>
</tr>
<tr>
<td>45 to 55 feet</td>
<td>white and tan clay with sand</td>
</tr>
<tr>
<td>55 to 70 feet</td>
<td>sand with clay and water</td>
</tr>
<tr>
<td>70 to 73 feet</td>
<td>yellow/tan clay</td>
</tr>
</tbody>
</table>

**Wanapum Basalt Well**

This well was constructed at the West Drilling Site to a total depth of 282 feet using an air rotary rig. Eight-inch diameter temporary steel casing was driven to a depth of 63 feet and then removed as the permanent casing was installed. The well has 4-inch diameter PVC casing to a depth of 280 feet with 0.010-inch, factory slotted casing in the depth interval of 270 to 280 feet. A sand pack was installed around the casing in the depth interval of 265 to 280 feet with a bentonite seal from land surface to a depth of 265 feet. Eight-inch diameter surface casing was installed to a depth of about 10 feet and equipped with a locking cap. The reported yield by the driller was 50 gpm. The reported depth to water was 170 feet below ground surface. The geologic log prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 3 feet</td>
<td>gravel fill</td>
</tr>
<tr>
<td>3 to 18 feet</td>
<td>brown clayish soil</td>
</tr>
<tr>
<td>18 to 43 feet</td>
<td>yellow clayish soil</td>
</tr>
<tr>
<td>43 to 58 feet</td>
<td>soft brown basalt with rounds</td>
</tr>
<tr>
<td>58 to 110 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>110 to 116 feet</td>
<td>basalt with water, 5 gpm</td>
</tr>
<tr>
<td>116 to 245 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>245 to 248 feet</td>
<td>basalt with rounds</td>
</tr>
<tr>
<td>248 to 277 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>277 to 282 feet</td>
<td>sand and clay, water</td>
</tr>
</tbody>
</table>

**Vantage Member Well**

This well was constructed at the West Drilling Site to a total depth of 355 feet using an air rotary rig. Twelve-inch diameter temporary steel casing was installed and driven to a depth of 60 feet. A 12-inch diameter open hole was drilled through the basalt and then 8-inch diameter temporary steel casing was advanced to a depth of 345 feet. Both sections of temporary casing were removed as the permanent casing was installed. The well has 4-inch diameter PVC casing to a depth of 350 feet with 0.010-inch, factory slotted casing in the depth interval of 345 to 355 feet. A sand pack was installed around the casing in the depth interval of 340 to 355 feet. The product “Hole Plug” was installed
from land surface to a depth of 340 feet. Eight-inch diameter surface casing was installed to a depth of about 10 feet and equipped with a locking cap. The reported yield by the driller was 50+ gpm. The reported depth to water was 140 feet below ground surface. The geologic log prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 feet</td>
<td>fill rock</td>
</tr>
<tr>
<td>2 to 10 feet</td>
<td>brown top soil</td>
</tr>
<tr>
<td>10 to 19 feet</td>
<td>loamy-tan clay</td>
</tr>
<tr>
<td>19 to 23 feet</td>
<td>yellowish-tan clay with sand</td>
</tr>
<tr>
<td>23 to 43 feet</td>
<td>broken basalt</td>
</tr>
<tr>
<td>43 to 50 feet</td>
<td>whitish tan clay</td>
</tr>
<tr>
<td>50 to 58 feet</td>
<td>honey basalt</td>
</tr>
<tr>
<td>58 to 61 feet</td>
<td>light grey soft basalt</td>
</tr>
<tr>
<td>61 to 110 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>110 to 116 feet</td>
<td>basalt with water, 5 gpm</td>
</tr>
<tr>
<td>116 to 245 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>245 to 249 feet</td>
<td>broken basalt with rounds</td>
</tr>
<tr>
<td>249 to 280 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>280 to 301 feet</td>
<td>sand, lots of water</td>
</tr>
<tr>
<td>301 to 304 feet</td>
<td>hard grey clay</td>
</tr>
<tr>
<td>304 to 345 feet</td>
<td>sand with clay seams and wood</td>
</tr>
<tr>
<td>345 to 348 feet</td>
<td>hard clay with basalt</td>
</tr>
<tr>
<td>348 to 355 feet</td>
<td>sand with water</td>
</tr>
</tbody>
</table>

**Grande Ronde Well**

This well was constructed at the West Drilling Site to a total depth of 735 feet using a sequence of air rotary, mud rotary, and then air rotary drilling techniques. Twelve-inch diameter temporary steel casing was installed was driven to a depth of 60 feet. A 12-inch diameter open hole was drilled through the basalt. The drilling rig was then converted for mud rotary operations. The well was drilled open hole to a depth of about 730 feet. Eight-inch diameter steel casing was placed to a depth of 730 feet and then pressure grouted in place using a cement grout. The temporary 12-inch diameter casing was removed at this time. No additional casing was installed. The 8-inch diameter casing was equipped with a locking cap. The reported yield by the driller was 300 gpm. The reported depth to water was 372 feet below ground surface. The geologic prepared by the well driller is provided below.

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 feet</td>
<td>fill rock</td>
</tr>
<tr>
<td>2 to 8 feet</td>
<td>dark brown clayish soil</td>
</tr>
<tr>
<td>8 to 19 feet</td>
<td>tan clayish soil</td>
</tr>
<tr>
<td>19 to 43 feet</td>
<td>yellow clay with sand</td>
</tr>
<tr>
<td>43 to 50 feet</td>
<td>white clay with water</td>
</tr>
<tr>
<td>50 to 63 feet</td>
<td>broken basalt honey combed</td>
</tr>
<tr>
<td>63 to 110 feet</td>
<td>hard basalt</td>
</tr>
<tr>
<td>110 to 115 feet</td>
<td>fractured basalt with water, 6 gpm</td>
</tr>
<tr>
<td>115 to 245 feet</td>
<td>hard basalt</td>
</tr>
</tbody>
</table>
245 to 248 feet fractured basalt with water
248 to 277 feet hard basalt
277 to 293 feet sand with water, 100+ gpm
293 to 365 feet sand with tan clay seams
365 to 371 feet sand and wood with water
371 to 422 feet clay with sand
422 to 460 feet brown clay with sands
460 to 500 feet brown hard clay
500 to 582 feet grey basalt
582 to 627 feet sand and wood with water
627 to 686 feet sand, quartz with clay seams
686 to 725 feet dark brown clay with basalt chips
725 to 735 feet broken basalt with water

GEOLOGY AS INTERPRETED BY DR. JOHN BUSH

Grande Ronde Well

Depth in feet
0-2--------Top soil, dark dusky brown (5 yr 2/2).

LATAH FORMATION
Sediments of Bovill

2-30-------Clay, dark yellowish brown (10 yr 4/2), slightly silty.
35-50------Clay, white (N9) to yellowish gray (5 yr 7/2).

WANAPUM BASALT
Priest Rapids Member-Lolo chemical type

50-60-----Basalt, vesicular, fine-grained, medium-gray (N5), iridescent coatings common.
60-70-----Basalt, vesicular.
70-110----Basalt, dense, fine to medium-grained, occasional plagioclase phenocryst, medium-gray (N5), fractured at 110 ft.
110-245---Basalt, dense, same as above.
245-247---Basalt gravels, 2-3cm, angular to sub-rounded, same as host rock, interpreted as non-depositonal.
247-276---Basalt, dense, fine to medium-grained, occasional plagioclase phenocryst.

LATAH FORMATION
Vantage Member

276-278---Sand, coarse to very coarse (1/2mm to 2mm), 90% quartz, 10% basalt?, minor muscovite and feldspar?, subangular to subrounded, sample mixed with chips from above.
278-285---Clay, white (N9) to very light gray (N8).
285-290 ---Sand, very coarse (1.5-2mm), 90% quartz, 10% basalt ?, minor muscovite, subrounded, fairly well sorted, rare wood fragments.
290-335---Sand, silt and clay, occasional granule of quartz and some subrounded basalt (3-5%). Abundant wood fragments and sample sticky 299-305 feet.
335-360---Sand, silt, and clay, greenish gray clay in overflow ditch but not in samples. Sand is coarse to very coarse-grained
360-370—Clay, brownish gray (5YR 4/1), sandy?, abundant wood fragments.
370-410—Sand, coarse .5 to 1mm to very coarse (1.5mm), subangular to subrounded, fairly well sorted with silt and clay, minor wood fragments with some abundant intervals, color of mud is greenish gray, abundant silt in overflow ditch after drilling, occasional very fine-grained well rounded siltite granule.
410-423---Sand, slightly coarser than above.
423-485---Clay and silt, mud a moderate brown (5 YR 4/4) in color.
485-499---Clay and silt, mud a grayish yellow green (5GY 7/2) in color.

GRANDE RONDE BASALT
N2 Member

499-510---Basalt, vesicular with small openings, iridescent coatings.
510-580---Basalt, dark gray (N3), very fine-grained, dense.
580-585---Basalt, dark gray (N3), vesicular and iron stained, minor vesicle fillings.

LATAH FORMATION

585-620---Clay, grayish green (10GY 5/2), silty in places.
620-665---Sand, coarse to very coarse (1/2mm to 2mm), subangular, 95% quartz with siltite, basalts, and minor muscovite fragments.
665-720---Clay, brownish gray (5YR 4/1), silty in places.

GRANDE RONDE BASALT
R2 Member

720-735---Basalt, dark gray(N3), very fine-grained.

Sediments of Bovill Well

Depth in feet
0-8---------Top soil, dark dusky brown (5 yr 2/2).

LATAH FORMATION
Sediments of Bovill Member

8-19--------Clay, dark yellowish orange (10 yr 6/6), slightly silty.
19-25--------Granule gravel, 2mm to 6mm, average 4mm, occasional pebble 10-20mm, very angular to subangular, 99% quartz, minor muscovite and feldspar, most grains transparent, very light gray (N8) to yellowish gray (5y 8/1), water bearing. Samples are stained and contain yellow clay. Percent clay undetermined, but believed to be relatively high.

SADDLE MOUNTAINS BASALT
Weissenfels Ridge Member-Lewiston Orchards Flow

25-35-----Basalt, fine-grained, occasional plagioclase phenocryst 3-4mm, medium dark gray (N4), Fe and Mn stains on uppermost and lowermost chips.
LATAH FORMATION
Sediments of Bovill Member

35-40-----Clay, pale blue (5B 6/2) with white (N9) centers, when wet color changes to blue and generally recorded as blue clay by most drillers, very slick.

40-47-----Clay, varied colored, yellowish gray (5yr 7/2) to pale yellowish orange (10yr 8/6), minor black streaks (N1), approximately 10% silt and very fine sand.

47-58-----Clay, pale yellowish orange (10 yr 7/2), very slick.

58-70-----Granule gravel, 3-5mm, coarser in places 6-7mm, occasional 10-15mm pebble, 99% quartz, minor muscovite and feldspar, subangular to subrounded. Samples stained yellow and contained yellow clay. Not possible to estimate percent of clay.

70-72-----Clay, pale yellowish orange (10 yr 7/2).

Figure 1 Location Map
RYAN ITANI WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 31, 2018

Well Log ID: 1643507  Elev (ft): 2680 ±10  Depth (ft): 660  7.5’ Quad: Viola

Latitude: 46.754510°  Longitude: -117.088363°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Pullman Airport Road, Pullman, Wash.; on north side of road

Location Method:
Location is for well, in field; latitude and longitude from Ms. Robin Nimmer (written commun., April 17, 2018); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
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<tr>
<td>Clay, brown</td>
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<tr>
<td>Wanapum Basalt</td>
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</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
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<tr>
<td>Basalt of Lolo</td>
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<tr>
<td>Basalt</td>
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<td>Latah Formation</td>
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<td>Vantage Member</td>
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<tr>
<td>Clay, gray</td>
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<tr>
<td>Grande Ronde Basalt</td>
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<tr>
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<td>Meyer Ridge Member(?)</td>
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<tr>
<td>Basalt, soft</td>
<td>615</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>655</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515257590, TT B PT E1/2 OF W1/2 & PT N1/2 TT C; owner now is ITANI LAND CO LLC, 1515 SW WADLEIGH DR, PULLMAN WA; 88.26 acres; 10/01/15: grantor was LOCKEMAN, STANIA to ITANI LAND CO LLC (for $0).

Above, Itani parcel TT B is southwest of the yellow highlighted E.M. Boyd parcel.

References Cited:
WATER WELL REPORT

CONSTRUCTION/DECOMMISSION ("x" in circle)

Construction
Decommission

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned ☐ Method: ☐ Dog ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 10 in., drilled 10 ft.
Depth of completed well 120 ft.

CONSTRUCTION DETAILS

Casing ☐ Welded ☐ - Diam. from 2 ft. to 148 ft.
Installed: ☐ Liner installed ☐ - Diam. from 20 ft. to 160 ft.
☐ Threaded ☐ - Diam. from 20 ft. to 160 ft.

Perforations: ☐ Yes ☐ No
Type of perforator used SKILL SAW CUT

SIZE of perfor: ☐ 1 in. by ☐ 1 in. and no. of perfor: ☐ 1 from 120 ft.
diameter to 120 ft.

Screen: ☐ Yes ☐ No ☐ Stack-Off Direction: ☐ Yes ☐ No
Manufacturer's Name
Type ☐ Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel/Filter packed: ☐ Yes ☐ No
Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No
To what depth? 18 ft.

Material used in seal BENTONITE HOLE SEAL

Did any strata contain unsuitable water? ☐ Yes ☐ No
Type of water: ☐ Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name
Type: ☐ H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 495 ft. below top of well Date 9-2-717
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield gal./min. with ft. drawdown after hrs.
Yield gal./min. with ft. drawdown after hrs.
Yield gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

Date of test

Reactor gal/min. with ft. drawdown after hrs.
Arttest gal./min. with stem set at 100 ft. for hrs.
Artesian flow g.p.m. Date

Temperature of water °F Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller: ☐ Engineer ☐ Trainee Name (Print) Britt Uhlenkott
Driller's trainee License No. 2697

Driller's Signature:

Drilling Company: Britt Uhlenkott Drilling
Address 4604 103rd St. SW, Puyallup, WA
City, State, Zip Puyallup, WA 98371
Contractor's Registration No. 011650838A Date 10-1-17

ECY 050-1-20 (Rev 02-2016) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.
**J–S FARMLAND HOLDINGS WELL**

**[J BAR S FARMLAND HOLDINGS]**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

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**Well Log ID:** 1592907  
**Elev (ft):** 2580 ±10  
**Depth (ft):** 605  
**Quad:** Viola

**Latitude:** 46.756474°  
**Longitude:** -117.101898°  
**decimal degrees (WGS84)**

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**Well Address and (or) Other Location Information:**
Orville Boyd Road, Pullman, Wash.; on north side of road

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**Location Method:**
Location is for well, in field northeast of Bob Boyd well 2; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 14, 2018

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### GEOLOGIC UNITS — DESCRIPTION

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<th>Overburden</th>
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<table>
<thead>
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<th>Wanapum Basalt</th>
<th>Depth (ft)</th>
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<tr>
<td>Priest Rapids Member</td>
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<tr>
<td>Basalt of Lolo</td>
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<table>
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<th>Latah Formation</th>
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<tr>
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<tr>
<td>1Basalt(?), soft, green clay</td>
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<td>N2 magnetostratigraphic unit</td>
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<td>Sentinel Bluffs Member</td>
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<td>271 – 330</td>
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<tr>
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<td>330 – 373</td>
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<tr>
<td>Basalt</td>
<td>373 – 557</td>
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<tr>
<td>Basalt, soft</td>
<td>557 – 583</td>
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</table>
Driller reported soft, green basalt; interpreted as clay in the Vantage Member

Comments:
Whitman County Tax Parcel 200004515264900, SE BAL, owner now is J–S FARMLAND HOLDINGS LLC, 18 CRESCENT KEY, BELLEUVE WA; 58.0 acres; 02/26/14: grantor was BOYD FARMS INC, MERRILL, 14 parcels, to REDWOOD FARMLAND HOLDINGS LLC; 10/01/15: grantor was REDWOOD FARMLAND HOLDINGS LLC, 3 parcels, to J–S FARMLAND HOLDINGS LLC.

[Four currently undeveloped lots (A, B, C, and D) are part of HILLCREST ESTATES BOYD CLUSTER A SHORT PLAT and are assigned to 1634, 1638, 1636, and 1632 J BAR S Road, Pullman, respectively.]

Well is a group well, probably to serve homes in HILLCREST ESTATES BOYD CLUSTER A SHORT PLAT.

References Cited:
WATER WELL REPORT

CONSTRUCTION/DECOMMISSION ("x" in circle)

Construction  Decommission ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: Domestic  Industrial  Municipal
DeWater  Irrigation  Test Well  Other

TYPE OF WORK: Owner’s number of well (if more than one) ______
New well  Reconditioned  Method:  Deg.  Bored  Drilled
Deepened  Cable  Rotary  Jetted

DIMENSIONS: Diameter of well ______ inches, drilled ______ ft.
Depth of completed well ______ ft.

CONSTRUCTION DETAILS

Casing  Yes  No  Dia. ______ ft. ______ ft.
Installed:  Liner installed ______ Dia. ______ ft. ______ ft.
Threaded  ______ Dia. ______ ft. ______ ft.

Perforations:  Yes  No  Size of perf. 1/4 in. by ______ in. no. of perf. ______ ft. ______ ft.

Screen:  Yes  No  K-Pac  Location

Manufacturer’s Name

Type ______ Model No. ______
Diam ______ ft. ______ ft. ______ ft.
Diam ______ ft. ______ ft. ______ ft.

Gravel/Filter packed:  Yes  No  Size of gravel/sand ______ ft. ______ ft.

Materials placed from ______ ft. to ______ ft.

Surface Seal:  Yes  No  To what depth ______ ft.

Material used in seal ______ ft.

Did any strata contain unusable water?  Yes  No

Type of water ______ Depth of strata ______ ft.

Method of sealing strata off ______

PUMP: Manufacturer’s Name

Type ______ H.P. ______

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.

Static level:  ______ ft. below top of well  Date 9-10-2016

Artesian pressure ____ lbs. per square inch  Date ______

Artesian water is controlled by ______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made?  Yes  No  If yes, by whom? ______

Yield:  gal./min. with ______ ft. drawdown after ______ hrs.

Yield:  gal./min. with ______ ft. drawdown after ______ hrs.

Yield:  gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time  Water Level  Time  Water Level  Time  Water Level

Date of test ______

Bailer test  gal./min. with ______ ft. drawdown after ______ hrs.

Airtest  35 gal./min. with stem set at ______ for ______ hrs.

Artesian flow ______ g.p.m.  Date ______

Temperature of water ______ Was a chemical analysis made?  Yes  No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller  Engineer  Trainer  Name (Print)  Burt Uhlenkott
Driller’s License No.  2014

Drilling Company  Burt Uhlenkott Drilling
Address  PO BOX 225
City  State  Zip  Cottonwood  ID  83522
Contractor’s Registration No.  RNW074185A

RANDALL JACK WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: 308586  Elev (ft): 2390 ±10  Depth (ft): 190  Quad: Pullman

Latitude: 46.705376  Longitude: -117.163382  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
603 Johnson Road, Pullman, Wash., on west side of road; well is located at right front of garage along inside curve of driveway.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 19, 2016).

<table>
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<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
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<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>12 – 175</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>*Sand and clay</td>
<td>175 – 190</td>
</tr>
</tbody>
</table>

Comments:
*Driller reported granite. Ground up granite is difficult to discern in well chips from poorly sorted quartz-rich coarse sediments.

Whitman County Tax Parcel 200004514084900, 603 JOHNSON RD, SE SE1/4 PART; owner is now TBD FARMS, LLC; 1½ story house built in 1938. Grantor was JEAN M. JACK ESTATE to ASKINS, DONALD, and then ASKINS, DONALD to TBD FARMS LLC, all on 12/16/14.

References Cited:


### WELL TESTS

- **Date of test:**
- **Time at which pump started:**
- **Time at which pump stopped:**
- **Flow rate:**
- **Water level:**
  - **Recorded:**
  - **Depth of screen:**
  - **Type of screen:**
  - **Type of well:**
  - **Type of well:**
  - **Type of well:**
  - **Type of well:**

### WATER LEVELS

- **Screen level:**
- **Ground level:**
- **Spout:**
- **Impoundment:**
- **Impoundment:**
- **Impoundment:**
- **Impoundment:**
- **Impoundment:**
- **Impoundment:**

### PUMP

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<th>Model No</th>
<th>Manufacturer</th>
<th>Name</th>
<th>Type</th>
<th>Diameter</th>
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### SCREENS

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<th>Diameter</th>
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<th>Depth of Screen</th>
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### CONSTRUCTION DETAILS

- **Date of construction:**
- **Date of completion:**
- **Depth of screen:**
- **Type of construction:**
- **Method of construction:**
- **Type of well:**
- **Type of well:**
- **Type of well:**
- **Type of well:**

### DIMENSIONS

- **Diameter of well:**
- **Depth of well:**
- **Type of construction:**
- **Method of construction:**
- **Type of well:**
- **Type of well:**
- **Type of well:**
- **Type of well:**

### LOCATION OF WELL

- **Proposed utility:**
- **Proposed utility:**
- **Proposed utility:**
- **Proposed utility:**

### MATERIAL

- **From:**
- **To:**

---

**Note:** The image appears to be a scanned document with handwritten notes. The text contains data related to well construction and testing.
ED JACOBSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 8, 2017

Well Log ID: 166153   Elev (ft): 2640 ±10   Depth (ft): 63   7.5’ Quad: Pullman

Latitude: 46.683818   Longitude: -117.179249 decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 20, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
901 Kirkendahl Road, Pullman, Wash., on southeast side of road

Location Method:
Location is for driveway area near attached garage; visual of mailbox (April 19, 2016); topographic map; PLSS subdivision is incorrect on driller’s report.

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<th>GEOLOGIC UNITS — DESCRIPTION</th>
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<td>Overburden</td>
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<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>*Wanapum Basalt(?)</td>
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<tr>
<td>Priest Rapids Member(?)</td>
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<tr>
<td>Basalt of Lolo(?)</td>
<td></td>
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<tr>
<td>Basalt, fractured</td>
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</tr>
<tr>
<td>Basalt, hard</td>
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<td>Basalt, porous and broken</td>
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</tr>
<tr>
<td>Basalt, hard</td>
<td>46</td>
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<tr>
<td>Basalt, broken</td>
<td>56</td>
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<td>Latah Formation</td>
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<tr>
<td>Vantage Member(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>61</td>
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</tbody>
</table>
Comments:

*This basalt could be the Saddle Mountains Basalt due to its high elevation.

Whitman County Tax Parcel 200004514202300, 901 KIRKENDAHL RD, NW SW 1/4, owners are JACOBSON, EDWARD/AFTON R; 38.0 acres; 1 story residence built in 1984.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name Ed Jacobson
Address Pullman

(2) LOCATION OF WELL: County Whitman

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner’s number of well
New well [ ] Method: Dug [ ] Bored [ ]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS:
Diameter of well 8” inches.
Drilled 63 ft. Depth of completed well 63 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8” Diam. from 1 ft. to 25 ft.
Threaded [ ] Diam. from ft. to ft.
Welded [ ] Diam. from ft. to ft.

Perforations: Yes [ ] No [ ]
Type of perforator used
SIZE of perforations In. by In.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [ ]
Manufacturer’s Name
Type
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ] Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ] To what depth? 25 ft.
Material used in seal Clay
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water... Depth of strata
Method of sealing strata off...

(7) PUMP: Manufacturer’s Name
Type

(8) WATER LEVELS:
Land-surface elevation above mean sea level ft.
Static level 35 ft. below top of well Date 8/19/84
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal/min. with ft. drawdown after hrs.
air test 6.5 pm

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

State of test
Water test gal/min. with ft. drawdown after hrs.
Temperature of water

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO
Overburden 0 17
Basalt 12 21
Basalt 21 27
Lava basalt 27 42
Broken basalt 42 46
Hard gray basalt 46 54
Broken basalt 54 61
Clay 61 63

RECEIVED
APR-9-1985
DEPARTMENT OF ECOLOGY
WELL DRILLER’S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Earl Wille
Drilling: (Person, firm, or corporation)
Address 207 Peters Lewiston

[Signature] Regan
(Well Driller)
License No. 0673 Date 1/16/85

799

(USE ADDITIONAL SHEETS IF NECESSARY)
**JOHN JACOBSON WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, July/August 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>D0035280</th>
<th>Elev (ft):</th>
<th>2650 ±10</th>
<th>Depth (ft):</th>
<th>375</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
</table>

Latitude: 46.759273  
Longitude: -117.013683  
decimal degrees (WGS84)


```
¼,  SE ¼,  SW ¼,  Sec. 31,  T. 40 N,  R. 5 W
```

**Well Address and (or) Other Location Information:**  
985 Compton Court, Moscow, Idaho, on east side of cul de sac

**Location Method:**  
Location is for house area; Latah County Assessor; Google Earth imagery; topographic map; PLSS subdivisions incorrect on driller’s report. Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation and Latah Formation (sediments of Bovill)</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>From 0 - To 130</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 130 - To 265</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 265 - To 301</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 301 - To 350</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>From 350 - To 375</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel number RP016160010020, 985 COMPTON CT, owner now is HALVORSON REV TRUST LIFE EST, CANTERWOOD ESTATES, BLK 1 LOT 2 (2.18 AC), 31 40 5.

References Cited:
**WELL DRILLER'S REPORT**

**1. WELL TAG NO. D**
- ID: 35280
- Water Right or Injection Well No.:

**2. OWNER:**
- Name: John Jacobson
- Address: 985 Compton Ct, Moscow, ID 83843

**3. LOCATION OF WELL by legal description:**
- You must provide address or Lot, Blk, Sub, or Directions to well.
- Twp: 39
- Rge: 5
- Sec: 31
- Govt Lot: L+41H
- Address of Well Site: 985 Compton Ct

**4. USE:**
- Domestic [X]
- Municipal [ ]
- Irrigation [ ]
- Other [ ]

**5. TYPE OF WORK**
- New Well [X]
- Modify [ ]
- Abandonment [ ]
- Other [ ]

**6. DRILL METHOD:**
- Air Rotary [X]
- Cable [ ]
- Mud Rotary [ ]
- Other [ ]

**7. SEALING PROCEDURES**

<table>
<thead>
<tr>
<th>Seal Material</th>
<th>From</th>
<th>To</th>
<th>Weight / Volume</th>
<th>Seal Placement Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>0</td>
<td>18</td>
<td>450 *</td>
<td>Top Pour</td>
</tr>
</tbody>
</table>

**8. CASING/LINER:**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 1/2</td>
<td>20</td>
<td>1 1/2</td>
<td>138</td>
<td>Steel</td>
<td>4 5/8</td>
<td>250</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**9. PERFORATIONS/SCREENS PACKER TYPE**

<table>
<thead>
<tr>
<th>Perforation Method</th>
<th>Screen Type &amp; Method of Installation</th>
</tr>
</thead>
</table>

**10. FILTER PACK**

**11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:**
- 142 ft. below ground
- Artesian pressure = _lb
- Depth flow encountered = _ft.
- Describe access port or control devices:
  - Top of Casing

**12. WELL TESTS:**

<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td></td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>

**13. LITHOLOGIC LOG:**

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1/2</td>
<td>TAN C101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1 1/2</td>
<td>138</td>
<td>Hard Gray Blt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3 1/2</td>
<td>138</td>
<td>Soft Blt Blt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>30</td>
<td>350</td>
<td>Nod Blt Blt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>30</td>
<td>375</td>
<td>SANDBSTONE</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

**14. DRILLER'S CERTIFICATION**

We certify that all minimum well construction standards were complied with at the time the rig was removed.

- Company Name: WICKLIM DRILLING
- Firm No.: 125
- Principal Driller: ______________
- Driller or Operator: ______________
- Date: 8-18-04
- Operator: ______________
- Date: 8-19-04

FORWARD WHITE COPY TO WATER RESOURCES
JERRY JAMES WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 4, 2016; November 9, 2017

Well Log ID: 162616  Elev (ft): 2450 ±10  Depth (ft): 450  Quad: Elberton

Latitude: 46.908487  Longitude: -117.228123 decimal degrees (WGS84)

\( \frac{1}{4}, \frac{3}{4}, \text{NE} \frac{1}{4}, \text{Sec. 2}, \text{T. 16 N}, \text{R. 44 E} \)

Well Address and (or) Other Location Information:
2361 James Road, Palouse, Wash., on northwest side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map.
Incorrectly located 6 mi west as Colfax North quadrangle Well 6 of Bush and others (2005 [2006]).
Site visit (September 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 6</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>6 – 18</td>
</tr>
<tr>
<td>Basalt</td>
<td>18 – 30</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>30 – 120</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>120 – 225</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>225 – 450</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004416021900, 2361 JAMES RD, NE LTS 9-10 & PT 15X7, owners are now JAMES, JERRY R/RYAN J/; 94.0 acres; 1 story residence, built in 1984.

Note on driller’s report refers to Jerry James as "Mrs. Jimmy."

References Cited:

OWNER: Jerry James (Mrs. Jimmy) Address: 2361 James Rd., Palouse WA 99161

LOCATION OF WELL: County: Whitman

STREET ADDRESS OF WELL: 2361 James Rd.

PROPOSED USE: Domestic X Industrial O Municipal O

TYPE OF WORK: Owner's number of well (If more than one)

Abandoned O New well X Method: Dug O Bored O

Deepened O Cable O Driven O Reconditioned O Rotary O Jetted O

DIMENSIONS: Diameter of well 6 inches.

Drilled 450 feet. Depth of completed well 450 ft.

CONSTRUCTION DETAILS:

Ceiling installed: 6 ft. Diam. from 0 ft. to 30 ft.

Welded: 4 ft. Diam. from 20 ft. to 450 ft.

Perforations: Yes X No O

Type of perforator used: Sawed

SIZE of perforations 3/16 in. by 4 in.

60 perforations from 450 ft. to 410 ft.

screens: Yes O No X

Gravel packed: Yes X No O

Gravel placed from 

Surface seal: Yes X No O

To what depth? 30 ft.

Material used in seal: Bentonite

Did any strata contain unusable water? Yes O No X

Type of water? Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type: H.P.

WATER LEVELS:

Land-surface elevation above mean sea level ft.

Static level 350 ft. below top of well Date

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes X No O

If yes, by whom?

Yield: 20 gal./min. with ft. drawdown after hrs.

Date of test

Bailer test gal./min. with ft. drawdown after hrs.

Artes test gal./min. with stem set at 450 ft. for 1 hrs.

Artesian flow g.p.m. Date

Temperature of water °F Was a chemical analysis made? Yes O No X

WELL CONSTRUCTOR CERTIFICATION:

NAME: JRU Well Drilling

ADDRESS: P.O. Box 214 Cottonwood

LICENSE NO.: 2205

Contractor's Registration No. Date

(USE ADDITIONAL SHEETS IF NECESSARY)
WILSON JASPER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 9, 2018

Well Log ID: NA Elev (ft): 2665 Depth (ft): 128 7.5’ Quad: Robinson Lake

Latitude: 46.751599° Longitude: -116.933553° decimal degrees (WGS84)

¼, ¼, W ½, Sec. 2, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
3884 Darby Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well, in field west of homes (latitude, longitude, and elevation from Fairley and others, 2006, HCP_well shapefile); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>98</td>
</tr>
<tr>
<td>Shale*</td>
<td>117</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>122</td>
</tr>
</tbody>
</table>

*Broken, fractured basalt is often misinterpreted as shale
Comments:

Latah County Tax Parcel RP39N05W022411, JASPER, WILSON C JR; 3884 DARBY RD, 40.31 AC GOVT LOT 3; 39.76 AC GOVT LOT 4; S 1/2 NW; N 1/2 SW, 2 39 5.

References Cited:

State: Idaho
Department of Water Administration

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Administration within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: WILSON JASPER
Address: MOSCOW IDAHO
Owner's Permit No.: 87-73-N-7

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement  ☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Other (specify type)
☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection

4. METHOD DRILLED

☐ Cable  ☐ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION

Diameter of hole: 6 inches  Total depth: 128 feet
Casing schedule: ☐ Steel  ☐ Concrete

Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No
How perforated?  ☐ Factory  ☐ Knife  ☐ Torch

6. LOCATION OF WELL

Sketch map location must agree with written location.

57

Subdivision Name
Lot No.
Block No.
County: CATHAN

8088 NW Sec. 2 T. 39 N. R. 5 W

7. WATER LEVEL

Static water level: 65 feet below land surface
Flowing?  ☐ Yes  ☐ No  G.P.M. flow
Temperature: 70° F.  Quality: GOOD
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA

Discharge G.P.M.: 25 GPM.

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diam.</th>
<th>Depth From</th>
<th>Depth To</th>
<th>Material</th>
<th>Water Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 1/2</td>
<td>16.78</td>
<td>24.99</td>
<td>DECOMPOSED GRANITE</td>
<td>1</td>
</tr>
<tr>
<td>9.9 1/17</td>
<td>3.866</td>
<td>11.4</td>
<td>5</td>
<td>x</td>
</tr>
<tr>
<td>0 117 123</td>
<td>0 122 125</td>
<td>SCALE</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>


11. DRILLERS CERTIFICATION

Bumpus & Witt

Address: LONSDON IDAHO

Signed by (Firm Official): E. R. Burns

USE ADDITIONAL SHEETS IF NECESSARY  FORWARD THE WHITE COPY TO THE DEPARTMENT
RALPH JENNINGS WELL 1

[DRILLED IN 1969]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 4, 2016

Well Log ID: NA  Elev (ft): 2540 ±10  Depth (ft): 276  Quad: Moscow West

Latitude: 46.700353  Longitude: -117.034619  decimal degrees (WGS84)

NE ¼, NE ¼, NW ¼, Sec. 25, T. 39 N, R. 6 W

Well Address and (or) Other Location Information:
1043 Blue Heron Lane, Moscow, Idaho; at end of lane, on south side

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. Moscow West quadrangle Well 52 of Bush, Provant, and Gill (1998).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 0 — To 50</td>
</tr>
<tr>
<td>Sediment, white and gray</td>
<td>From 50 — To 252</td>
</tr>
<tr>
<td>*Sand, poorly sorted</td>
<td>From 252 — To 276</td>
</tr>
</tbody>
</table>
Comments:

*Driller reported decomposed granite.

It is difficult to determine sediments of Bovill from decomposed granite. It is clear, however, that many wells reported as granite are in fact slightly reworked, decomposed granite. The fact that (1) no hard zones were reported in this well and (2) the driller decided the rock was decomposed leads to the conclusion that the well is primarily in sediments of Bovill. Its location near the basalt-granite contact is also evidence that the well is in the sediments of Bovill.

Latah County Tax Parcel RP39N06W252407, 1043 BLUE HERON LN; NENW, 25 39 6; owner now is MILLER, JAMES I; 5.0 acres.

References Cited:

State of Idaho
Department of Reclamation

WELL DRILLER’S REPORT

State law requires that this report be filed with the State Reclamation
within 30 days after completion or abandonment of the well.

1. WELL OWNER
Name: RALPH JENNINGS
Address: MOSCOW, IDAHO
Owner’s Permit No.: 87-69-N-4

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☒ Domestic  ☐ Irrigation  ☐ Test
☐ Municipal  ☐ Industrial  ☐ Stock

4. METHOD DRILLED
☐ Cable  ☐ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Diameter of hole 6 inches  Total depth 276 feet
Casing schedule: ☐ Steel  ☐ Concrete
Thickness Diameter From To
50 inches 6 inches 1 feet 82 feet
Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No
How perforated? ☐ Factory  ☐ Knife  ☐ Torch
Number of perforations  inches by inches
Well screen installed?  ☐ Yes  ☐ No
Manufacturer’s name
Type Model No.
Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet
Gravel packed?  ☐ Yes  ☐ No  Size of gravel
Placed from feet to feet
Surface seal?  ☐ Yes  ☐ No  To what depth feet
Material used in seal ☐ Cement grout ☐ Pudding clay

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level 40 feet below land surface
Flowing? ☐ Yes  ☐ No  G.P.M. flow
Temperature 75°F  Quality GOOD
Artesian closed-in pressure p.s.i.
Controlled by ☐ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☐ Other AIR TEST
Discharge G.P.M. Draw Down Hours Pumped

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Diam.</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>6”</td>
<td>0’-30”</td>
<td>CLAY</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8”</td>
<td>0’-81’</td>
<td>DECOMPOSED GRANITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6’</td>
<td>81’-92’</td>
<td>GRAY WHITE</td>
<td>DECOMPOSED GRANITE</td>
<td></td>
</tr>
<tr>
<td>6”</td>
<td>92’-276’</td>
<td>PINKISH DECOMPOSED GRANITE</td>
<td>WATER BEARER</td>
<td></td>
</tr>
</tbody>
</table>

WELL PRODUCED 1 G.P.M. MIN - FROM 81’ TO 252’
5 G.P.M. IN ZONE 252’ TO 276’

10. Work started DEC 7 (69) finished DEC 12 (69)

11. DRILLER’S CERTIFICATION
This well was drilled under my supervision and this report is to the best of my knowledge.

Driller’s or Firm’s Name: BURKE & WITT 58-103
Address: 2019 POWERS MEWS STON

Signed By: BURKE & WITT

USE ADDITIONAL SHEETS IF NECESSARY  FORWARD THE WHITE, BLUE, AND PINK COPIES TO THE DEPARTMENT
RALPH JENNINGS WELL 3

[DRILLED OCTOBER 18, 2001]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 2, 2016

Well Log ID: 315908 Elev (ft): 2460 ±10 Depth (ft): 375 7.5’ Quad: Pullman

Latitude: 46.675682 Longitude: -117.130952 decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 22, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1101 Jennings Road, Pullman, Wash., on north side of road. There are two wells at this address (Ralph Jennings well 2 and Ralph Jennings well 3, both drilled in October 201); Ralph Jennings 3 has to be at a lower elevation than Ralph Jennings 2.

Location Method:
Assumed location is in field west of house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 — 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 — 20</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>20 — 30</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>30 — 100</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>100 — 173</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2–R2 magnetostratigraphic units</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>173 — 340</td>
</tr>
<tr>
<td>Basalt, with blue clay(?)</td>
<td>340 — 375</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514224000, 1101 JENNINGS RD; SE; JENNINGS, RALPH E; 1½ story residence built in 1904; 158 acres.


References Cited:


WATER WELL REPORT

Construction/Decommission ("x" in circle)  102990

PROPOSED USE:  ☐ Domestic  ☐ Industrial  ☐ Municipal
☐ DeWater  ☐ Irrigation  ☐ Test Well  ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New Well  ☐ Reconditioned  Method: ☐ Dug  ☐ Bored  ☐ Driven
☐ Deepened  ☐ Cable  ☐ Rotary  ☐ Jetted

DIMENSIONS: Diameter of well _______ inches, drilled _______ ft

CONSTRUCTION DETAILS
Casing: ☐ Welded  ☐ Butt  ☐ Slip Joint  ☐ Other
Installed: ☐ Liner installed  ☐ Diam from _______ ft to _______ ft
☐ Threaded  ☐ Diam from _______ ft to _______ ft

Perforations: ☐ Yes  ☐ No
Type of perforator used: _______
SIZE of perfs _______ in by _______ in and no of perfs _______

Screens: ☐ Yes  ☐ No  ☐ K-Pac  Location: _______
Manufacturer's Name: _______
Type: _______ Model No.: _______
Diam _______ ft  Slot Size _______ ft to _______ ft
Diam _______ ft  Slot Size _______ ft to _______ ft

Gravel/Filter packed: ☐ Yes  ☐ No  ☐ Size of gravel/sand _______ ft
Materials placed from _______ ft to _______ ft

Surface Seal: ☐ Yes  ☐ No  To what depth? _______ ft
Materials used in seal: _______
Did any strata contain unusable water? ☐ Yes  ☐ No
Type of water: Depth of strata _______ ft
Method of sealing strata off: _______

PUMP: Manufacturer's Name: _______
Type: _______ HP

WATER LEVELS: Land-surface elevation above mean sea level _______ ft
Static level _______ ft below top of well Date: _______
Artesian pressure _______ lbs per square inch Date: _______
Artesian water is controlled by _______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes  ☐ No  If yes, by whom?
Yield: _______ gal/min with _______ ft drawdown after _______ hrs
Yield: _______ gal/min with _______ ft drawdown after _______ hrs
Yield: _______ gal/min with _______ ft drawdown after _______ hrs
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time _______ Water Level _______ Time _______ Water Level _______
Date: _______ Date: _______ Date: _______

Date of test: _______
Bailer test _______ gal/min with _______ ft drawdown after _______ hrs
Artesian flow _______ gpm Date: _______
Temperature of water: _______
Was a chemical analysis made? ☐ Yes  ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief
Driller ☐ Engineer ☐ Trainee Name (Print): _______
Driller/Engineer/Trainee Signature: _______
Driller or Trainee License No.: _______

If trained, licensed driller's
Signature and License no.: _______

CURRENT Notice of Intent No. W065632
Unique Ecology Well ID Tag No. AAW800
Water Right Permit No._______

Property Owner Name: Ralph Jennings
Well Street Address: 101 Jennings Rd
City: Pullman  County: Whitman
Location SE1/4- 1/4 NW1/4 Sec 22 Twin 14 R 41 EWM circle or one
Lat/Long: Lat Deg _______ Lat Min/Sec _______
Lang/Long: Long Deg _______ Long Min/Sec _______

Tax Parcel No._______

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered
(USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO
Clay _______ _______ 0 2
Silt Loam _______ _______ 2 30
Sand _______ _______ 20 100
Clay _______ _______ 100 173
Silt Loam _______ _______ 173 340
Blue Shale _______ _______ 340 375

RECEIVED
NOV 1 4 2001
DEPARTMENT OF ECOLOGY
WELL DRILLING DIV.

NEW DRILLER NO. 102990
Completed Date: Oct 19, 01

Drilling Company: Harker Fluid Drills
Address: R1 Red 20A
City, State, Zip: Ellensburg, WA 82531
Contractor's Registration No. 01, Date Nov 3, 01

Ecology is an Equal Opportunity Employer  ECO 0501-20 (Rev 4/01)
MAX C. JENSEN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: NA Elev (ft): 2490 ±10 Depth (ft): 220 7.5’ Quad: Potlatch

Latitude: 46.908764° Longitude: -116.998200° decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 8 T. 41 N R. 5 W

Well Address and (or) Other Location Information:
1205 Wellesley Road, Potlatch, Idaho; on east side of road; believed to be site of the former John Thompson ranch on River Road (now Wellesley Road?)

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; obituary for Eva S. Thompson Jensen states that she and her husband Max Jensen purchased the ranch on which she grew up which was on River Road near the Palouse River (Moscow-Pullman Daily News, 2011). Driller recorded S½, NW¼, Section 8; PD chose location as the closest old farmhouse (N½, SW¼, Section 8) even though it has a Wellesley Road address; site visit March 26, 2018 — well not observed from road.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Loess(?), clay, brown and tan</td>
<td>1 – 37</td>
</tr>
<tr>
<td>Modern alluvial sediments</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>37 – 42</td>
</tr>
<tr>
<td>Clay, sandy, minor gravel</td>
<td>42 – 97</td>
</tr>
<tr>
<td>Clay, gray and brown</td>
<td>97 – 138</td>
</tr>
<tr>
<td>Cambrian–Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Clay and rock (argillite?)</td>
<td>138 – 140</td>
</tr>
<tr>
<td>*Argillite, black</td>
<td>140 – 183</td>
</tr>
<tr>
<td>Quartzite(?) or argillite(?)</td>
<td>183 – 220</td>
</tr>
</tbody>
</table>

*Outcrops of black argillite occur on the south side of the Palouse River, often confused with basalt
Comments:
Latah County Tax Parcel RP41N05W085448, owner is now THOMPSON, RICHARD WAYNE; 1205 WELLESLEY RD; 4.62 AC TAX #7114 NWSW, 8 41 5.

Eva S. Thompson Jensen died in 2011 and lived on a ranch on River Road between Potlatch and Palouse; her second husband, Max C. Jensen, died in 1985 (Moscow-Pullman Daily News, 2011).

References Cited:
WELL DRILLER’S REPORT

State of Idaho
Department of Water Resources

1. WELL OWNER
Name: MAX C. JENSEN
Address: BOX 206 POTLATCH, ID 83545
Owner’s Permit No.: 87-78-N-14

2. NATURE OF WORK
□ New well □ Deepened □ Replacement
□ Abandoned (describe method of abandoning)

3. PROPOSED USE
□ Domestic □ Irrigation □ Test □ Other (specify type)
□ Municipal □ Industrial □ Stock □ Waste Disposal or Injection

4. METHOD DRILLED
□ Cable □ Rotary □ Dug □ Other

5. WELL CONSTRUCTION
Diameter of hole 8 inches Total depth 320 feet
Casing schedule: □ Steel □ Concrete
Thickness inches Diameter feet From To

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level 85 feet below land surface
Flowing? □ Yes □ No G.P.M. Flow
Temperature °F. Quality
Artesian closed-in pressure □ p.s.i.
Controlled by □ Valve □ Cap □ Plug

8. WELL TEST DATA
□ Pump □ Bailer □ Other
Discharge G.P.M. = 7 Draw Down = 163' Hours Pumped = 1/2

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth</th>
<th>Material</th>
<th>Water Yes: No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01</td>
<td>SEAL</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>CLAY BROWN</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>11-20</td>
<td>CLAY TAN</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>20-23</td>
<td>CLAY LIGHT TAN</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>23-37</td>
<td>CLAY SANDY BROWN</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>37-43</td>
<td>CLAY &amp; SAND</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>43-48</td>
<td>CLAY &amp; SAND</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>48-77</td>
<td>CLAY SANDY &amp; SMALL GRAVEL</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>77-107</td>
<td>CLAY LIGHT BLUE</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>107-123</td>
<td>CLAY SANDY BROWN</td>
<td></td>
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<tr>
<td>1</td>
<td>123-138</td>
<td>CLAY LIGHT BLUE</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>138-140</td>
<td>CLAY &amp; SAND</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>140-143</td>
<td>CLAY SANDY BROWN</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>143-183</td>
<td>SANDY SANDY MUD-SILT</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>183-200</td>
<td>METAMORPHIC ROCK</td>
<td></td>
</tr>
</tbody>
</table>

10. Work started 8-15-78 finished 8-25-78

11. DRILLERS CERTIFICATION
Firm Name: RAY McPherson WELD OPERATOR
Address: 911 BOX 138, PATAHOE, ID 83545
Signed by (Firm Official): RAY McPherson
and (Operator): RAY McPherson

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT
# MARK JOHNSON WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, November 1, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>451419</th>
<th>Elev (ft):</th>
<th>2535 ±10</th>
<th>Depth (ft):</th>
<th>116</th>
<th>Quad:</th>
<th>Moscow West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.700750</td>
<td>Longitude:</td>
<td>-117.042525</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼, ¼, NE ¼, Sec. 17, T. 14 N, R. 46 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Well Address and (or) Other Location Information:
6304 Sand Road, Pullman, Wash.; on west side of road, near state line.

## Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS incorrect on driller's report. Site visit (November 18, 2016).

## GEOLOGIC UNITS — DESCRIPTION | DEPTH (ft)
--- | ---
Overburden | 
No description | 0 – 16
Wanapum Basalt | 
Priest Rapids Member | 
Basalt of Lolo | 
Basalt, soft | 16 – 47
Basalt, hard | 47 – 54
Basalt, broken | 54 – 58
Basalt, hard | 58 – 71
Basalt, fractured | 71 – 75
Basalt, hard | 75 – 114
Latah Formation | 
Vantage Member | 
Clay, green | 114 – 116
Comments:

Whitman County Tax Parcel 200004614171690, 6304 SAND RD, LOT A OF D & C SMITH SHORT PLAT, owners are JOHNSON, MARK E/CARMAN A; 4.0 acres; no grantor listed, sale date 6/1/2003.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission** (*x* in circle)
- **Construction**
- **Decommission**

**PROPOSED USE:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**TYPE OF WORK:**
- Owner's number of well (if more than one)
- New Well
- Reconditioned
- Method: Dug
- Bored
- Driven
- Deepened
- Cable
- Rotary
- Jetted

**DIMENSIONS:**
- Diameter of well: __________ inches, drilled: __________ ft.
- Depth of completed well: __________ ft.

**CONSTRUCTION DETAILS**
- Casing: __________
- Diam. from __________ ft. to __________ ft.
- Installed: __________
- Diam. from __________ ft. to __________ ft.

**Perforations:**
- Yes
- No

**CONSTRUCTION OR DECOMMISSION PROCEDURE**
- Form: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Soft basalt</td>
<td>16</td>
<td>47</td>
</tr>
<tr>
<td>Basalt firm</td>
<td>47</td>
<td>54</td>
</tr>
<tr>
<td>Broken basalt</td>
<td>54</td>
<td>58</td>
</tr>
<tr>
<td>Basalt firm</td>
<td>58</td>
<td>71</td>
</tr>
<tr>
<td>Fract. basalt</td>
<td>71</td>
<td>76</td>
</tr>
<tr>
<td>Basalt firm</td>
<td>76</td>
<td>114</td>
</tr>
<tr>
<td>Green Shale</td>
<td>114</td>
<td>116</td>
</tr>
</tbody>
</table>

**WATER LEVELS:**
- Land-surface elevation above mean sea level __________ ft.
- Static level __________ ft. below top of well Date: 6/12/64
- Artesian pressure __________ lbs. per square inch Date
- Artesian water is controlled by (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? __________
- Yield: gal/min. with ft. drawdown after __________ hrs.
- Yield: gal/min. with ft. drawdown after __________ hrs.
- Recovery data (time taken as zero when pump turned off, water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level
- __________ __________ __________ __________ __________ __________
- __________ __________ __________ __________ __________ __________
- __________ __________ __________ __________ __________ __________

**WELL CONSTRUCTION CERTIFICATION:**
- I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller: [Name]
- Engineer: [Name]
- Trainee: [Name]
- Driller/Engineer/Trainee Signature: [Signature]
- Driller or Trainee License No.: [License No.]

- Drilling Company: [Company Name]
- Address: [Address]
- City, State, Zip: [City, State, Zip]
- Contractor's Registration No.: [Registration No.]
- Date: 6/13/64

Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)
MARVIN AND JEAN JOHNSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 24, 2016


Latitude: 46.983852  Longitude: -117.210832  decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 12, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
32 Robinson Road, Elberton, Wash., on north side of road; well is in strawberry garden, west of
parking area for the ~100-ft-long shop building with reddish brown roof.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; PLSS
subdivision incorrect on driller’s report. Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>0 – 9</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td>Clay, green, and basalt</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>Clay, green</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, weathered</td>
</tr>
</tbody>
</table>

821
Comments:

Whitman County Tax Parcel 200004417122390, 32 ROBINSON RD, ELBERTON, NW SW1/4-RR 1 AC, owners are JOHNSON, MARVIN E/ A JEAN; 30.0 acres; NEW 4852SF HOME WITH 983SF GARAGE, building permit of 7/27/2011; NEW 4264SF SHOP WITH APT AREA, building permit of 4/2/2009.

Left, well is just inside wire fence.
WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle) 359832

DEPARTMENT OF ECOLOGY
State of Washington

Notice of Intent Number

PROPOSED USE: ☑ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's well of number (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened

DIMENSIONS: Diameter of well 8 inches, drilled 330 ft.
Depth of completed well 330 ft.

CONSTRUCTION DETAILS
Casing ☑ Welded 8" Diam. from 3 ft. to 20 ft.
Installed: ☑ Liner installed 6" Diam. from 10 ft. to 330 ft.
☐ Threaded Diameter from ft. to ft.

Perforations: ☑ Yes ☐ No
Type of perforator used SAW

SIZE of perfs 1/8 in. by 12 in. and no. of perfs 90 from 270 ft. to 330 ft.

Screen: ☑ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name
Type: Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel/Filter packed: ☑ Yes ☐ No Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: ☑ Yes ☐ No To what depth? 20 ft.
Material used in seal BENTONITE

Did any strata contain unsuitable water? ☑ Yes ☐ No
Type of water? Depth of strata
Method of sealing strata off

Pump: Manufacturer's Name
Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 155 ft. below top of well Date 6/12/09
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☑ Yes ☐ No If yes, by whom?
Yield: gal/min. with ft. drawdown after hrs.
Yield: gal/min. with ft. drawdown after hrs.
Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airest 5 gal./min. with stem set at 320 ft. for hrs.
Artesian flow g.p.m. Date

Start Date 6/5/09 Completed Date 6/12/09

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (mn) TED WRIGHT
Driller/Engineer/Trainee Signature
Driller or trainer License No.

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Drilling Company: MCPHERSON & WRIGHT DRILLING
Address: 2246 BURRELL
City, State, Zip LEWISTON , ID, 83501
Contractor's Registration No. MCPHWD135N1 Date 8/15/09

ECY 050-1-20 (Rev 06/09) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**ROBERT L. JOHNSON WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.824133°, Longitude: -117.036054°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| ¼, SE ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W |

**Well Address and (or) Other Location Information:**
1031 Trestle Road, Viola, Idaho; on south side of road

**Location Method:**
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>1 – 50</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand, clay</td>
<td>50 – 320</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>¹Granite</td>
<td>320 – 665</td>
</tr>
</tbody>
</table>

¹Boundary between sediments of Bovill and granite difficult to determine
Comments:

Latah County Tax Parcel RP40N06W124052; JOHNSON, DENISE L; 1031 TRESTLE RD; 8.22 AC TAX #6774 NENW & SENW; 12 40 6.

References Cited:
Form 238-7

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL TAG NO. D
DRILLING PERMIT NO.
Water Right or Injection Well No.

2. OWNER:
Name: ROBERT L. JOHNSON
Address: PO Box - 9272
City: MOSCOW State: ID zip: 83843

3. LOCATION OF WELL by legal description:
You must provide address or: Lot, Blk, Sub. or Directions to well.
Twp: 40, Sec: 12, Gov’t Lot: 1
Address of Well Site: 1031 TRESTLE RD.

4. USE:
Domestic ☑, Municipal ☐, Monitor ☐, Irrigation ☐, Other ☐

5. TYPE OF WORK: check all that apply
New Well ☐, Modify ☐, Abandonment ☐, Other ☐

6. DRILL METHOD:
Air Rotary ☑, Cable ☐, Mud Rotary ☐, Other ☐

7. SEALING PROCEDURES
Seal Material: Bentonite
Weight / Volume: 105 lbs
Seal Placement Method: Pour Around Pipe

Was drive shoe used? ☑, Shop Depth(s): 8 1/2 - 22 1/4
Was drive shoe seal tested? ☑, How? Air

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 + 1</td>
<td>226</td>
<td>250</td>
<td>Steel</td>
<td>☑</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6 + 2</td>
<td>324</td>
<td>350</td>
<td>Steel</td>
<td>☑</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4 - 15</td>
<td>665</td>
<td>160</td>
<td>PVC</td>
<td>☑</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Length of Headpipe: 150', Length of Tailpipe: 30'

Packer: ☑, N, Type: 

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method: Drill
Screen Type & Method of Installation: none

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Soil Size</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>-565</td>
<td>-665</td>
<td>3/4</td>
<td>5/8</td>
<td>1/2''</td>
<td>PVC</td>
<td></td>
</tr>
</tbody>
</table>

10. FILTER PACK
Filter Material: none
Weight / Volume: 
Placement Method:

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
94 ft. below ground Artesian pressure: 10 lb.
Depth flow encountered: 460 ft. Describe access port or control devices: well cap

12. WELL TESTS:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Gpm</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 1/2 gpm Air lift from 460'</td>
<td>500</td>
<td>Bottom hole temp.</td>
<td>Slightly Cloudy</td>
<td></td>
</tr>
</tbody>
</table>

Water Temp: 500, Bottom hole temp: Slightly Cloudy
Water Quality test or comments: Depth first Water Encountered 460'

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 0 1</td>
<td>Top Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.50</td>
<td>Clay - Tan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.240</td>
<td>Decomposed granite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.230</td>
<td>Sandy w/ Clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.220</td>
<td>Granite Soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.220</td>
<td>Granite Soft Sandy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.33</td>
<td>Granite Med</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.33</td>
<td>Granite Med w/ Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.230</td>
<td>Granite Med</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.230</td>
<td>Granite Med w/ Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 gpm</td>
<td>460 gpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>460 gpm</td>
<td>8 gpm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8 1/2 gpm well cap

RECEIVED
FEB 08 2008
IDWR/North

14. DRILLER’S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: ACTION DRILLING Firm No. 618
Principal Driller: ALVIN CARRIS Date: 1-15-07
Driller or Operator II: Date: 
Operator I: ALVIN CARRIS Date: 1-15-07

Principal Driller and Rig Operator Required. Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
**Karl Jones Well**

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, January 19, 2018

| Well Log ID: | 810069 | Elev (ft): | 2650 ±10 | Depth (ft): | 305 | 7.5’ Quad: | Palouse |
|-------------|--------|------------|---------|------------|-----|-------------|
| Latitude:   | 46.879136° | Longitude: | -117.059243° | decimal degrees (WGS84) |
| Location:   | ¼, NW ¼, NE ¼, Sec. 18, T. 16 N, R. 46 E |

**Well Address and (or) Other Location Information:**

2192 McKenzie Road, Palouse, Wash., east side of road

**Location Method:**

Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; incorrect ¼-section and tax parcel number recorded on driller’s report

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 34</td>
</tr>
<tr>
<td>Cambrian—Precambrian</td>
<td></td>
</tr>
<tr>
<td>¹Quartzite</td>
<td>34 – 38</td>
</tr>
<tr>
<td>Argillite</td>
<td>38 – 89</td>
</tr>
<tr>
<td>Quartzite</td>
<td>89 – 112</td>
</tr>
<tr>
<td>Argillite and quartzite, weathered</td>
<td>112 – 213</td>
</tr>
<tr>
<td>Quartzite</td>
<td>213 – 247</td>
</tr>
<tr>
<td>Argillite</td>
<td>247 – 278</td>
</tr>
<tr>
<td>Quartzite</td>
<td>278 – 296</td>
</tr>
<tr>
<td>Argillite</td>
<td>296 – 305</td>
</tr>
</tbody>
</table>

¹ Difficult to interpret; interpreted as alternating quartzite and argillite; could also be alternating quartzite and schist?
Comments:

Whitman County Tax Parcel 200004616181691, 2192 MCKENZIE RD, NE PT N1/2 SC SPLIT ONLY 4-02/51493 636026, owners now are KAMMERZELL, SHARYL/TIMOTHY; 1 acre; 06/07/10: grantor was MCKENZIE, MILDRED J.

Also, Whitman County Tax Parcel 200004616181690, NE PT N1/2 4-02/51493 636026, owner now is KAMMERZELL, SHARYL; 10 acres; 09/25/12: grantor was LINK, TIMOTHY E.; one story residence built in 1950.


References Cited:

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

☐ Construction
☐ Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE:
☐ Domestic
☐ Industrial
☐ Municipal
☐ DeWater
☐ Irrigation
☐ Test Well
☐ Other

TYPE OF WORK:
Owner’s number of well(s) (if more than one)
☐ New well
☐ Recirculated
☐ Method
☐ Dug
☐ Bored
☐ Driven
☐ Deepened
☐ Cable
☐ Rotary
☐ Jetted

DIMENSIONS:
Diameter of well
Inches, drilled
Depth of completed well

CONSTRUCTION DETAILS:

Casing:
☐ Welded
8” Diameter from
to

Installed:
☐ Liner installed
6” Diameter from
15’

☐ Threaded
8” Diameter from
100’

Perforations:
☐ Yes
☐ No

Type of perforator used

SAW

SIZE of perfor 1/8” by 12” in and no of perfor 50 from

Screen:
☐ Yes
☐ No

☐ K-Pac

Manufacturer’s Name

Model No

Diam
Slot size
from

Diam
Slot size
from

Gravel/Filter packed:
☐ Yes
☐ No

Size of gravel/sand

Materials placed from

to

Surface Seal:
☐ Yes
☐ No

To what depth

Material used in seal

Benonite

Did any strata contain unusable water?

☐ Yes
☐ No

Type of water

Depth of strata

Method of sealing strata

PUMP:
Manufacturer’s Name

Type

HP

WATER LEVELS:
Land-surface elevation above mean sea level

Date

Artesian pressure
2 lbs per square inch

Date

Artesian water is controlled by

(cap, valve, etc.)

WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made?

☐ Yes
☐ No

If yes, by whom?

Yield

gal/ft drawdown after

hrs

Yield

gal/ft drawdown after

hrs

Yield

gal/ft drawdown after

hrs

Recovery data (time taken or zero when pump turned off) (water level measured from well top to water level)

Time

Water Level

Time

Water Level

Time

Water Level

Date

Bailer test

gal/ft drawdown after

hrs

Artesian

5 gal/ft with stem set at

for

hrs

Artesian

flow

gpm

Date

Temperature of water

Was a chemical analysis made?

☐ Yes
☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller
☐ Driller
☐ Engineer
☐ Tranche

Name (Print): TED WRIGHT

Driller/Engineer/Tranche/Signature

Driller or tranch License No 0532

IF TRAINEE Driller License No

Driller’s Signature

CURRENT

Notice of Intent No. w272858

Unique Ecology Well ID Tag No ahr767

Water Right Permit No

Property Owner Name KARL JONES

Well Street Address 1 mile north on McKenzie rd

City Palouse County Whitman

Location nw1/4-1/4 nw1/4 Sec 16 Twn 16 R 46

WWM

Lat/Lon

Lat Deg

Lat Min/Sec

Long Deg

Long Min/Sec

Tax Parcel No. (Required) 2-0000-44-12-2312

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information

(MATERIAL FORM}

FROM

TO

CLAY BROWN

0

34

QUARTZITE

34

38

CLAY GREEN

38

89

QUARTZITE

89

112

CLAY BROWN

112

157

SAND

157

188

CLAY TAN

188

213

QUARTZITE

213

247

CLAY BROWN

247

278

QUARTZITE

278

296

CLAY BROWN

296

305

Start Date 10/21/09 Completed Date 10/23/09

Drilling Company McPherson & Wright Drilling

Address 2246 Burrell

City, State, Zip Lewiston Idaho 83501

Contractor’s Registration No mcpnewd135nl Date 11/16/09

829
**LARRY JONES WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, November 28, 2016

|-------------|--------|-----------|----------|-------------|-----|------------|--------------|

Latitude: 46.891090  
Longitude: -117.369091  
Decimal degrees (WGS84)

<table>
<thead>
<tr>
<th>SW ¼,</th>
<th>NW ¼,</th>
<th>SW ¼,</th>
<th>Sec. 11</th>
<th>T. 16 N</th>
<th>R. 43 E</th>
</tr>
</thead>
</table>

**Well Address and (or) Other Location Information:**
425 W Walla Walla Highway, Colfax, Wash., Jones Truck and Implement; well location plots on north side of WA 26 going west out of town

**Location Method:**
Location is from bearing and distance from southwest corner of section given on driller’s report; Whitman County Assessor; Google Earth imagery; topographic map. Colfax North quadrangle Well 5 of Bush and others (2005 [2006]). Site visit (September 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Loose rock</td>
<td>0 – 18</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>18 – 63</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay(?), brown-green</td>
<td>63 – 100</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>100 – 164</td>
</tr>
<tr>
<td>Basalt, various colors</td>
<td>164 – 240</td>
</tr>
<tr>
<td>Latah Formation(?</td>
<td></td>
</tr>
<tr>
<td>Clay(?), red</td>
<td>240 – 255</td>
</tr>
<tr>
<td>Basalt</td>
<td>255 – 260</td>
</tr>
<tr>
<td>Clay(?), red</td>
<td>260 – 265</td>
</tr>
<tr>
<td>Basalt</td>
<td>265 – 270</td>
</tr>
<tr>
<td>Clay(?), red</td>
<td>270 – 275</td>
</tr>
</tbody>
</table>
Grande Ronde Basalt
N1–R2 magnetostratigraphic unit(?)

<table>
<thead>
<tr>
<th>Basalt</th>
</tr>
</thead>
<tbody>
<tr>
<td>275</td>
</tr>
<tr>
<td>–</td>
</tr>
<tr>
<td>285</td>
</tr>
</tbody>
</table>

Comments:

Stratigraphic picks are just estimations based upon the belief that the N2 and R2 units are thinner in Colfax than in Pullman. Some picks were made at interbeds. The red interbeds (at 240–275 ft in depth) in this well may correlate to the red cinders and gravels (at 241–310 ft in depth) in Colfax city well 2.

Well is presently not recognizable; Larry Jones’ daughter confirmed probable location.

Whitman County Tax Parcel 801950000000016, 425 W WALLA WALLA HWY, CX S 1/2 11-16-43 SW 1/4 - NW 1/4 S OF RD & W OF RIVER, owner is now LABEL, INC.; four buildings (built in 1978, 1994, 1994, 2012).

References Cited:

WATER WELL REPORT

STATE OF WASHINGTON

Permit No. C-2135A

Owner: Larry Jones
Address: N1920 Riverside Lane

Location of well: Whitman County
Sec. 11 T16 N, R43 W M

Drilling and distance from section or subdivision corner:
800' E - 1900' N of SW corner

Proposed use: Domestic

Type of work:
- New well
- Dug
- Bored
- Deepened
- Cable
- Driven
- Reconditioned
- Rotary
- Jetted

Dimensions:
- Diameter of well: 8 inches
- Drilled: 235 ft
- Depth of completed well: 285 ft

Construction details:
- Casing installed: 18" Dia. from 0 ft to 14 ft
- Threaded: 18" Dia. from 14 ft to 26 ft
- Welded: 18" Dia. from 26 ft to...

Perforations:
- Yes
- No
- Type of perforators used:
- Size of perforations
- Perforations from...

Screens:
- Yes
- No
- Manufacturer's name:
- Type:
- Dia.
- Slot size

Gravel packed:
- Yes
- No
- Size of gravel
- Gravel placed from...

Surface seal:
- Yes
- No
- To what depth?
- Material used in seal
- Did any strata contain unusable water?
- Yes
- No
- Type of water?
- Depth of strata
- Method of sealing strata off

Pump details:
- Manufacturer's name:
- Type:
- H.P.

Water levels:
- Land-surface elevation:
- Above mean sea level:
- Static level:
- ft below top of well
- Artesian pressure:
- lbs. per square inch
- Date
- Artesian water is controlled by:
- (Cap, valve, etc.)

Well tests:
- Drawdown is amount water level is lowered below static level
- Was a pump test made?
- Yes
- No
- If yes, by whom?
- Yield:
- gal. per min.
- ft. drawn down after
- hrs.

Recovery data (time taken as zero when pump turned off):
- Time
- Water level
- Time
- Water level
- Time
- Water level

Date of test
- Baller test:
- 30 gal./min.
- ft. drawn down after
- hrs.
- Artesian flow:
- g.p.m.
- Date
- Temperature of water:
- Was a chemical analysis made?
- Yes
- No

Well driller's statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name: DeTroy Drilling Co
Type or print:
Address: 1000 15th St.
Clarkston
License No.

[Signature]
Copied by
Date

[5/3/82]
832

(USE ADDITIONAL SHEETS IF NECESSARY)
## GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Layer</th>
<th>Description</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>From 0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td>To 38</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>From 38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 105</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W123152; JUDKINS, VERNON T JR; 1050 TRESTLE RD; 12.79 AC TAX #5296 NWNW; 12 40 6.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

1. DRILLING PERMIT NO. 87.97. N 33.

Other IDWR No._D3188

2. OWNER:

Name_ Vernon Judkins
Address_P.O. Box 116
City_Garfield State WA Zip 99130

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

Twp. 40 North or South
Rge. 6 East or West
Sec. 12 NW 1/4 SW 1/4

Gov't Lot 10 acres

County_Latah

Lat.: Long.: Address of Well Site_Trestle Road

City_Viola

4. USE:

X Domestic
Municipal Monitor Irrigation Thermal Injection Other

5. TYPE OF WORK check all that apply

X New Well Modify Abandonment Other

6. DRILL METHOD

X Air Rotary Cable Mud Rotary Other

7. SEALING PROCEDURES

SEAL/FILTER PACK AMOUNT METHOD
Bentonite 250 Dry

8. CASING/LINER:

Diameter From To Gauge Material Casing Liner Welded Threaded
8" -2 36 0250 Steel X

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS

X Perforations Method Slotted

Screen Type

From To Slot Size Number Diameter Material Casing Liner
105' 65' 3/16 50 4" PVC

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

ft. below ground Artesian pressure lb.

Depth flow encountered 36 ft. Describe access port or control devices:

11. WELL TESTS:

Yard gal./min. Drawdown Pumping Level Time
10

Water Temp. 60° Bottom hole temp.

Water Quality test or comments: Good

Depth first Water Encountered

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Water

Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
10 0 38 Brown Clay X
6" 38 75 Black Blst. X
6" 75 85 Black Green Blst. X
6" 85 105 Gray Black Blst X

13. DRILLER'S CERTIFICATION

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name_JRU Well Drilling Firm No. 539

Firm Official_ Dating and

Supervisor or Operator_ Dating

(Sign once if Firm Official & Operator)

835
JUDITH JUST WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 29, 2016

Well Log ID: D00558166   Elev (ft): 2590 ±10   Depth (ft): 165   7.5’   Quad: Moscow East

Latitude: 46.717304   Longitude: -116.957640   decimal degrees (WGS84)

¼, SW ¼, SW ¾, Sec. 15, T. 39 N, R. 5 E

Well Address and (or) Other Location Information:
3600 Lenville Road, Moscow, Idaho; on east side of road, about 0.35 mi south of Idaho State Highway 8 (Troy Highway), opposite Dairy Road

Location Method:
Location is for driveway area by house; Latah County Assessor; Google Earth imagery; topographic map. PLSS correction by IDWR and latitude and longitude on driller’s report are incorrect. Site visit (September 20, 2016), did not see a well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>0</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>40</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>46</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>76</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N05W154845, 3600 LENVILLE RD; owner now is BROWN, JASON M; 2.6 acres.

J Brown is a current owner and J Just was a past owner of 3600 Lenville Road property (Spokeo.com, 2016).

References Cited:
1. WELL TAG NO. D: D0058166
   Drilling Permit No.: 8595H10
   Water right or injection well if applicable: 

2. OWNER: Judith Just
   Name: 
   Address: 3600 Lenvilled Rd
   City: Moscow
   State: ID
   Zip: 83843

3. WELL LOCATION:
   Twp.: 39 North, Sec.: 15 SW 1/4
   Range: 5 East, or West (X)
   Gov't Lot: 1/4
   County: Latah
   Lat.: 46° 42' 41" (Deg. and Decimal minutes)
   Long.: 116° 59' 42" (Deg. and Decimal minutes)
   Address of Well Site: 3600 Lenvilled Rd
   City: Moscow

4. USE:
   Domestic [ ] Municipal [ ] Monitor [ ] Irrigation [ ] Thermal [ ] Injection [ ] Other [ ]

5. TYPE OF WORK:
   New well [ ] Replacement well [ ] Modify existing well [ ]
   Abandonment [ ] Other [ ]

6. DRILL METHOD:
   Air Rotary [ ] Mud Rotary [ ] Cable [ ] Other [ ]

7. SEALING PROCEDURES:
   Seal material: Bentonite
   From (ft) to (ft): 0 to 150
   Quantity (lbs or ft³): 1950#
   Placement method/procedure: overbore (granular)

8. CASING/LINER:
   Diameter (nominal): 8" + 1½"
   From (ft) to (ft): 0 to 200
   Material: Steel + PVC
   Gauge or Schedule: 40 PVC
   Casing Liner: Threaded [ ] Welded [ ]
   Was drive shoe used? [ ] Y [ ] N
   Shoe Depth(s): 0

9. PERFORATIONS/SCREENS:
   Perforations [Y] [N] Method: Saw
   Manufactured screen [ ] Y [ ] N Type: 
   Method of installation: 

10. FILTER PACK:
    Filter Material: 
    From (ft) to (ft): 
    Quantity (lbs or ft³): 
    Placement method: 

11. FLOWING ARTESIAN:
    Flowing Artesian? [ ] Y [ ] N
    Artesian Pressure (PSIG): 
    Describe control device: 

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft): 120'
    Static water level (ft): 103'
    Water temp. (°F): 59°
    Bottom hole temp. (°F): 
    Describe access port: 
    Well cap [ ]
    Drawdown (feet): 
    Discharge or yield (gpm): 
    Test duration (minutes): 
    Test method: Pump [ ] Air [ ] Flowing artesian [ ]

13. LITHOLOGIC LOG and/or repairs or abandonment:
    Bore Dia. (in): 
    From (ft) To (ft): Remarks, lithology or description of repairs or abandonment, water temp.
    Water Y N 
    12 0 40 Sandy Clay [ ]
    12 40 46 Tan Clay [ ]
    12 40 76 Brown Clay [ ]
    90 120 Basalt [ ]
    120 165 Lava [ ]

14. DRILLER'S CERTIFICATION:
    *Principal Driller: 
    Date: 7-23-10
    *Operator I: 
    Date: 7-23-10
    *Signature of Principal Driller and rig operator are required.

Completed Depth (Measurable): 165'
Date Started: 7-22-10
Date Completed: 7-22-10

Location Corrected by IDWR To: T39N R05W Sec. 22 NWNWSW
By: micscell 2013-10-16
KAMIK BUTTE COUNTY PARK WELL

[STATE PARKS & RECREATION WELL]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 2016


Latitude: 46.876385     Longitude: -117.149096     decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Kamiak Butte Park Road, Palouse, Wash., on west side of road (which extends south off of Fugate Road)

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 12 of Bush, Garwood, and Halver (2005 [2006]). Site visit (May 24, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 10</td>
</tr>
<tr>
<td>Quaternary(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, red with boulders</td>
<td>10 – 80</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>80 – 120</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>120 – 143</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>143 – 170</td>
</tr>
</tbody>
</table>

839
Comments:

Whitman County Tax Parcel 200004516162901, NW, owner is WHITMAN CO, 2.0 acres.

Above, well is inside well house.

References Cited:

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

WELL LOG

Record by: Driller
Source: Driller's Record

Location: State of WASHINGTON
County: Whitman
Area:
Map: SE 1/4 NW 1/4 sec. 16 T. 16 N. R. 45 E.

Drilling Co.: A.E. SPRAY
Address: 806 South Jefferson, Moscow, Idaho

Method of Drilling: Date: June 24, 1960

Owner: State Parks & Recreation Commission
Address: 522 S. Franklin, Olympia, Washington

Land surface, datum: 60' above

SWL: 40'

Consolidation

<table>
<thead>
<tr>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic park supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Clay, red, &amp; boulders</td>
<td>10</td>
<td>80</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>120</td>
<td>143</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>143</td>
<td>170</td>
</tr>
</tbody>
</table>

Casing: 8" from 0-140'

Yield: Bailer Test:
30 gpm with 15' DD

Turn up

Sheet of sheets
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: NA   Elev (ft): 2262   Depth (ft): 196   Quad: Moscow East

Latitude: 46.742186°   Longitude: -116.950766°   decimal degrees (WGS84)

Well Address and (or) Other Location Information:
4400 Robinson Park Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006, HCP_wells shapefile); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>26</td>
</tr>
<tr>
<td>*Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>173</td>
</tr>
</tbody>
</table>

*Difficult to determine contact between sediments of Bovill (Latah Formation) and granite
Comments:

Latah County Tax Parcel RP39N05W102570, owner now is BULL, DAVID M; 4400 ROBINSON PARK RD; 9.47 AC TAX #4871 NENW 10 39 5.

References Cited:

**WELL DRILLER'S REPORT**

State of Idaho  
Department of Reclamation  

**1. WELL OWNER**  
Name: Ron Kasper  
Address: Moscow, Idaho  
Owner's Permit No.: 87-69-N-12

**2. NATURE OF WORK**  
- [ ] New well  
- [ ] Deepened  
- [ ] Replacement  
- [ ] Abandoned (describe method of abandoning)

**3. PROPOSED USE**  
- [ ] Domestic  
- [ ] Irrigation  
- [ ] Test  
- [ ] Municipal  
- [ ] Industrial  
- [ ] Stock

**4. METHOD DRILLED**  
- [ ] Cable  
- [ ] Rotary  
- [ ] Dug  
- [ ] Other

**5. WELL CONSTRUCTION**  
- Diameter of hole: 8 1/2 inches  
- Total depth: 16 feet  
- Casing schedule:  
- Diameter: 11 7/8 inches  
- Thickness: [ ] Steel  
- Concrete

**6. LOCATION OF WELL**  
Sketch map location must agree with written location.

**7. WATER LEVEL**  
- Static water level: 6 feet below land surface  
- Flowing: [ ] Yes  
- No  
- G.P.M. flow:  
- Temperature: [ ] ° F.  
- Quality:  
- Artesian closed-in pressure: [ ] p.s.i.  
- Controlled by:  
- Valve  
- Cap  
- Plug

**8. WELL TEST DATA**  
- Discharge G.P.M.:  
- Draw Down:  
- Hours Pumped:  
- AIR TEST:  
- 2

**9. LITHOLOGIC LOG**  
- Hole Diam.:  
- Depth From To Material:  
- Water:  
- Yes  
- No

**10. WORK STARTED:** 6/19/69  
**FINISHED:** 6/26/69

**11. DRILLER'S CERTIFICATION**  
This well was drilled under my supervision and this report is true to the best of my knowledge.

**Address:** Lewiston, Idaho  
**Number:** 569

**SIGNED BY:** (signature)

**USE ADDITIONAL SHEETS IF NECESSARY**
JOHN J. KEACH WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, January 20, 2018

Well Log ID: NA Elev (ft): 2620 ±10 Depth (ft): 258 7.5’ Quad: Viola

Latitude: 46.824840° Longitude: -117.039610° decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W

Well Address and (or) Other Location Information:
1009 Trestle Road, Viola, Idaho; house is actually on east side of Poe Road

Location Method:
Location is for well; Latah County Assessor; Google Earth imagery; topographic map. Site visit (March 16, 2018).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>From 0 – 4</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>From 4 – 30</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>DEPTH (ft)</td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy, white</td>
<td>30 – 100</td>
</tr>
<tr>
<td>Sand, brown and white</td>
<td>100 – 108</td>
</tr>
<tr>
<td>Sand and clay, brown and white</td>
<td>108 – 200</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>200 – 225</td>
</tr>
<tr>
<td>Sand and clay, white</td>
<td>225 – 258</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W123752; KEACH, JOHN J; 1009 TRESTLE RD; 5.00 AC TAX #5532; GOVT LOT 2; 12 40 6.

Well is in field, to the right (south) of pine trees that line the driveway.

References Cited:
RECEIVED

Form 288-7

APR 17 1997

NORTH IDAHO REGION

1. DRILLING PERMIT NO.

2. OWNER:
Name:
Address:
City:
County:
State:
Zip:

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. USE:
\( \checkmark \) Domestic | \( \square \) Municipal | \( \square \) Monitor | \( \square \) Irrigation
\( \square \) Thermal | \( \square \) Injection | \( \square \) Other

5. TYPE OF WORK check all that apply
\( \checkmark \) New Well | \( \square \) Modify | \( \square \) Abandonment | \( \square \) Other

6. DRILL METHOD
\( \checkmark \) Air Rotary | \( \square \) Cable | \( \square \) Mud Rotary | \( \square \) Other

7. SEALING PROCEDURES

8. CASING/LINER:

9. PERFORATIONS/SCREENS
\( \checkmark \) Perforations | \( \square \) Method: SLOTTED
\( \square \) Screens | \( \square \) Screen Type

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
181 ft. below ground | Artesian pressure _____ lb.
Depth flow encountered: 105 ft. | Describe access port or control devices:

11. WELL TESTS:

Yield gal./min. | Drawdown | Pumping Level | Time
Water Temp. | Bottom hole temp.
Water Quality test or comments: Good

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

13. DRILLER'S CERTIFICATION

Firm Name:
Firm Official:
Supervisor or Operator:

847
CHUCK AND BECKY KECK WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: D0022716 Elev (ft): 2830±10 Depth (ft): 350 7.5’ Quad: Potlatch

Latitude: 46.978143° Longitude: -116.969612” decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 16, T. 42 N, R. 5 W

Well Address and (or) Other Location Information:
1004 Rebecca Lane, Potlatch, Idaho; on north side of Garfield Road

Location Method:
Location is for house on hill; Latah County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018 — well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 160</td>
</tr>
<tr>
<td>Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Argillite(?)</td>
<td>160 – 350</td>
</tr>
</tbody>
</table>

848
Comments:

Latah County Tax Parcel RP42N05W168506, owner is KECK, REBECCA S, 1004 REBECCA LN, 12.73 AC TAX #6158, 16 42 5.

References Cited:
IDAHIT DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0022716
   DRILLING PERMIT NO. 7842538
   Other IDWR No. ___

2. OWNER
   Name: Chuck & Becky Kozek
   Address: 3854 Rebecca Lane
   City:elter: (Post)
   State: ID Zip: 83855

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

   Twp: 4N  Rge: 5E Sec: 16
   Govt Lot: 5
   County: Elmore
   Address of Well Site: Batalach
   Lat: 42° 30' 45"
   Long: 116° 24' 05"
   Miles E of W
   (Give at least one name of road or direction to road or landmark)

   Lt: 245  Blk: 4  Sub. Name

4. USE:
   ☐ Domestic  ☐ Municipal  ☐ Monitor  ☐ Irrigation
   ☐ Thermal  ☐ Injection  ☐ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
   ☐ New Well  ☐ Modify  ☐ Abandonment  ☐ Other

6. DRILL METHOD
   ☐ Air Rotary  ☐ Cable  ☐ Mud Rotary  ☐ Other

7. SEALING PROCEDURES
   SEAL/FILTER PACK AMOUNT METHOD
   Contents: 0  Edible Dry
   Was drive shoe used? ☐ N  Shoe Depth(s): 280 ft
   Was drive shoe seal tested? ☐ Y ☐ N How?:

8. CASING/LINER:
   Diameter: 4 9  T = Gauge: 2 8 250 
   Material: Pvc
   Casing: 4 9  Welded
   Liner: 4 9  Threaded
   Length of Headpipe: Length of Tailpipe:

9. PERFORATIONS/SCREENS
   ☑ Perforations  Method: SAW
   Screens: Screen Type:

   From To Slot Size Number Diameter Material Casing Liner
   -310 350 3/4x3 12 4  1/2 2 10 3.50x20  Pvc

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    140 ft. below ground  Artesian pressure:_lb
    Depth flow encountered: 850 ft. Describe access port or control devices:
        (Sign if well)

11. WELL TESTS:
    Yield gal./min. Drawdown Pumping Level Flowing Artesian
    129 gpm

    Water Temp. 54° C
    Bottom hole temp. 74° C
    Water Quality test or comments:
    Depth first Water Encounter 319

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water
    Sore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
    8  2  Light
    2  120  Clay
    100 210 Clay 4 shale
    210 240 steel
    240 330 shale more stable
    12 years

13. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: W. H. M. Co.
    Firm Official: W. H. M. Co.
    Date: 8/31/02
    Driller or Operator:

FORWARD WHITE COPY TO WATER RESOURCES
JAKE KECK WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018


Latitude: 46.978143° Longitude: -116.969612° decimal degrees (WGS84)

SW ¼, SW ¾, Sec. 16, T. 42 N, R. 5 W

Well Address and (or) Other Location Information:
1351 Garfield Road, Potlatch, Idaho; on south side of Garfield Road, opposite Rebecca Lane; well is east of shed near road

Location Method:
Location is for well; Latah County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 51</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>51 – 87</td>
</tr>
<tr>
<td>Latah Formation and weathered Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>87 – 96</td>
</tr>
<tr>
<td>Clay, red</td>
<td>96 – 141</td>
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<tr>
<td>Clay, tan and red</td>
<td>141 – 260</td>
</tr>
<tr>
<td>Precambrian</td>
<td></td>
</tr>
<tr>
<td>Quartzite</td>
<td>260 – 340</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP42N05W166366, owner is KECK, JACOB M; 1351 GARFIELD RD, 14.50 AC SWSW S OF CTY RD, 16 42 S.

References Cited:
1. WELL TAG NO. DDD 710 44
   Drilling Permit No. 87285
   Water right or injection well #
   
2. OWNER: Jake Keck
   Name: Jake Keck
   Address: 1004 Rebecca Lane
   City: Pocatello, State ID Zip 83255

3. WELL LOCATION:
   Twp. 42 North or South 0 Rge. 5 East or West
   Sec. 110
   Gov't Lot 1/4 SW 1/4 SW 1/4
   Lat. 42° 58' 28" (Deg. and Decimal minutes)
   Long. 116° 58.814 (Deg. and Decimal minutes)
   Address of Well Site: Intersection of Rebecca Lane and Garfield
   (Deed number and/or Surveyor's Name if Not in Public Record)
   Lot. Sub. Name

4. USE:
   [ ] Domestic
   [ ] Municipal
   [ ] Monitor
   [ ] Irrigation
   [ ] Thermal
   [ ] Injection
   [ ] Other

5. TYPE OF WORK:
   [ ] New well
   [ ] Replacement well
   [ ] Modify existing well
   [ ] Abandonment
   [ ] Other

6. DRILL METHOD:
   [ ] Air Rotary
   [ ] Mud Rotary
   [ ] Cable
   [ ] Other

7. SEALING PROCEDURES:
   [ ] Bentonite
   [ ] Slurry
   [ ] Sack
   [ ] Top pour
   [ ] Hol Plug

8. CASING/LINER:
   Diameter (nominal) From (ft) To (ft) Gauge or Schedule Material Casing Liner Threaded Welded
   10" 2.50 260 Schedule 40 PVC
   4.1" 1.0 200 Schedule 40 PVC

   Was drive shoe used? [ ] Y [ ] N Shoe Depth(s)

9. PERFORATIONS/SCREENS:
   Perforations [ ] Y [ ] N Method: Skill Saw

10. MANUFACTURED SCREEN:
    [ ] Y [ ] N Type

11. FILTER PACK:
    Filter Material From (ft) To (ft) Quantity (lbs or ft²) Placement method

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft) 26 1 Static water level (ft) 30
    Water temp. (°F) 54 Bottom hole temp. (°F)
    Describe access port

    Drawdown (feet) Discharge or yield (gpm) Test duration (minutes)
    Test method:
    Pump [ ] Baer [ ] Air [ ] Flowing artesian [ ]

    Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:
    Bore Diameter (in) From (ft) To (ft) Remarks, lithology or description of repairs or abandonment, water temp.
    Water
    [ ] Y [ ] N

    10 0 38 Clay
    0 38 51 Clay
    0 51 67 Soft Black Boar
    0 67 94 Brown Clay
    0 94 141 Red Clay
    0 141 260 Tan Red Loam
    0 260 340 Brown Shale

14. DRILLER'S CERTIFICATION:
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Brett Unkefeet Drilling Co. No. 769
    *Principal Driller
    *Driller
    *Operator I
    *Operator II

    Date 7-20-14
    Date 7-20-14

    *Signature of Principal Driller and rig operator are required.

Completed Depth (measurable): 316
Date Started: 7/17/14
Date Completed: 7/18/14

RECEIVED
JUL 22 2014
IDWR / NORTH
DALE KELSO WELL
Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 5, 2016; November 9, 2017

Well Log ID: 616924   Elev (ft): 2440 ±10   Depth (ft): 305   7.5’   Quad: Pullman

Latitude: 46.693369   Longitude: -117.135862   decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 15, T. 15 N, R. 44 W

Well Address and (or) Other Location Information:
802 Sand Road, Pullman, Wash.; on north side of road; well is in yard, east of garage and beyond light pole

Location Method:
Location is for well; Whitman County Tax Assessor; Google Earth; topographic map. Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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<tbody>
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<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 22</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>22 – 62</td>
</tr>
<tr>
<td>Basalt, soft, with clay, brown</td>
<td>62 – 68</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>68 – 94</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>94 – 106</td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>106 – 153</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>153 – 223</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>223 – 238</td>
</tr>
</tbody>
</table>
Basalt, hard  238 – 262
Basalt, weathered  262 – 291
Basalt, hard  291 – 305

Comments:

Whitman County Tax Parcel 200004514153790, 802 SAND RD, SW BAL OF W 1/2, owner is now KELSO, ELLEN LOUISE (402 WILBOURN RD); 36.0 acres; 1½ story residence built in 1889.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

□ Decommission
□ Decommission ORIGINAL INSTALLATION

Notice of Intent Number W272950

PROPOSED USE: ○ Domestic □ Industrial □ Municipal
□ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: Owner's number of well (if more than one)
□ New well □ Reconditioned □ Method: □ Dug □ Bored □ Driven
□ Deepened □ Other

DIMENSIONS: Diameter of well __ inches, drilled __ ft.
Depth of completed well 305 ft.

CONSTRUCTION DETAILS

Casing: □ Welded 8/8" Diam from __ ft. to __ ft.
□ Installed 4 1/2" Diam. from __ ft. to __ ft.
□ Threaded □ Diam. From __ ft. to __ ft.

Perforations: □ Yes □ No
Type of perforator used SAW

SIZE of perf 1/8 in. by __ in. and no. of perf __ from __ ft. to __ ft.

Screens: □ Yes □ No □ K-Pac □ Location:

Manufacturer's Name

Pump: Manufacturer's Name

Type: __ H.P.

WATER LEVELS: Land-surface elevation above mean sea level __ ft.
Static level: __ ft. below top of well Date: __
Artesian pressure __ lbs. per square inch Date: __
Artesian water is controlled by __ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? □ Yes □ No If yes, by whom?

Yield: gal./min. with __ ft. drawdown after __ hrs.
Yield: gal./min. with __ ft. drawdown after __ hrs.
Yield: gal./min. with __ ft. drawdown after __ hrs.

Recovery data (time taken as zero when pump turned off, water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test __

Bailer test gal./min. with __ ft. drawdown after __ hrs.
Arrest __ gal./min. with stem set at __ ft. for __ hrs.
Artesian flow __ p.m. Date __

Temperature of water __ Was a chemical analysis made? □ Yes □ No

CURRENT

Notice of Intent No. W272950
Unique Ecology Well ID Tag No. AHR758
Water Right Permit No. __

Property Owner Name DALE KELSO

Well Street Address: 802 SAND RD

City PULLMAN County WHITMAN

Location SW1/4 SE1/4 SW1/4 Sec 15 Twn 15 R 44 EWM B

Lat/Long Lat Deg ___ Lat Min/Sec ___
Long Deg ___ Long Min/Sec ___

Tax Parcel No. (Required) 2000-45-14-15-3790

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO

CLAY LIGHT BROWN STIFF 0 22

BASALT STRONG BLACK 22 62

BASALT WEAK BLACK & CLAY 62 68

SOFT BROWN 68 94

BASALT STRONG BLACK 94 106

SAND MEDIUM 106 153

CLAY LIGHT BROWN STIFF 153 223

BASALT STRONG BLACK 223 238

BASALT WEATHERED BLACK 238 262

BASALT STRONG BLACK 262 291

BASALT STRONG BLACK 291 305

Start Date 10/23/08 Completed Date 10/28/08

The Department of Ecology does NOT warrant the Data and/or the Information on this Report.
**GARY KENDALL WELL 1**

**[DRILLED JULY 1, 1968]**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 14, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2670 ±10</th>
<th>Depth (ft):</th>
<th>367</th>
<th>7.5’ Quad:</th>
<th>Palouse</th>
</tr>
</thead>
</table>

Latitude: 46.949784°  
Longitude: -117.033847°  
decimal degrees (WGS84)

NE ¼, SE ¼, SW ¼, Sec. 25, T. 42 N, R. 6 W

**Well Address and (or) Other Location Information:**

1040 Kendall Road, Potlatch, Idaho; on north side of road

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sediments of Bovill</td>
</tr>
<tr>
<td>*Clay, yellow</td>
<td>0 – 101</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>101 – 130</td>
</tr>
<tr>
<td>Clay, orange</td>
<td>130 – 175</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>175 – 243</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, scoria</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member(?)</td>
</tr>
<tr>
<td>Sand</td>
<td>312 – 367</td>
</tr>
</tbody>
</table>

*Includes loess*
Comments:
Well was abandoned; no water encountered.

Latah County Tax Parcel RP42N06W254315, KENDALL, GARY LEE, 7.92 AC GOVT LOT 1; 7.95 AC GOVT LOT 2; SENW; E 1/2 NESW; 25 42 6.

References Cited:
REPORT OF WELL DRILLER
State of Idaho

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:
Name: GARY KENDALL
Address: POTLATCH, IDAHO
87-68-N-8

Owner's Permit No: X
NATURE OF WORK (check): Replacement well
New well X
Deepened Abandoned
Water is to be used for: DOMESTIC
METHOD OF CONSTRUCTION: Rotary X Cable
Dug

CASING SCHEDULE: Threaded - Welded -
Diam. from ft. to ft. ft.
Diam. from ft. to ft.
Diam. from ft. to ft.
Thickness of casing: 2.50 Material:
Steel X concrete  No wood  Other

(explain)
PERFORATED? Yes No Type of perforator used:
Size of perforations: " by "
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
WAS SCREEN INSTALLED? Yes No
Manufacturer's name
Type Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

CONSTRUCTION: Well gravel packed? Yes No
size of gravel Gravel placed from ft. to ft. Surface seal provided? Yes No To what depth?
Material used in seal:

Did any strata contain unusable water? Yes No
Type of water:
Depth of strata ft. Method of sealing strata off:

Surface casing used? Yes No
Cemented in place? Yes No

Locate well in section

LOCATION OF WELL: County
SW NW Sec. 24 T. 4N R. 6W

Size of drilled hole: 6 Total depth of well: 367 Standing water level below ground: Temp.
Fahr. Test delivery: gpm or cfs Pump? Bail
Size of pump and motor used to make test:
Length of time of test: Hrs. Min.
Drawdown: ft. Artesian pressure: ft. above land surface
Give flow cfs or gpm. Shutoff pressure:
Controlled by: Valve Cap Plug
No control X Does well leak around casing?
Yes No

DEEP MATERIAL WATER
FROM TO
FEET FEET
0 100 CLAY (YELLOW)
101 130 CLAY (DARK BROWN)
131 175 CLAY (ORANGE)
176 213 DECOMPOSED Gneiss WITH CLAY
214 280 SCORIA
281 367 DRY SAND

WELL WAS ABANDONED
CASING COVER WELDED TIGHT
WELL RECOVERED
CASING AT LATER DATE

Work started: JUNE 27
Work finished: JULY

Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.
Name: BURNS & WITT
Address: 1321 14TH AVE

Signed by: M. R. Burns
License No: 103 Date: JUN 21 1968

# 58

Use other side for additional remarks

RECEIVED OCT 1 1968

859
Department of Reclamation
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 14, 2018

Well Log ID: NA      Elev (ft): 2650 ±10      Depth (ft): 172      7.5’     Quad: Palouse

Latitude: 46.947551°    Longitude: -117.033551°    decimal degrees (WGS84)

SE ¼, SE ¼, SW ¼, Sec. 25, T. 42 N, R. 6 W

Well Address and (or) Other Location Information:
1040 Kendall Road, Potlatch, Idaho; on south side of road

Location Method:
Location near farmyard pond is approximate; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>*Clay, yellow</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>70</td>
</tr>
<tr>
<td>Clay, green</td>
<td>122</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, scoriaceous</td>
<td>134</td>
</tr>
<tr>
<td>Basalt</td>
<td>160</td>
</tr>
</tbody>
</table>

*Includes loess
Comments:
Latah County Tax Parcel RP42N06W255260, owner now is KNUDSEN, KATHLEEN ANN; W 1/2 NESW; 7.97 AC GOVT LOT 3; 8 AC GOVT LOT 4; SESE 25 42 6.

References Cited:
State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:

Name: GARY KENDALL
Address: DOWLING, IDAHO

Owner's Permit No.: 87-78-0-1
NATURE OF WORK (check): Replacement well □
New well □ Deepened □ Abandoned □

Water is to be used for: DOMESTIC □
Dug □ Other □
METHOD OF CONSTRUCTION: Rotary □ Cable □

CASING SCHEDULE: Threaded □ Welded □

Diam. from ft. to ft. □

Thickness of casing: 3/16 in. Material: Steel □ concrete □ wood □ other □

PERFORATED? Yes □ No □ Type of perforator used:

Size of perforations: " by " ft. ft.

WAS SCREEN INSTALLED? Yes □ No □

Manufacturer's name

Type Diam. Slot size Set from ft. to ft.

CONSTRUCTION: Well gravel packed? Yes □ No □

Gravel placed from ft. to ft. Surface seal provided? Yes □ No □ To what depth? ft.

Material used in seal:

NUMBER OF STRATA:

Did any strata contain unusable water? Yes □ No □

Type of water:

Depth of strata: ft. Method of sealing strata off:

Surface casing used? Yes □ No □
Cemented in place? Yes □ No □

Locate well in section:

LOCATION OF WELL: County

Location Corrected by IDWR To:
T42N R06W Sec. 25 SESESW
By: segbert 2012-04-17

Size of drilled hole: 8" Total depth of well: 372' Standing water level below ground: 30' Temp. Fehr. 51° Test delivery: 30 gpm or cfs Pump? □ Bail □

Size of pump and motor used to make test: AIR TEST WITH RIG

Length of time of test: Hrs. Min.

Drawdown: ft. Artesian pressure: ft. above land surface. Give flow cfs or gpm. Shutoff pressure:

Controlled by: Valve □ Cap □ Plug □

No control □ Does well leak around casing? Yes □ No □

DEPT TO MATERIAL WATER

FROM TO YES OR NO

 feet YELLOW CLAY
10 YES BROWN CLAY
50 YES SABLE (GREEN)
100 YES SCARA (RED)
150 YES BASALT

Work started: JULY 3

Work finished: JULY 13

Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.
Name: BURNS & WIT
Address:
Signed by: D.R. Burns
License No. 103 Date: Oct 2 1968

RECEIVED

OCT 1 1968

Use other side for additional remarks
JAMES KERNS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: NA Elev (ft): 2660 ±10 Depth (ft): 190 7.5’ Quad: Palouse

Latitude: 46.988696° Longitude: -117.000617° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1014 Kerns Way, Potlatch, Idaho; on north side of Cora and Garfield Roads

Location Method:
Assumed location is for house on hill at north end of driveway; Latah County Assessor; Google Earth imagery; topographic map; Well 4 of Bush and others (2005 [2006]); site visit March 26, 2018 — well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 47</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>47 – 57</td>
</tr>
<tr>
<td>Clay, with gravel</td>
<td>57 – 85</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>85 – 88</td>
</tr>
<tr>
<td>Clay, with gravel</td>
<td>88 – 92</td>
</tr>
<tr>
<td>Clay, brown and gray</td>
<td>92 – 118</td>
</tr>
<tr>
<td>Clay, brown, with gravel</td>
<td>118 – 149</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>149 – 150</td>
</tr>
</tbody>
</table>
KENNEWICK INDUSTRIAL WELL

[CHAMPION ELECTRIC]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 10, 2018

Well Log ID: NA Elev (ft): 2518.82 Depth (ft): 384 7.5’ Quad: Moscow West

Latitude: 46.739405* Longitude: -117.055730* decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 31, T. 15 N, R. 46 W

Well Address and (or) Other Location Information:
7202 State Route 270, Pullman, Wash.; on north side of road; current site of Stoneway Electric Supply

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile, "Champion Electric" well).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From</td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>*Modern sediments(?)</td>
<td>1</td>
</tr>
<tr>
<td>Gravel and sand</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>29</td>
</tr>
<tr>
<td>Basalt</td>
<td>68</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown, yellow</td>
<td>135</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>192</td>
</tr>
</tbody>
</table>
Latah Formation
Sediments of Moscow
Clay, blue, and sand, greenish

*Could be either sediments from modern Paradise Creek or sediments of Bovill

Comments:
Whitman County Tax Parcel 200004615314901, SE1/4 TRACT B CHAMPION ELECTRIC, owners now are YOUNG, SAM/GINA; 4662 HWY 95, MOSCOW ID, 2.28 acres.

The Kennewick Industrial well is listed as "Champion Electric" in Carey (2011, p. 109 and 122).

References Cited:
**Well Log**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>Clay soil (s)</td>
</tr>
<tr>
<td>0-15</td>
<td>C-Clay (s)</td>
</tr>
<tr>
<td>0-30</td>
<td>Dirty clay (s)</td>
</tr>
<tr>
<td>30-65</td>
<td>Gravel s/m and gravel basalt</td>
</tr>
<tr>
<td>65-125</td>
<td>Iron ore (s), iron oxides</td>
</tr>
<tr>
<td>125-150</td>
<td>Iron ore (s), iron oxides</td>
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<td>150-175</td>
<td>Clay, more yellowish (s)</td>
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<tr>
<td>175-195</td>
<td>Clay with basalt</td>
</tr>
<tr>
<td>195-250</td>
<td>Basalt (m. h.)</td>
</tr>
<tr>
<td>250-300</td>
<td>Basalt with blue shale (m. s.)</td>
</tr>
<tr>
<td>300-360</td>
<td>8 inch casing -- 49 feet</td>
</tr>
<tr>
<td>360-400</td>
<td>8 inch casing -- 357 feet</td>
</tr>
<tr>
<td>400-450</td>
<td>8 inch drive shoe -- 3 days</td>
</tr>
<tr>
<td>450-500</td>
<td>Bentonite -- 5 sacks</td>
</tr>
<tr>
<td>500-550</td>
<td>Labor for setting 5&quot; liner-- 360 ft</td>
</tr>
<tr>
<td>550-600</td>
<td>8 inch shale (m. s.)</td>
</tr>
<tr>
<td>600-650</td>
<td>Greenish sand (v. s.)</td>
</tr>
<tr>
<td>650-700</td>
<td>8 inch casing -- 211 2/12 ft</td>
</tr>
<tr>
<td>700-750</td>
<td>Iron ore (s), iron oxides</td>
</tr>
<tr>
<td>750-800</td>
<td>Iron ore (s), iron oxides</td>
</tr>
<tr>
<td>800-850</td>
<td>Iron ore (s), iron oxides</td>
</tr>
<tr>
<td>850-900</td>
<td>Iron ore (s), iron oxides</td>
</tr>
<tr>
<td>900-950</td>
<td>Iron ore (s), iron oxides</td>
</tr>
<tr>
<td>950-1000</td>
<td>Iron ore (s), iron oxides</td>
</tr>
</tbody>
</table>

**Invoice**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 inch drilling -- 47 feet</td>
<td>5.25</td>
<td>8,175.00</td>
</tr>
<tr>
<td>8 inch drilling -- 357 feet</td>
<td>13.50</td>
<td>4,869.50</td>
</tr>
<tr>
<td>8 inch casing -- 49 feet</td>
<td>9.25</td>
<td>133.25</td>
</tr>
<tr>
<td>8 inch casing -- 357 feet</td>
<td>10.50</td>
<td>105.00</td>
</tr>
<tr>
<td>Bentonite -- 5 sacks</td>
<td>10.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Labor for setting 5&quot; liner-- 360 ft</td>
<td>1.25</td>
<td>450.00</td>
</tr>
</tbody>
</table>

**Memo:** Hit water at 300 feet 7 gallon per minute, and again at 260 feet 100 gallon per minute.

CE (Champion Electric)

Extracted from Carey (2011, p. 122)
Comments:

Latah County Tax Parcel RP42N05W170607, KERNS FARMS INC, 1014 KERNS WAY, NWNE; NENW; NWNW 17 42 5.

References Cited:

WELL DRILLER'S REPORT

1. WELL OWNER
Name: James Harris
Address: 571 Box 157 Patatuck, ID
Queen's Permit No: SND BERT 4-12-73

2. NATURE OF WORK
New well ☐, Deepened ☐, Replacement ☐, Abandoned (describe method of abandoning) ☐

3. PROPOSED USE
☐ Domestic, ☐ Irrigation, ☐ Test, ☐ Municipal, ☐ Industrial, ☐ Stock

4. METHOD DRILLED
☐ Cable, ☐ Rotary, ☐ Dug, ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches, Total depth: 190 feet
Casing schedule:
Steel ☐, Concrete ☐
Thickness: 8 inches, Diameter: 8 inches, From: 3 feet, To: 129 feet

Was a packer or seal used? Yes ☐, No ☐, SEE SAW

How perforated? Factor ☐, Knife ☐, Torch ☐
Size of perforation: 4 inches by 4 inches

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 28 feet below land surface
Flowing: ☐ Yes, ☐ No G.P.M. flow
Temperature: °F, Quality:...
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve, ☐ Cap, ☐ Plug

8. WELL TEST DATA
Discharge G.P.M.: 15, Draw Down: 80, Hours Pumped: 1/2

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diam.</th>
<th>Depth From To</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-2</td>
<td>TOP SEAL</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>2-49</td>
<td>TAN CLAY</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>49-49</td>
<td>DEWATERED GRANITE</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>49-55</td>
<td>TAN SAND CLAY</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>55-57</td>
<td>DEWATERED GRANITE</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>57-75</td>
<td>TAN CLAY WITH SMALL PERCENT QUARTZ</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>75-85</td>
<td>BROWN CLAY-SEED QUARTZ</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>85-85</td>
<td>CLAY CLAY</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>85-95</td>
<td>BROWN CLAY-SEED QUARTZ</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>95-115</td>
<td>BROWN CLAY-SEED QUARTZ</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>115-137</td>
<td>BROWN CLAY-SEED QUARTZ</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>137-150</td>
<td>BROWN CLAY-SEED QUARTZ</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

5.5 feet 60 perforations from 130 feet to 190 feet

Well screen installed? Yes ☐, No ☐
Manufacturer's name: 
Type: Diameter: ___, Slot size: ___, Set from ___ feet to ___ feet
Diameter: ___, Slot size: ___, Set from ___ feet to ___ feet
Gravel packed? Yes ☐, No ☐, Size of gravel ___
Placed from ___ feet to ___ feet
Surface seal? Yes ☐, No ☐, To what depth ___ feet
Material used in seal: Cement grout ☐, Puddling clay ☐

10. Work started 9-25-72, finished 10-1-72

11. DRILLER'S CERTIFICATION
This well was drilled under my supervision and this report is true to the best of my knowledge.

Driller or Firm's Name: BMS REICHER WELL DRILLING
Number 190
Address: Box 332, Philomath, Wash 97363
Signed By: Pat Wilhelm
Date: 10-9-72

USE ADDITIONAL SHEETS IF NECESSARY
JAMES KESLER WELL
Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, March 26, 2016; November 9, 2017


Latitude: 46.812679  Longitude: -117.173593  decimal degrees (WGS84)

SW ¼, NE ¼, SW ¼, Sec. 5, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
221 Banner Road, Pullman, Wash., on west side of road; well is within the driveway loop, south of the cluster of trees

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 25</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>25 – 176</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>176 – 188</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>188 – 278</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>278 – 289</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>289 – 304</td>
</tr>
</tbody>
</table>
Comments:

Grande Rode units were determined by correlation of elevations, thicknesses, and porous zone of a upper Meyer Ridge flow over parts of the southeastern Albion and southwestern Viola 7.5-minute quadrangles. The black shale noted, is in places, basalt and is difficult to interpret, but the shale at this location can be related to similar notation by different drillers in nearby wells.

Whitman County Tax Parcel 200004515053694 (retired), 221 BANNER RD, LOT C HAIGHT ACRES 22.12A, owners now are EICKHOFF, GERALD JR/KAY; grantors were KESLER, JAMES R/MALIA F on April 8, 2015.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**File Original and First Copy with**

**Department of Ecology**

**Second Copy — Owner’s Copy**

**Third Copy — Driller’s Copy**

---

**RECEIVED**

**WATER WELL REPORT**

**STATE OF WASHINGTON**

Water Right Permit No. **13**

**RECEIVED**

**WATER WELL REPORT**

**STATE OF WASHINGTON**

Water Right Permit No. **12**

---

(1) **OWNER:** Name **James Kesler**

Address **Box 982 Pullman Wa 99163**

(2) **LOCATION OF WELL:**

Water Right Permit No. **W230218**

**UNIQUE WELL ID.: APN222**

(2a) **STREET ADDRESS OF WELL (or nearest address):**

221 Banner Rd Pullman Wa 99163

(4) **TYPE OF WORK:**

Owner's number of well (if more than one)

- Abandoned
- New well
- Deepened
- Reconditioned
- Driven
- Bored
- Motorized
- Other

Method of Well Drilled

- Dug
- Rotary
- Jetted

Well Completion Method

- DeWater
- Test Well
- Other

(5) **DIMENSIONS:**

Diameter of well **8** inches

- Drilled **304** feet
- Depth of completed well **304** ft.

(6) **CONSTRUCTION DETAILS:**

- Casing Installed: **8** ft. Diam. from **1** ft. to **39** ft.
- Wedge
- Liner installed
- Threaded

Perforations: Yes [ ] No [X]

- Type of perforator used
- Size of perforations

- Perforations from ft. to ft.
- Perforations from ft. to ft.

- Perforations from ft. to ft.

- Screws: Yes [ ] No [X]

- Manufacturer’s Name
- Model No.
- Diameter Slot size from ft. to ft.
- Diameter Slot size from ft. to ft.

Gravel packed: Yes [ ] No [X]

- Size of gravel
- Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ]

- To what depth? **39** ft.
- Material used in seal
- Did any strata contain unusable water? Yes [ ] No [X]

- Type of water
- Method of sealing strata off

---

(7) **PUMP:**

- Manufacturer’s Name
- Type
- Model No.
- H.P.

---

(8) **WATER LEVELS:**

- Land-surface elevation above mean sea level **125** ft.
- Static level **512007** ft.
- Below top of well **Date 5/12/07**
- Artesian pressure bs. per square inch **Date**
- Artesian water is controlled by (Cap, valve, etc.)

---

(9) **WELL TESTS:**

- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes [X] No [ ]
- If yes, by whom?
- Yield: **gal./min.**
- ft. drawn down after **hrs.**
- **gal./min.**
- **ft. drawn down after** **hrs.**
- **gal./min.**
- **ft. drawn down after** **hrs.**
- **gal./min.**
- **ft. drawn down after** **hrs.**

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time **Water Level**
- Time **Water Level**
- Time **Water Level**

- Date of test
- **gal./min.**
- **ft. drawn down after** **hrs.**
- **gal./min.**
- **ft. drawn down after** **hrs.**
- **gal./min.**
- **ft. drawn down after** **hrs.**
- **gal./min.**
- **ft. drawn down after** **hrs.**

- Temperature of water **°F**
- Was a chemical analysis made? Yes [ ] No [X]

---

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

**FORMATION:**

- Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

**MATERIAL**

- **FROM** **TO**
  - Overburden
  - Basalt Firm
  - Black Shale
  - Basalt Firm
  - Pumice Basalt
  - Basalt Firm

---

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:**

- **WILL WELL DRILLING**
- **ADDRESS:**
  - 291 South Grade Rd, Julietta, IL

(Signed) **Robert Jeff**

License No. **6073**

---

**ECY 000-1-20 (9/93)**
**Greg Kimball Well**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 31, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>153412</th>
<th>Elev (ft):</th>
<th>2640 ±10</th>
<th>Depth (ft):</th>
<th>230</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Latitude:</th>
<th>46.815463</th>
<th>Longitude:</th>
<th>-117.115624</th>
<th>decimal degrees (WGS84)</th>
</tr>
</thead>
</table>

| ¼, SW ¼, NW ¼, Sec. 2, T. 15 N, R. 45 E |

**Well Address and (or) Other Location Information:**

9321 State Route 27, Pullman, Wash., on east side of highway, north of R Zakarison Road

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Driller misspelled last name as "Kimble" and reported incorrect section and Township.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>56</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>125</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>131</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>173</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>181</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>220</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>226</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515022339, 9321 SR 27, PULLMAN; KIMBALL, GREGORY NW1/4 SW COR OF SW1/4, owners now are KIMBALL, GREGORY/MARGIE; 2.5 acres, one story residence built in 1988; no grantor listed.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name: GREG HINKLEY
Address: 37.3

LOCATION OF WELL: County: WHITMAN

STREET ADDRESS OF WELL: Address: 

PROPOSED USE: Domestic [] Irrigation [] Industrial [] Municipal []
DeWater [] Test Well [] Other []

TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [] New well [] Method: Dug [] Bored []
Deepened [] Reconditioned [] Cable [] Driven []
Reconditioned [] Rotary []

DIMENSIONS:
Diameter of well: 8 & 6 inches

CONSTRUCTION DETAILS:
Casing Installed: 9" Diam. from: +1 ft. to: 64 ft.
Welded []
Liner Installed: Threaded []
Perforations: Yes [] No []
Size of perforator used:
in. by in.

Screens: Yes [] No []
Manufacturer's Name:
Type: Model No:
Diam: Slot size: from: ft. to: ft.
Diam: Slot size: from: ft. to: ft.

Gravel packed: Yes [] No []
Size of gravel:
Gravel placed from: ft. to: ft.

Surface seal: Yes [] No [] To what depth? 64 ft.
Material used in seal: CEMENT
Did any strata contain unusable water? Yes [] No []
Type of water:
Method of sealing strate off:

PUMP: Manufacturer's Name:
Type: H.P.

WATER LEVELS:
Land-surface elevation above mean sea level: 113 ft.
Static level: ft. below top of well: Date: 8-8-88 ft.
Artesian pressure: lbs. per square inch: Date:
Artesian water is controlled by: (Cap, valve, etc.)

WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [] No [] If yes, by whom?
Yield: gal./min. with: ft. drawdown after: hrs.
Recovery data (time taken as zero when pump turned off) (water level measured
from well top to water level)
Time: Water Level: Time: Water Level: Time: Water Level:

Date of test: 6-6-88

AIR TEST:
Date of test: 6-6-88

Bailer test: gal./min. with: ft. drawdown after: hrs.
Airtest: gal./min. with stem set at: ft. for: hrs.
Artesian flow: 3 1/4 g.p.m. Date:
Temperature of water: Was a chemical analysis made? Yes [] No []

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well,
and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best
knowledge and belief.

NAME: [signature]
WRIGHT DRILLING
(PERSON, FIRM, OR CORPORATION)
ADDRESS: [signature]
(WELL DRILLER)
LICENSE NO.: 0623

(USE ADDITIONAL SHEETS IF NECESSARY)
Mike Kinkade Well

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, February 3, 2017; November 9, 2017

Well Log ID: 332771 Elev (ft): 2600 ± 20
Depth (ft): 410 7.5' Quad: Albion

Latitude: 46.791019 Longitude: -117.161503
decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 17, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1252 Reid Road, Pullman, Wash., on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS
township incorrect and owner’s last name misspelled on driller’s report. Site visit (September 19,
2016), view up long driveway. Note that the well could easily be 20 ft lower in elevation, as the
house sits on a small knoll.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>Clay, brown</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N2 magnetostratigraphic unit(?)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R2 magnetostratigraphic unit(?)</td>
</tr>
</tbody>
</table>
Comments:

*The lack of an interbed at the Vantage horizon (none reported by the driller) makes it difficult to accurately pick the Wanapum–Grande Ronde contact in this well.

Whitman County Tax Parcel 200004515171900, 1252 REID RD PULLMAN, NE NE & 16 AC S 1/2, owners are now BRENAN, MICHAEL JR/WENDY; 54 acres; house built in 2003; grantors were KINKADE, MICHAEL/MICHELLE in 2013 and then WILMINGTON TRUST NA in 2014.

References Cited:
WATER WELL REPORT

Construction/Decommission (\(x\) in circle)

\(112744\)

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

PROPOSED USE: 2 Domestic 0 Industrial 0 Municipal
0 DeWater 0 Irrigation 0 Test Well 0 Other

TYPE OF WORK: Owner’s number of well (if more than one)

\(\times\) New Well 0 Reconditioned 0 Method: Dug 0 Bored 0 Driven
0 Deepened 0 Cable 0 Rotary 0 Jettied

DIMENSIONS: Diameter of well: 6 inches drilled: 410 ft
Depth of completed well: 410 ft

CONSTRUCTION DETAILS

Casing: \(\times\) Welded 6” Diam. from 20 ft to 410 ft
Installed: \(\times\) Liner installed 6” Diam. from 0 ft to 410 ft

Perforations: \(\times\) Yes 0 No \(\times\) Circular Saw Type of perforator used.

SIZE of perfor \(1/2\) in by \(1/2\) in and no of perfor \(72\) from \(370\) ft to \(410\) ft

Screens: \(\times\) Yes 0 No \(\times\) K-Pac Location

Manufacturer’s Name

Gravel/Filter packed: \(\times\) Yes 0 No \(\times\) Size of gravel/sand

Materials placed from \(\times\) ft to \(\times\) ft

Surface Seal: \(\times\) Yes 0 No To what depth? \(\times\) ft

Materials used in seal \(\times\) Dry Bentonite

Water level: \(\times\) Yes 0 No

Artesian pressure \(\times\) lbs, per square inch

Artesian water is controlled by \(\times\) (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? \(\times\) Yes 0 No

Yield gal/\(\times\) min with \(\times\) ft drawdown after \(\times\) hrs

Yield gal/\(\times\) min with \(\times\) ft drawdown after \(\times\) hrs

Yield gal/\(\times\) min with \(\times\) ft drawdown after \(\times\) hrs

Recovery data (time taken as zero when pump turned off/water level measured from well top to water level)

Time Water Level Time Water Level

Date of test

Bailer test gal/\(\times\) min with \(\times\) ft drawdown after \(\times\) hrs

Arttest \(\times\) gal/\(\times\) min with stem set at \(\times\) 10 ft for \(\times\) hrs

Date of test

Temperature of water

Was a chemical analysis made? \(\times\) Yes 0 No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

\(\times\) Driller \(\times\) Engineer \(\times\) Trainee

Name (Print) \(\times\) Ulrich \(\times\) Hulenkott

Driller/Engineer/Trainee Signature \(\times\) Ulrich \(\times\) Hulenkott

Driller or Trainee License No. 0768

CURRENT

Notice of Intent No. 065636

Unique Ecology Well ID Tag No. AAW 770

Water Right Permit No.

Property Owner Name Mike Kincard

Well Street Address Reel Rd Near Pullman

City Pullman

County: Whitman

Location \(\times\) NE 1/4, 1/4 \(\times\) NE 1/4 Sec. \(\times\) Twn. \(\times\) R. \(\times\) W

Lat/Long: Lat Deg Long Min/Sec

RECEIVED

APR 2002

DEPARTMENT OF ECOLOGY

WELL DRILLING UNIT

REVIEW

APR 2002

DEPT OF ECOLOGY BUDGET

MAY 6, 2002

UHLENKOTT DRILLING

Address PO Box 264

City, State, Zip: \(\times\) Spokane, ID \(\times\) 99210

Drilling Company: \(\times\) Ulrich \(\times\) Hulenkott

Contractor’s Registration No. \(\times\) 0768

Date: 2002-02-24

Ecology is an Equal Opportunity Employer
SCOTT KINZER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 5, 2018

Well Log ID: 1784501   Elev (ft): 2360 ±10   Depth (ft): 180   7.5’   Quad: Albion

Latitude: 46.837784°   Longitude: -117.186719°   decimal degrees (WGS84)

¼, ¼, SE ¼, Sec. 30, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
8701 Parvin Road, Pullman, Wash.; on west side of road

Location Method:
Location is for southernmost house in parcel; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 6</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>6 – 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>12 – 30</td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>30 – 63</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>63 – 85</td>
</tr>
<tr>
<td>Basalt</td>
<td>85 – 165</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>165 – 180</td>
</tr>
</tbody>
</table>

878
Comments:

Whitman County Tax Parcel 200004516304790, SE 1/4 PT S OF THE RD; owner is KINZER, SCOTT; 8501 PARVIN RD, PULLMAN WA; 25.0 acres, two residences (one built in 1950, shown below, southeast of pond).

References Cited:
**WATER WELL REPORT**

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

**Construction/Decommission** (*X* in circle)

- Construction
- Decommission

**ORIGINAL INSTALLATION**

**Notice of Intent Number**

**PROPOSED USE:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**TYPE OF WORK:**
- Owner’s number of well (if more than one)
- New well
- Reconditioned
- Method: Dug
- Bored
- Drive
- Cable
- Rotary
- Jetted

**DIMENSIONS:**
- Diameter of well 8 inches, drilled 180 ft.
- Depth of completed well 180 ft.

**CONSTRUCTION DETAILS**

- Casing: Welded 8" Diam. from 78 ft.
- Installed: Liner installed 4.1/2" Diam. from 20 ft. to 180 ft.
- Threaded: 8" Diam. from 20 ft. to 180 ft.

**Perforations:**
- Yes
- No

**Type of perforator used:** Saw Cut

**SIZE of perfs:** 1/8 in. by 6 in. and no. of perfs: 60 from 140 ft. to 180 ft.

**Screens:**
- Yes
- No
- K-Pac

**Location:**

**Manufacturer’s Name:**

**Type:**

**Diam. Slot size from ft. to ft.**

**Diam. Slot size from ft. to ft.**

**Gravel/Filter packed:**
- Yes
- No

**Size of gravel/sand:**

**Materials placed from ft. to ft.**

**Surface Seal:**
- Yes
- No
- To what depth? 78 ft.

**Material used in seal:**
- Bentonite Grout

**Did any strata contain unusable water?**
- Yes
- No

**Type of water?**
- Depth of strata

**Method of sealing strata off:**

**PUMP:**

**Manufacturer’s Name:**

**Type:**

**WATER LEVELS:**
- Land-surface elevation above mean sea level ft.
- Static level 60 ft. below top of well Date 8/16/18
- Artesian pressure lbs. per square inch Date

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- No
- If yes, by whom?

**Yield:**
- gal./min. with ft. drawdown after hrs.
- gal./min. with ft. drawdown after hrs.
- gal./min. with ft. drawdown after hrs.

**Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date of test:**

**Bailer test:**
- gal./min. with ft. drawdown after hrs.

**Aisent:**
- 30 gal./min. with stem set at 170 ft. for hrs.

**Artesian flow:**
- g.p.m. Date

**Temperature of water:**
- 52°F Was a chemical analysis made? Yes
- No

**RECEIVED**

AUG 20 2018

**CURRENT**

Notice of Intent No. 032652

Unique Ecology Well Tag No. BIU 870

Water Right Permit No.

Property Owner Name: Scott Kinzer

Well Street Address: 8701 Parvin Road

City: Pullman

County: Whitman

Location: R4/4 T25N R45E

(s, t, r, still required)

Lot/Lot

Lat Deg

Lat Min/Sec

Long Deg

Long Min/Sec

Tax parcel No. (Required): 032652

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (Use Additional Sheets if Necessary)

**MATERIAL**

<table>
<thead>
<tr>
<th>Material</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Clay</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Brown Basalt</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Gray Basalt</td>
<td>17</td>
<td>30</td>
</tr>
<tr>
<td>Clay</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Fractured Basalt</td>
<td>63</td>
<td>85</td>
</tr>
<tr>
<td>Gray Basalt</td>
<td>85</td>
<td>165</td>
</tr>
<tr>
<td>Blue Clay</td>
<td>165</td>
<td>180</td>
</tr>
</tbody>
</table>

**Start Date:** 08/14/18 **Completed Date:** 08/15/18

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**Driller**

**Engineer**

**Trainee**

Name: Eric S. Forssman

Driller/Engineer/Trainee Signature

Driller or trainee License No.: 2767

**IF TRAINEE:** Driller’s License No.

**Contractor’s Registration No.**

STUVVD914PT

Date 08/16/18

JAMES KINZER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 26, 2016

Well Log ID: 154174  Elev (ft): 2350 ±10  Depth (ft): 161  7.5’  Quad: Albion

Latitude: 46.840013  Longitude: -117.190318  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
8501 Parvin Road, Pullman, Wash., on southwest side of road

Location Method:
Location is for tan, two-story house with red roof (northwest of pond); Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 4 of Bush and Garwood (2005 [2006]), visual in 2005. Site visit (May 24, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>11 – 38</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>38 – 57</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>57 – 107</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>107 – 111</td>
</tr>
<tr>
<td>Basalt</td>
<td>111 – 134</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>134 – 161</td>
</tr>
</tbody>
</table>
Comments:
The Roza is thinning in this area and the Grande Ronde is rising in elevation. In addition, interbeds are rapidly changing in thickness and composition. Therefore, contacts are estimations.

Whitman County Tax Parcel 200004516304790, SE 1/4 PT S OF THE RD; owner is KINZER, SCOTT; 8501 PARVIN RD, PULLMAN WA; 25.0 acres, two residences (one built in 1950).

The two houses are also listed on Whitman County Tax Parcel 200004516304900, PT N OF RD BAL; owners now are KINZER, SCOTT (8501 Parvin Road); KINZER, KAREN R; KINZER, STEVEN; and KINZER, KIMBERLY S; photos were provided for two houses on this parcel, a quarter mile apart (at either end of pond); former owners were KINZER, JAMES E & E BERYL in 2013; 73.0 acres.

Tan two-story house (red roof) northwest of pond. White one-story house southeast of pond.
Above, the James and Beryl Kinzer parcel is north of the yellow-outlined Latham parcel.

References Cited:

### WATER WELL REPORT

**STATE OF WASHINGTON**

**LOCATION OF WELL:** County Whitman

**ADDRESS:** PO Box 171 - Pullman, WA 99163

**OWNER:** Name: James Kinzer

**LOCATION OF WELL (or nearest address):** SW 1/4 SE 1/4 Sec 30 T 16 N, R 45 W M

### PROPOSED USE:
- Domestic
- Irrigation
- DeWater
- Municipal

### TYPE OF WORK:
- Owner's number of well (if more than one)
- New well
- Abandoned
- Deepened
- Reconditioned

**Method:**
- Dug
- Bored
- Cable
- Driven
- Jetted

**Reconditioned:**
- No

### DIMENSIONS:
- Diameter of well: 84.6 inches
- Depth of completed well: 161 ft.

### CONSTRUCTION DETAILS:
- Casing installed:
  - Diameter from: 8 ft. to 20 ft.
  - Length: 161 ft.
  - Perforations: Yes
  - Type of perforator used
  - Size of perforations: in. by in.
  - Screened: Yes
  - Manufacturer's Name
  - Diameter: 8 in.
  - Slot size: 1/16 in.
  - Diameter: 8 in.
  - Slot size: 1/16 in.
- Gravel packed: Yes
- Gravel placed from: ft. to ft.
- Surface seal: Yes
- Material used in seal
- Did any strata contain usable water?: Yes
- Type of water:
- Material used in seal
- Method of sealing strata off

### PUMP:
- Manufacturer's Name
- Type
- H.P.

### WATER LEVELS:
- Static level: 84 ft. below top of well
- Date: 9-10-91
- Artesian water is controlled by (Cap. valve, etc.)

### WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made?: Yes
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Date of test
- Boiler test: gal./min. with ft. drawdown after hrs.
- Air test: 30 gal./min. with stem set at 135 ft. for 1 hrs.
- Artesian flow
- Temperature of water
  - Was a chemical analysis made?: Yes

### WELL CONSTRUCTOR CERTIFICATION:
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** McPherson & Wright Drilling

**Address:** Lewiston, Idaho 83501

**License No.:** 0523

**Date:** 9-27-91

**USE ADDITIONAL SHEETS IF NECESSARY**
RYAN KLAVEANO WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 18, 2018

Well Log ID: 554001
Elev (ft): 2670 ±10
Depth (ft): 314
Quad: Pullman

Latitude: 46.707208°
Longitude: -117.220644°
decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 12, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
875 Country Club Road, Pullman, Wash.; on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; WA DOE database incorrectly lists owners as "Ryan and Kara Clarence"

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td>To 75</td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td>Basalt, soft</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 99</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt and shale(?)</td>
<td>From 135</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>From 312</td>
</tr>
</tbody>
</table>

*The lack of rock chip chemistry in this area means that the interpreted sequence may not be correct.
Comments:

Whitman County Tax Parcel 200004414123793, 875 COUNTRY CLUB RD, LOT 2 JIM CLARK SHPLT, owners are KLAVEANO, RYAN/KARA; 5.51 acres; 2 story residence built in 2008.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Ryan Klaviano  
Address: 825 Country Club Rd Pullman Wa 99163

(2) LOCATION OF WELL: County Whitman  
SW 1/4 SW 1/4 Sec 12 T 14 N R 44 WM.

(2a) STREET ADDRESS OF WELL (or nearest address) Same

(3) PROPOSED USE:  
- Domestic  
- Irrigation  
- Municipal  
- Industrial  
- Test Well  
- DeWater  
- Other

(4) TYPE OF WORK:  
- Owner's number of well (1-10)
- New well
- Deepened
- Reconditioned

(5) DIMENSIONS: Diameter of well 8 1/2 inches.  
Diameter of completed well 11 1/4 ft.

(6) CONSTRUCTION DETAILS:
- Casing installed: 8 ft. from ground to 41 ft. to 84 ft.  
- Liner installed: 8 ft. from ground to 41 ft. to 84 ft.  
- Perforations: Yes  
- Size of perforations 2 in. by 2 in.  
- Screen type: Yes  
- Screen model: No  
- Diam. slot size: From ft. to ft.  
- Gravel packed: Yes  
- Gravel placed from ft. to ft.  
- Surface seal: Yes  
- To what depth: 84 ft.  
- Material used in seal: Bentonite  
- Did any strata contain unusable water? Yes  
- Depth of strata  
- Method of sealing strata: 

(7) PUMP:
- Manufacturer's Name:  
- Type:  
- H.P.: 

(8) WATER LEVELS:  
- Land surface elevation 76 ft. below top of well:  
- Static level 84.28108 ft.  
- Artesian pressure lbs. per square inch:  
- Artesian water controlled by

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Yield:  
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):  
- Date of test: 
- Bailer test:  
- Artesian flow: g.p.m. Date: 
- Temperature of water  
- Was a chemical analysis made? Yes  

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME

Address

Contractor's Registration No.

License No.

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6800. The TDD number is (206) 407-6006.
KLEMGARD COUNTY PARK WELL 1

[DRILLED IN 1972]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 26, 2016

Well Log ID: 174311       Elev (ft): 2035 ±10       Depth (ft): 150       7.5’        Quad: Colfax South

Latitude: 46.771431       Longitude: -117.357386       decimal degrees (WGS84)

¼, NW ¼, SE ¼, Sec. 23, T. 15 N, R. 43 E

Well Address and (or) Other Location Information:
Upper Union Flat Road, Colfax, Wash.; on southwest side of road, well is located inside well house, on west side of residence.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>9</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>45</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>68</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>143</td>
</tr>
</tbody>
</table>
Comments:

Outcrops of Roza occur on the north side of the county road 200 ft from the well. It is interpreted that the valley floor is on the Grande Ronde. TerraGraphics Environmental Engineering Inc. and Ralston Hydrologic Services (2011) discussed the hydrological implications of this well.

Whitman County Tax Parcel 200004315234690, SE PT N 1/2 KLEMGARD PARK, owner is WHITMAN COUNTY, 40.0 acres.

There are two wells at the park: Klemgard County Park well 1, and Klemgard County Park well 2 (drilled in 1986).

References Cited:

**WATER WELL REPORT**  
**STATE OF WASHINGTON**

(1) OWNER: Name: Whitman County Parks  
Address: ON B Blog, Room 11, Colfax, WA  
Permit No. 61-201

(2) LOCATION OF WELL: County  
Sec., T., R.: W.B.

(3) PROPOSED USE: Domestic [ ]  Industrial [ ]  Municipal [ ]  Irrigation [ ]  Test Well [ ]  Other [ ]

(4) TYPE OF WORK:  
Owner's number of well  
Method: Dug [ ]  Bored [ ]  Driven [ ]  Rotary [ ]  Jetted [ ]

(5) DIMENSIONS:  
Diameter of well: 8 inches.  
Drilled: 150 ft.  
Depth of completed well: 150 ft.

(6) CONSTRUCTION DETAILS:  
Casing installed: [ ]  Diam. from 1 ft. to 2 ft.  
Threaded [ ]  Diam. from 2 ft. to 3 ft.  
Welded [ ]  Diam. from 3 ft. to 150 ft.

Perforations: Yes [ ]  No [ ]
Type of perforator used: Torch
SIZE of perforations: 1/8 in. by 1/8 in.
perforations from: 150 ft. to 150 ft.
perforations from: 150 ft. to 150 ft.

Screens: Yes [ ]  No [ ]
Manufacturer's Name:  
Model No:  
Type:  
Diam.: 3 in.  
Slot size: 3 in.  
Diam.: 3 in.  
Slot size: 3 in.

Gravel packed: Yes [ ]  No [ ]
Size of gravel:  
Gravel placed from:  
To what depth: 60 ft.

Surface seal: Yes [ ]  No [ ]
To what depth: 60 ft.
Material used in seal: Cement
Did any strata contain unusable water? Yes [ ]  No [ ]
Type of water:  
Depth of strata:  
Method of sealing strata off:  

(7) PUMP:  
Manufacturer's Name:  
Type: H.P.

(8) WATER LEVELS:  
Land-surface elevation above mean sea level: 2060 ft.
Static level:  
ft. below top of well  
Date:  
Artesian pressure:  
lbs. per square inch  
Date:  
Artesian water is controlled by: (Cap, valve, etc.)

(9) WELL TESTS:  
Drawdown is amount water level is lowered below static level  
Was a pump test made? Yes [ ]  No [ ]  If yes, by whom?  
Yield: gal/min. with  
ft. drawdown after hrs.  
Test: Air Test 75 GPM

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test: 11/3/74  
Water test: gal/min. with  
ft. drawdown after hrs.  
Artesian flow: gpm.  
Date:  
Temperature of water:  
Was a chemical analysis made? Yes [ ]  No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, an show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil (Black) 1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Clay (Brown) 2</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Basalt (Gray) Fractured 3</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Basalt (Gray) Hard 45</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Basalt (Gray) Fractured 68</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Basalt (Gray) Hard 143</td>
<td>157</td>
<td></td>
</tr>
</tbody>
</table>

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME:  
Person, firm, or corporation:  
Type or print:  
Address:  
Well Driller:  
License No.  
Date:  
(Make all entries impressed and counter impressed)

(USE ADDITIONAL SHEETS IF NECESSARY)
**Klemgard County Park Well 2**

**[Drilled in 1986]**

Geologic Interpretation of Water Well Driller's Log  
By John H. Bush, December 4, 2016

Well Log ID: 174312  
Elev (ft): 2045 ±10  
Depth (ft): 106  
Quad: Colfax South

Latitude: 46.770054  
Longitude: -117.356064  
decimal degrees (WGS84)

| ¼, NW ¼, SE ¼, Sec. 23 | T. 15 N | R. 43 E |

**Well Address and (or) Other Location Information:**  
Upper Union Flat Road, Colfax, Wash.; on southwest side of road, well is located in hexagonal well house northeast of playground equipment.

**Location Method:**  
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller's report. Site visit (September 13, 2016).

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>9 — 45</td>
</tr>
<tr>
<td>Basalt, fractured, soft</td>
<td>45 — 80</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>80 — 90</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>90 — 100</td>
</tr>
<tr>
<td>Basalt</td>
<td>100 — 106</td>
</tr>
</tbody>
</table>

891
Comments:

Outcrops of Roza occur on the north side of the county road several hundred feet from the well. It is interpreted that the valley floor is on the Grande Ronde.

Whitman County Tax Parcel 200004315234690, SE PT N 1/2 KLEMGARD PARK, owner is WHITMAN COUNTY, 40.0 acres.

There are two wells at the park: Klemgard County Park well 1 (drilled in 1972), and Klemgard County Park well 2.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Whitman County Parks  
**Address:** Room 3, ONB Building, Colfax, WA 99111

**LOCATION OF WELL:** County WHITMAN  
**Section:** 23  
**Township:** T 15  
**Range:** R 43 E W.M.

### PROPOSED USE:
- Domestic □  
- Industrial □  
- Municipal X  
- Irrigation □  
- Test Well □  
- Other □

### TYPE OF WORK:
- Owner's number of well (if more than one) 2
- New well XX  
- Method: Dug □  
- Bored □
- Deepened □  
- Cable □  
- Driven □
- Reconditioned □  
- Rotary XX  
- Jetted □

### DIMENSIONS:
- Diameter of well: 8 inches.
- Drilled: 106 ft.  
- Depth of completed well: 106 ft.

### CONSTRUCTION DETAILS:
- Casing installed: 8" "Diam. from ... ft. to ... ft.
- Threaded □  
- "Diam. from ... ft. to ... ft.
- Welded XX  
- "Diam. from ... ft. to ... ft.

### Perforations:
- Yes □  
- No XX
- Type of perforator used...
- Size of perforations... in. by... in.
- Perforations from... ft. to... ft.
- Perforations from... ft. to... ft.
- Perforations from... ft. to... ft.
- Perforations from... ft. to... ft.

### Screens:
- Yes □  
- No XX
- Manufacturer's Name...
- Type...
- Model No...
- Dia...
- Slot size... from... ft. to... ft.
- Dia...
- Slot size... from... ft. to... ft.

### Gravel packed:
- Yes □  
- No XX
- Size of gravel...
- Gravel placed from... ft. to... ft.

### Surface seal:
- Yes XX  
- No □
- To what depth? 87 ft.
- Material used in seal...
- Did any strata contain unusable water? Yes XX  
- No □
- Type of water...
- Depth of strata 15' - 80'
- Method of sealing strata off...

### PUMP:
- Manufacturer's Name...
- Type...
- H.P...

### WATER LEVELS:
- Land surface elevation above mean sea level...
- ft.
- pie level...
- ft.
- Below top of well...
- Date... 6/12/86.
- Artesian water is controlled by...
- (Cap, valve, etc.)

### WELL TESTS:
- Drawdown is amount water level is lowered below static level...
- A pump test made? Yes XX  
- No □
- If yes, by whom?...
- Ponderosa... gal./min. with...
- 20 ft. drawdown after... 12 hrs.

### WELL DRILLER'S STATEMENT:
- This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

**NAME:** PONDEROSA DRILLING & DEVELOPMENT INC.  
(Person, firm, or corporation) (Type or print)

**Address:** 6010 Broadway, Spokane, WA 99212

**[Signed] James M. Doyle** (Well Driller)

**License No:** 1287  
**Date:** 6/12/86

---

**USE ADDITIONAL SHEETS IF NECESSARY.**
### MICHAEL KNAPP WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, March 17, 2016

Well Log ID: 1074634  
Elev (ft): 2590 ±10  
Depth (ft): 188  
7.5’  
Quad: Viola

Latitude: 46.83345  
Longitude: -117.084183  
decimal degrees (WGS84)

¾, ¼, NE ¼, Sec. 36, T. 16 N, R. 45 E

**Well Address and (or) Other Location Information:**
701 Beeson Cutoff Road, Palouse, Wash., on north side of road; well is near back west corner of house.

**Location Method:**  
Latitude, longitude, and tax parcel from driller’s report; Whitman County Tax Assessor; topographic map. Site visit (April 15, 2016), "L.W. Knapp" on mailbox.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 30</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>30 – 177</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>177 – 188</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004516361000, 701 BEESON CUT OFF RD, NE, owners are KNAPP, MICHAEL/ERIC; 156.0 acres; 1½ story residence built in 1910; farm equipment shed built in 2014.

References Cited:
Notice of Intent Number: W360658

Property Owner Last Name: Knapp
First Name: Michael

Organization Name:

Well Tag ID Number (e.g., AAA-001): APN 271
Variance Granted? (Circle One): Yes ( ) No ( )

Water Right Permit Required? (Circle One): Yes ( ) No ( )

If Yes, enter Water Right Permit Here (Required):

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Domestic
- Individual Irrigation
- Parks and recreation
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Deepened Well
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Jetted
- Rotary
- Driven

Drilling Start Date: 5/18/15
Drilling Completion Date: 5/21/15

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):
Well Street Address: Deo Benson Cutoff
Well City: Palouse
Well County: Whitman
Well Zip Code: 99163
Tax Parcel Number: 00004516361000

If claiming tax parcel exemption (Circle One):
- Tribal
- Federal Property
- Right of Way
- Railroad Land

Township: 16 N
Range: 45 E
Section: 36

Latitude: N46 50 00.7
Decimal Degrees; Longitude: W117 05 05.1
West Decimal Degrees

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: 8" ft in. Drilled: 188 ft 0 in
Depth of Completed Well: 188 ft 0 in

Casing (At least one Casing must have 6 in. of stickup and all fields must be filled out for each casing entered):

Type (Circle One):
- Concrete
- Plastic
- Steel
- Other

Diameter: 8 inches
Stickup: 12 inches
Depth: 188 ft 0 in

Type (Circle One):
- Concrete
- Plastic
- Steel
- Other

Diameter: 8 inches
Stickup: 12 inches
Depth: 188 ft 0 in

Liners? Circle One: Yes ( ) No ( )

(If yes, then complete the below fields that apply)

Type 1 (Circle One):
- PVC
- Steel
- Other

Diameter: 8 inches
From: 1 ft 0 in TO: 188 ft 0 in

Type 2 (Circle One):
- PVC
- Steel
- Other

Diameter: 8 inches
From: 1 ft 0 in TO: 188 ft 0 in

Perforations? Circle One: Yes ( ) No ( )

(If yes, then complete the below fields that apply)

Type of Perforator (Circle One):
- Drill
- Mills Knife
- Saw cut
- Star
- Torch Cut
- Other

Perforation size: 1 in by: 50 in
Total Perforations:

Perforation 1 from: 1 ft 0 in TO: 188 ft 0 in
Perforation 2 from: 1 ft 0 in TO: 188 ft 0 in

Screens? Circle One: Yes ( ) No ( )

(If yes, then complete the below fields that apply)

Mfr 1: Type: Diam: in Slot Size: From: 1 ft 0 in TO: 188 ft 0 in

Mfr 2: Type: Diam: in Slot Size: From: 1 ft 0 in TO: 188 ft 0 in

The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.

If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes ☐ No ☐ (If yes, then complete the below fields that apply)

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From ft in TO ft in
Packing Material 2 Circle One 20-40 8-12 Coarse Sand Pea Gravel From ft in TO ft in

Surface Seal Was there an existing surface seal? ☐ Yes ☐ No Depth of Seal ft in
Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes ☐ No ☐ If yes, Mfr Name Pump Type HP

Static Water Level (Circle One and fill in the blanks if needed)

Yes Measured Level (Below top of well) ft in Date Measured 5/11/15
Flowing Artesian (Circle One) Greater Than or Equal To GPM PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)
Dry Hole

Unusable Water Strata? (Circle One) Yes ☐ No ☐ If Yes is circled, method of sealing strata off:

Strata 1 (Specify Unusable Water Type) From ft in TO ft in
Strata 2 (Specify Unusable Water Type) From ft in TO ft in

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test Date of test (Circle One) Greater Than or Equal To GPM, with Drawdown after hrs min
Air Test Date of test (Circle One) Greater Than or Equal To GPM, with stem set at ft in
Test Duration hrs min

Pump Test Date of test Test performed by

Note: Drawdown = the amount the water level is lowered below the static level
Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min
Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min
Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Note: Recovery = The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording
Time hrs min; Water Level ft in Time hrs min; Water Level ft in Time hrs min; Water Level ft in
Time hrs min; Water Level ft in Time hrs min; Water Level ft in Time hrs min; Water Level ft in
Time hrs min; Water Level ft in Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Well Lithology Details — Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

Layer Formation Description From To Layer Formation Description From To

Overburden 0 30
Basalt/Firm 30 177
Shale & Sand 177 185

Comments — Enter any other important well construction and/or location details here.

CERTIFICATION — I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

Circle One) Driller Trainee Engineer Name(Print) □ Driller □ Trainee □ Engineer Name(Print) □ Driller □ Trainee □ Engineer Name(Print) □ Driller □ Trainee □
Drilling Company WILLS WELL DRILLING 1519 South Grade Rd
Address □ Driller □ Trainee □ PE License No. 06756
City, State, Zip JULIETTA, ID 83535
Phone Number □ Driller □ Trainee □ Email Address □ Driller □ Trainee □
HAROLD KNOPE'S WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 25, 2016

Well Log ID: 153585    Elev (ft): 2290 ±10     Depth (ft): 70     7.5’ Quad: Colfax North

Latitude: 46.947461    Longitude: -117.334400    decimal degrees (WGS84)

¾, ¾, SW ¾, Sec. 24, T. 17 N, R. 43 E

Well Address and (or) Other Location Information:
42401 WA 195, Colfax, Wash., on east side of highway

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 12 of Bush and others (2005 [2006]) which was incorrectly located near next house to the north (~0.1 mi). Site visit (September 16, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>0</td>
</tr>
<tr>
<td>Clay, dark brown</td>
<td>18</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>27</td>
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<tr>
<td>Basalt, gray, brown and yellow</td>
<td>31</td>
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<tr>
<td>Basalt</td>
<td>45</td>
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<td>Basalt, fractured, brown and green</td>
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<td>Latah Formation</td>
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<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, yellowish orange</td>
<td>68</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004317243390, 42401 SR 195, SW PT SW1/4 1AC, owner is KNOPES, HAROLD E; 1.0 acre, 1 story residence, built in 1905.

References Cited:

WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Harold Knopes
Address: Route 1, Box 112, Colfax, WA

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: Domestic ☐ Irrigation ☐ Industrial ☐ Municipal ☐
DeWater ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one):
Abandoned ☐ New well ☒ Method: Dig ☐ Cable ☐ Driven ☒
Deepened ☐ Rotary ☒ Reconditioned ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well ______ inches.
Drilled ______ feet. Depth of completed well ______ ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 ___ Diam. from ______ ft. to ______ ft.
Welded: PVC 4 __ Diam. from ______ ft. to ______ ft.
Linier installed: ______ ft. to ______ ft.
Perforations: Yes ☒ PVC LINER
Type of perforator used: Skill saw
Size of perforations ______ in. by ______ in.
40 perforations from ______ ft. to ______ ft.
________ perforations from ______ ft. to ______ ft.
________ perforations from ______ ft. to ______ ft.

Screens: Yes ☐ No ☒ Model No. ______
Manufacturer's Name ______
Diam. ______ Slot size ______ ft. to ______ ft.
Diam. ______ Slot size ______ ft. to ______ ft.

Gravel packed: Yes ☒ No ☐ Size of gravel ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes ☒ Bentonite 3/8th Holeplug
No ☐ To what depth? ______ ft.
Material used in seal: ______
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? ______
Method of sealing strata off ______

(7) PUMP: Manufacturer's Name ______
Type ______ H.P. ______

(8) WATER LEVELS:
Land-surface elevation ______ ft. below top of well ______ ft.
Static level ______ ft. above mean sea level ______ ft.
Artesian pressure ______ lbs. per square inch ______ Date ______
Artesian water is controlled by ______
(Cap, valve, etc.) ______

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ if yes, by whom? ______
Yield: 25 gal. / min. with ______ ft. drawdown after ______ hrs.
ESTIMATED AIRLIFT ______
Recovery date (time taken as zero when pump turned off) ______
(water level measured from well top to water level)
Time Water Level Time Water Level

Date of test ______
Boiler test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Airtest ______ gal./min. with steam set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. ______ Date ______
Temperature of water ______ Was a chemical analysis made? Yes ☐ No ☐

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Ponderosa Drilling & Development, Inc.
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address: 6010 Broadway, Spokane, Wa 99212

(Signed)
(WELL DRILLER)
(Louie Hanner)
License No. 1472
Contractor's Registration No. PO-ND-EI*248JF Date 12-11 1991

(USE ADDITIONAL SHEETS IF NECESSARY)
BEN KOPYCIAŃSKI WELL 1

[DRILLED APRIL 24, 1997]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: NA Elev (ft): 2650 ±10 Depth (ft): 300 7.5’ Quad: Viola

Latitude: 46.823625° Longitude: -117.039267° decimal degrees (WGS84)

____ ¼, SW ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W

Well Address and (or) Other Location Information:
1005 Trestle Road, Viola, Idaho; actually on east side of Poe Road (south of John Keach well)

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 16, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>87</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>110</td>
</tr>
</tbody>
</table>

901
Comments:

Latah County Tax Parcel RP40N06W123802; KOPYSCIANSKI, BENJAMIN B; 1005 TRESTLE RD; 4.12 AC LOT 2 & 5.11 AC; LOT 3 TAX #5556; 12 40 6.

References Cited:
RECEIVED
MAY 2 2 1997

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

FORM 238-7
3/95

NORTHERN REGION
1. DRILLING PERMIT NO. 82-97-W-006-300
Other IDWR No.

2. OWNER:
Name: Ben Copey
Address: 1201 South Maine, Moscow, Idaho 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp. 40
Rge. 18
Sec. 15
Gov't Lot

Lat.: 47
Long.: 116

Address of Well Site:
Trestle Rd., Viola

4. USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK check all that apply (Replacement etc.):
☐ New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD:
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>bentonite</td>
<td>0.110</td>
<td>300 lbs.</td>
</tr>
</tbody>
</table>

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>87</td>
<td>+1</td>
<td>134</td>
<td>860</td>
<td>steel</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

9. PERFORATIONS/SCREENS

☐ Perforations ☐ Method
☐ Screens ☐ Screen Type

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
</table>

10. STATIC WATER LEVEL OR ARTESSIAN PRESSURE:

37 ft. below ground
Artesian pressure ___ lb.

Depth flow encountered ___ ft.
Describe access port or control devices:

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 2</td>
<td>495</td>
<td>30 minutes</td>
<td></td>
</tr>
</tbody>
</table>

Water Temp.: Bottom hole temp.: 25°C
Water Quality test or comments: Water cloudy

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>800</td>
<td>1200</td>
<td>overburden</td>
</tr>
<tr>
<td>24</td>
<td>120</td>
<td>180</td>
<td>dec. granite, clay</td>
</tr>
<tr>
<td>8</td>
<td>130</td>
<td>135</td>
<td>granite, firm</td>
</tr>
<tr>
<td>8</td>
<td>135</td>
<td>200</td>
<td>dec. granite, firm</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Witt Well Drilling
Firm Official: Roger Witt
Firm No.: 58
Date: 5/1/97

(Sign once if Firm Official & Operator)

903
BEN KOPYSCIANSKI WELL 2

[DRILLED JUNE 12, 1997]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: NA Elev (ft): 2650 ±10 Depth (ft): 100 7.5' Quad: Viola

Latitude: 46.824008° Longitude: -117.039448° decimal degrees (WGS84)

Section ¼, SW ¼, NW ¼, Sec. 12, T. 40 N, R. 6 W

Well Address and (or) Other Location Information:
1005 Trestle Road, Viola, Idaho; actually on east side of Poe Road (south of John Keach well)

Location Method:
Approximate location is for large shed north of house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 16, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>5 – 60</td>
</tr>
<tr>
<td>Sand and clay, white</td>
<td>60 – 70</td>
</tr>
<tr>
<td>Sand and clay, brown</td>
<td>70 – 80</td>
</tr>
<tr>
<td>Sand, white</td>
<td>80 – 100</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W123802; KOPYSCIANSKI, BENJAMIN B; 1005 TRESTLE RD; 4.12 AC LOT 2 & 5.11 AC; LOT 3 TAX #5556; 12 40 6.

References Cited:
1. DRILLING PERMIT NO.: 87-97-W-5-6-301
2. OWNER:
   Name: Ben Hopkins
   Address: 1015 Main
   City: Moscow
   State: ID
   Zip: 83843
3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.
   Twp. 40 N  or South □
   Sec. 12
   Lat.: 
   Long.: 
   Address of Well Site: Treasure Road
4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other
5. TYPE OF WORK: check all that apply
   □ New Well □ Modify □ Abandonment □ Other
   □ Air Rotary □ Cable □ Mud Rotary □ Other
7. SEALING PROCEDURES
   SEAL/FILTER PACK
   AMOUNT
   METHOD
   Bentonite 0' 40' 800# DRY
   Was drive shoe used? □ Y □ N
   Shoe Depth(s) __100__'
   Was drive shoe seal tested? □ Y □ N
8. CASING/LINER:
   Diameter From To Gauge Material
   8" - 3' 98' 0850 STEEL
   Casing Liner Welded Threaded
   □ □ □ □
   Length of Headpipe: 
   Length of Tailpipe:
9. PERFORATIONS/SCREENS
   □ Perforations Method: OPEN BOTTOM
   □ Screens Screen Type
   From To Slot Size Number Diameter Material Casing Liner
   □ □ □ □ □ □ □
10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    21' ft. below ground Artesian pressure:
    Depth flow encountered: 961 ft. Describe access port or control devices:

11. WELL TESTS:
    □ Pump □ Bailer
    Yield gal/min: 
    Drawdown: 
    Pumping Level: 
    Flowing Artesian
    Water Temp. 58°
    Water Quality test or comments: FAIR
    Depth first Water Encountered
12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    □ Y □ N
    Remarks: Lithology, Water Quality & Temperature
    Depth first Water Encountered
13. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Firm Name: Jim Well Drilling Firm No: 539
    Firm Official: Jim Wells Date 5-18-97
    Supervisor or Operator: Date
    (Sign once if Firm Official & Operator)
BRIAN KRAFT WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 25, 2016

Well Log ID: 955532 Elev (ft): 2580 ±10 Depth (ft): 178 Quad: Moscow West

Latitude: 46.710638 Longitude: -117.064789 decimal degrees (WGS84)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
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</tr>
<tr>
<td>No description</td>
<td>0 – 14</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>14 – 45</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>45 – 77</td>
</tr>
<tr>
<td>Basalt, alternating hard and soft</td>
<td>77 – 161</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
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<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Shale, tan (clay?)</td>
<td>161 – 174</td>
</tr>
<tr>
<td>Sand</td>
<td>174 – 178</td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
601 Brown Road, Pullman, Wash.; on northwest side of road; well is in field on northeast side of driveway

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 12, 2016).
Comments:

Whitman County Tax Parcel 200004614074290, 601 BROWN RD, SE PT NW OF RD 10AC; owners are KRAFT, BRIAN and AURORA CLARK; building permit issued 9/10/2015 for NEW HOME: 3587SF MAIN AND 2ND FL. 130SF BASEMENT 973SF COVERED DECK 920SF ATTACHED GARAGE.

References Cited:
Notice of Intent Number: W310656
Property Owner Last Name: Kraft
Organization Name:
Well Tag ID Number (e.g., AAA-001): APN 265
Water Right Permit Required? (Circle One) Yes No

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Commercial
- Individual Irrigation
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Deepened Well
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Driven
- Jetted
- Rotary

Drilling Start Date: 10/13/14
Drilling Completion Date: 10/16/14

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)
Well Street Address: TBD Brown Rd. Parcel neighboring 814 Brown Rd.
Well City: Pullman
Well County: Whitman
Well Zip Code: 99163

Tax Parcel Number: 06000 4614074290

If claiming tax parcel exemption (Circle One) Tribal Federal Property Right of Way Railroad Land

Place an "X" in ¼

ONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well in, Drilled in: 178 ft in

Casing (At least one Casing must have 6 in of stickup and all fields must be filled out for each casing entered)

Type (Circle One) Concrete Plastic Other Diameter in Inches Stickup in Inches Depth in ft in

Type (Circle One) Concrete Plastic Other Diameter in Inches Stickup in Inches Depth in ft in

Iners? Circle One Yes No (If yes, then complete the below fields that apply)

In 1 (Circle One) PVC Steel Other Diameter in, From ft in TO ft in

In 2 (Circle One) PVC Steel Other Diameter in, From ft in TO ft in

Perforations? Circle One Yes No (If yes, then complete the below fields that apply)

Type of Perforator (Circle One) Drill Mills Knife Saw cut Star Torch Cut Other Perforation size in by in Total Perforations

Perforation 1 from ft in, TO ft in Perforation 2 from ft in, TO ft in

Trenches? (Circle One) Yes No (If yes, then complete the below fields that apply)

Trench 1 Type Diam in, Slot Size in, From ft in TO ft in

Trench 2 Type Diam in, Slot Size in, From ft in TO ft in

The Department of Ecology does NOT warranty the data and/or information on this Well Report.
If you need a document in an alternate format, please call the Water Resources Program at 360-407-6872.
Persons with a hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes [No] (If yes, then complete the below fields that apply)

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _______ ft _______ in TO _______ ft _______ in
Packing Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _______ ft _______ in TO _______ ft _______ in

Surface Seal Was there an existing surface seal? Yes or [No] Depth of Seal _______ ft _______ in
Type of Seal Material (Circle One) Bentonite [Bentonite Slurry] Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes [No] If yes, Mfr Name ___________ Pump Type ___________ HP ___________

Static Water Level (Circle One and fill in the blanks if needed)
Yes Measured Level (Below top of well) _______ ft _______ in Date Measured _______ 10/16/14
Flowing Artesian (Circle One) Greater Than or Equal To _______ GPM _______ PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.) _______
Dry Hole
Unusable Water Strata? (Circle One) Yes [No] If yes is circled, method of sealing strata off _______
Strata 1 (Specify Unusable Water Type) From _______ ft _______ in TO _______ ft _______ in
Strata 2 (Specify Unusable Water Type) From _______ ft _______ in TO _______ ft _______ in

General Well Tests (Circle all that apply and fill in the blanks)
Bailer Test Date of test _______ 10/16/14 (Circle One) Greater Than or Equal To _______ GPM, with _______ Drawdown after _______ hrs _______ min
Air Test Date of test _______ 10/16/14 (Circle One) Greater Than or Equal To _______ GPM, with stem set at _______ ft _______ in
Test Duration _______ hrs _______ min
Pump Test Date of test _______ Test performed by _______
Note: Drawdown=the amount the water level is lowered below the static level
Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min
Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min
Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min
Note: Recovery=The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording
Time _______ hrs _______ min; Water Level _______ ft _______ in Time _______ hrs _______ min; Water Level _______ ft _______ in
Time _______ hrs _______ min; Water Level _______ ft _______ in Time _______ hrs _______ min; Water Level _______ ft _______ in
Time _______ hrs _______ min; Water Level _______ ft _______ in Time _______ hrs _______ min; Water Level _______ ft _______ in

Well Lithology Details — Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>14</td>
<td>45</td>
</tr>
<tr>
<td>Porous Basalt</td>
<td>45</td>
<td>77</td>
</tr>
<tr>
<td>Hard Grey Basalt</td>
<td>77</td>
<td>80</td>
</tr>
<tr>
<td>Soft Basalt</td>
<td>80</td>
<td>85</td>
</tr>
<tr>
<td>Hard Basalt</td>
<td>85</td>
<td>88</td>
</tr>
<tr>
<td>Soft Basalt</td>
<td>88</td>
<td>89</td>
</tr>
<tr>
<td>Hard Basalt</td>
<td>89</td>
<td>100</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>100</td>
<td>161</td>
</tr>
<tr>
<td>Lias Shale</td>
<td>161</td>
<td>174</td>
</tr>
<tr>
<td>Sand</td>
<td>174</td>
<td>178</td>
</tr>
</tbody>
</table>

Comments — Enter any other important well construction and/or location details here...

CERTIFICATION — I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.
(Circle One) Driller Trainee Engineer Name (Print) [ ]
Driller/Engineer/Trainee Signature ___________
Driller/Trainee/PE License No. _______

If Trainee, Mentor Driller License No. ___________
Mentor Driller Signature ___________

Drilling Company _______ WELL DRILLING
Address _______ 1691 South Grade Rd.
City, State, Zip _______ Walla Walla, WA 99362
Phone Number _______ 509-276-3745
Email Address _______ wills.end@tds.net
PAUL AND SHIRLEY KRAMER WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, December 4, 2016

Well Log ID: NA Elev (ft): 2590 ±10 Depth (ft): 280 7.5’ Quad: Moscow West

Latitude: 46.699258 Longitude: -117.038939 decimal degrees (WGS84)

¼, ¼, NW ¼, Sec. 25, T. 39 N, R. 6W

Well Address and (or) Other Location Information:
1025 Blue Heron Lane, Moscow, Idaho; south of bend in lane, just east of the state boundary

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. John Bush has a memory of a quarry and the area for a test (when he was accompanied by Sherman Clyde). Drove part way up driveway (September 20, 2016), not realizing it was the correct house.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation and Latah Formation (sediments of Bovill)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 34</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>34 – 168</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>168 – 186</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>186 – 261</td>
</tr>
<tr>
<td>Sand</td>
<td>261 – 280</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N06W253157, 1025 BLUE HERON LN, GOVT LOT 1 AND NENW, owner is
KRAMER, PAUL M; 11.72 acres.

References Cited:
1. DRILLING PERMIT NO. 87-96-2000-000  
Other IDWR No.  

2. OWNER:  
Name: PHILL KRAMER  
Address: 3400 E. 25th St  
City: Idaho Falls  State: ID  Zip: 83401  

3. LOCATION OF WELL by legal description:  
Sketch map location must agree with written location.  

4. USE:  
[ ] Domestic  [ ] Municipal  [ ] Monitor  [ ] Irrigation  
[ ] Thermal  [ ] Injection  [ ] Other  

5. TYPE OF WORK:  
[ ] New Well  [ ] Modify  [ ] Abandonment  [ ] Other  
(Replacement etc.)  

6. DRILL METHOD:  
[ ] Air Rotary  [ ] Cable  [ ] Mud Rotary  [ ] Other  

7. SEALING PROCEDURES  

<table>
<thead>
<tr>
<th>SEAL/Filter</th>
<th>From</th>
<th>To</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benonite</td>
<td>1</td>
<td>40</td>
<td>10</td>
<td>DRY</td>
</tr>
</tbody>
</table>

Was drive shoe used? [ ] Y [ ] N  
Shoe Depth(s)  
Was drive shoe seal tested? [ ] Y [ ] N  
How?  

8. CASING/LINER:  

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 &quot;</td>
<td>+1</td>
<td>40</td>
<td>.120</td>
<td>Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe  
Length of Tailpipe  

9. PERFORATIONS/SCREENS:  
[ ] Perforations  Method:  
[ ] Screens  Screen Type:  

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:  
94 ft. below ground  Artesian pressure  0 lb.  
Depth flow encountered  0 ft.  Describe access port or control devices:  

11. WELL TESTS:  

<table>
<thead>
<tr>
<th>Yr. Pump</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Temp.  
Bottom hole temp.  
Water Quality test or comments:  

12. LITHOLOGIC LOG: (Describe repairs or abandonment)  

<table>
<thead>
<tr>
<th>Bone Dis.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.06</td>
<td>38.16</td>
<td></td>
<td>12.06 38.16 38.16</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>12.34-40</td>
<td>Basalt- 600 Med 4 0 40</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.40-80</td>
<td>Basalt - Weathered 6 40-80</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.86-80</td>
<td>CLAY</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.26-80</td>
<td>SAND</td>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RECEIVED  
JAN 02 1996  
NORTHERN REGION  
IDWR  

13. DRILLER'S CERTIFICATION:  
We certify that all regulations and construction standards were complied with at the time the rig was removed.  

Firm Name: LEWISTON & WRIGHT DRILLING  
Firm Address: 2246 Burrell  
Firm Phone: (208) 743-7295  
Firm No: 37-6  
Firm Official:  
Date:  
Supervisor or Operator:  
Date:  
(Sign once if Firm Official & Operator)  

FORWARD ONE COPY TO IDAHO DEPARTMENT OF WATER RESOURCES

913
MAHLON KRIEBEL WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 16, 2016

Well Log ID: 156248, Elev (ft): 2570 ±10, Depth (ft): 155, 7.5’ Quad: Palouse

Latitude: 46.983072, Longitude: -117.085366, decimal degrees (WGS84)

NW ¼, NW ¼, SW ¼, Sec. 12, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
501 Kriebel Road, Garfield, Wash., on east side of road; well is in field at southeast corner of Ladow Butte and Kriebel roads.

Location Method:
Location is for well; Whitman County Tax Assessor; Google Earth imagery, topographic map; PLSS subdivisions incorrect on driller’s report. John Bush was present when decision was made to drill well in field 0.5 mi west of new home site. Site visit (April 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 19</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>19 – 38</td>
</tr>
<tr>
<td>Clay and basalt</td>
<td>38 – 53</td>
</tr>
<tr>
<td>Basalt</td>
<td>53 – 99</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>99 – 106</td>
</tr>
<tr>
<td>Basalt</td>
<td>106 – 141</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>141 – 151</td>
</tr>
<tr>
<td>Basalt</td>
<td>151 – 155</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004517123690, SW PT N1/2 PARCEL D, owner now is KRIEBEL, C MAHLON; 52.0 acres.

[The house is in Tax Parcel 200004517121390, 501 KRIEBEL, NE PT SW1/4 PARCEL D, owned by KRIEBEL, MONIKA B/MAHLON, 7.0 acres.]

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: MAHLON E. KRIEBEL
Address: 301 HILLBROOK DR, SPOKANE, WA 99208

LOCATION OF WELL: Whitman
STREET ADDRESS OF WELL: PALOUSE

PROPOSED USE: Domestic

TYPE OF WORK: New well
Method: Dug

DIMENSIONS: Diameter of well 8 1/2 inches.
Drilled 155 feet. Depth of completed well 155 feet.

CONSTRUCTION DETAILS:
Casing installed: 8 ft. Diam. from 1 ft. to 19 ft.
Welded: 1 ft. Diam. from 15 ft. to 19 ft.
Threaded: 1 ft. Diam. from 15 ft. to 19 ft.

Perforations: Yes
Type of perforator used: 1/2 in. by 1 1/2 in.
100 perforations from 110 ft. to 155 ft.

Screens: Yes
Manufacturer's Name

Gravel packed: Yes
Size of gravel
Gravel placed from 1 ft. to 15 ft.

Surface seal: Yes
Material used in seal

Did any strata contain unusable water? Yes
Type of water?

PUMP: Manufacturer's Name

WATER LEVELS:
Static level: 10 ft. below top of well
Artesian pressure: lbs. per square inch
Artesian water is controlled by (Cap. valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Date of test:
Bailer test: 60 gal./min. with ft. drawdown after hrs.
Artesial: 140 gal./min. with stem set at 140 ft. for 1 hrs.
Artesial flow: g.p.m. Date
Temperature of water
Was a chemical analysis made? Yes

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: MCPHERSON, R ORWRIGHT DRILLING
Address: 2246 RURAL, LEWISTON ID 83541
(Signed) (WELL CONTRACTOR)
License No. 0523

Contractor's Registration No. 13501 Date 11/15/97

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (208) 407-6600. The TDD number is (208) 407-6006.
MARK KUEHNER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 5, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>156336</th>
<th>Elev (ft):</th>
<th>2490 ±10</th>
<th>Depth (ft):</th>
<th>80</th>
<th>7.5’ Quad:</th>
<th>Albion</th>
</tr>
</thead>
</table>

Latitude: 46.868933  Longitude: -117.128132  decimal degrees (WGS84)

WELL ADDRESS AND (OR) OTHER LOCATION INFORMATION:
12732 WA 27, Palouse, Wash., west side of road; south of Mader Road.

LOCATION METHOD:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision and street number are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Precambrian–Cambrian</td>
<td></td>
</tr>
<tr>
<td>*Quartzite</td>
<td>3 – 80</td>
</tr>
</tbody>
</table>
Comments:

*Driller recorded granite but rock is likely quartzite. Nearby outcrops of quartzite comprise Kamiak Butte.

Whitman County Tax Parcel 200004516153890, 12732 SR 27, SW, S 1/2 LESS 5 AC IN NE, owner is KUEHNER, MARK & C E REV; 79.0 acres.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Name: MARK KUEHNER
Address: 4063 Hwy 87 N PALOUSE, PALOUSE

LOCATION OF WELL: County: WHITMAN

STREET ADDRESS OF WELL (or nearest address):

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
DeWater ☐ Test Well ☐ Other ☐

TYPE OF WORK: Owner's number of well
(if more than one)
Abandoned ☐ New well ☐ Deepened ☐ Reconditioned ☐
Method: Dug ☐ Cable ☐ Driven ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well: 8+6 inches.
Druilled 80 feet. Depth of completed well: 80 ft.

CONSTRUCTION DETAILS:
Casing installed: 8 ft. x 20 ft.
Weled ☐ Liner installed: ☐
Threaded ☐ Perforations: Yes ☐ No ☐

SIZE OF PERFORATIONS: in. by in.

Screens: Yes ☐ No ☐
Manufacturer's Name:
Type ☐ Model No ☐
Diam. from ft. to ft.
Diam. from ft. to ft.
Gravel packed: Yes ☐ No ☐ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☐ To what depth: 20 ft.
Material used in seal:
Did any strata contain usable water? Yes ☐ No ☐
Type of water:
Depth of strata:

METHOD OF SECTING STRATA OFF:

PUMP: Manufacturer's Name:

WATER LEVELS:
Land-surface elevation above mean sea level:

STATIC level: 44 ft. below top of well Date: 11-11-91
ARTESIAN pressure: lbs. per square inch Date:
Artesian water is controlled by:
(Cap. valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?

Yield: gal./min. with ft. drawdown after hra.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test:

Ball test gal./min. with ft. drawdown after hra.
Airtest 1 min. with atm set at 70 ft. for 15 mins
Artesian flow p.g.p.m. Date

Temperature of water was a chemical analysis made? Yes ☐ No ☐

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best knowledge and belief.

NAME McPherson & Wright Drilling

Address Lewiston, Idaho 83501

License No. 0523

Contractor's Reg. No. McPhl 18511 Date 9-19

(USE ADDITIONAL SHEETS IF NECESSARY)
RENEE KUEHNER WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, May 7, 2018

Well Log ID: D0056633  Elev (ft): 2600 ±10  Depth (ft): 158  Quad: Potlatch

Latitude: 46.913429°  Longitude: -116.997403°  decimal degrees (WGS84)

¾, SW ¾, NW ¾, Sec. 8, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1024 North River Road, Viola, Idaho; on north side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; latitude and longitude GPS apparently recorded incorrectly on driller's report; driller recorded first name as "Rene" and reported incorrect ¼-¼ section

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Loess, clay</td>
<td>0 — 33</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>33 — 150</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>150 — 158</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N05W083608, owner is KUEHNER, RENEE K; 1024 N RIVER RD, 5.12 AC TAX #6849, SWNW, 8  41  5.

References Cited:
**WELL DRILLER'S REPORT**

1. **WELL TAG NO. D** 0056633
   **DRILLING PERMIT NO.**
   **Water Right or Injection Well No.**

2. **OWNER:**
   **Name:** Kene Kuehner
   **Address:** 1205 Wellesley Rd
   **City:** Viola
   **State:** ID  Zip 93872

3. **LOCATION OF WELL by legal description:**
   You must provide address or Lot, Blk. Sub. or Directions to well.
   **Town:** 41 North or South □
   **Range:** 8 East or West □
   **Sec:** 1/4 N 1/4 W 1/4
   **Gov't Lot:** 24 Lake County
   **Lat:** 47° 40' 34.767256
   **Long:** 114° 32' 18.829660
   **Address of Well Site:** 1205 River Rd
   **City:** Viola
   **Lt:** Blk. Sub. Name

4. **USE:**
   - Domestic □
   - Municipal □
   - Irrigation □
   - Monitor □
   - Thermal □
   - Injection □
   - Other □

5. **TYPE OF WORK** check all that apply
   (Replacement etc.)
   - New Well □
   - Modify □
   - Abandonment □
   - Other □

6. **DRILL METHOD:**
   - Air Rotary □
   - Cable □
   - Mud Rotary □
   - Other □

7. **SEALING PROCEDURES**
   **Seal Material**
   **From**
   **To**
   **Weight / Volume**
   **Seal Placement Method**
   - Bentonite 0 38 300lbs top pour

   **Was drive shoe used?** □
   **Shoe Depth(s)** □
   **How?** □

8. **CASING/LINER:**
   **Diameter**
   **From**
   **To**
   **Gauge**
   **Material**
   **Casing** □
   **Liner** □
   **Welded** □
   **Threaded** □

   **Length of Headpipe**
   **Length of Tailpipe**

9. **PERFORATIONS/SCREENS Packer Type**
   **Perforation Method**
   **Screen Type**
   **Method of Installation**

10. **FILTER PACK**
    **Filter Material**
    **From**
    **To**
    **Weight / Volume**
    **Placement Method**

11. **STATIC WATER LEVEL OR ARTESIAN PRESSURE:**
    **Depth encountered** 121 ft. Describe access port or control devices:

12. **WELL TESTS:**
    **Yield gal/min.**
    **Drawdown**
    **Pumping Level**
    **Time**
    **Lat:**
    **Long:**

13. **LITHOLOGIC LOG:** (Describe repairs or abandonment)
    **Bore Dia.**
    **From**
    **To**
    **Remarks: Lithology, Water Quality & Temperature**

14. **DRILLER'S CERTIFICATION**
    I/we certify that all minimum well construction standards were complied with at the time the rig was removed.
    **Company Name:**
    **Firm No:**
    **Principal Driller:**
    **Driller or Operator:**
    **Date:**
    **Operator:**
    **Date:**

---

**RECEIVED**

**AUG 04 2009**

**IDWR/North**

**SCANNED**

**MAY 08 2010**

---

**COMPANY**
Brett AHLenkott Drilling

**Firm No:** 709

**Principal Driller**

**Driller or Operator**

**Date:** 7/14/09

**Completed Depth:** 158 (Measurable)

---

**FORWARD WHITE COPY TO WATER RESOURCES**
## ROBIN LAKE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 5, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 552837</th>
<th>Elev (ft): 2320 ±20</th>
<th>Depth (ft): 300</th>
<th>7.5’</th>
<th>Quad: Colfax North</th>
</tr>
</thead>
</table>

| Latitude: 46.931609 | Longitude: -117.307958 decimal degrees (WGS84) |

| NW ¼, NW ¼, NE ¼, Sec. 31, T. 17 N, R. 44 E |

### Well Address and (or) Other Location Information:
311 Red Tail Ridge Road, Colfax, Wash., on east side of road

### Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision and tax parcel are incorrect on driller’s report. Site visit (April 18, 2016).

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>Soil</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td>Basalt</td>
</tr>
<tr>
<td>Roza Member</td>
</tr>
<tr>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
</tr>
<tr>
<td>Vantage Member</td>
</tr>
<tr>
<td>Clay, gray</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
</tr>
<tr>
<td>Basalt, hard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>215</td>
</tr>
<tr>
<td>238</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 101420000170000, 311 REDTAIL RIDGE RD, RED TAIL RIDGE SUBD, Lot 17, Block 00, owner is now LAKE-CRISPELL EXEMPT FAMILY TRUST (KATHY CRISPELL TRUSTEE); 11.78 acres; grantor was LAKE, ROBIN M on 08/23/12.

Left, 311 Redtail Ridge Road parcel is outlined in yellow.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
☐ Construction
☐ Decommission ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner’s number of well (if more than one)
☐ New well ☐ Reconditioned Method: Drilled/Reamed/Bored/Driven
☐ Threaded ☐ Diameter: [size] ft. to [size] ft.


CONSTRUCTION DETAILS

Perforations: ☐ Yes ☐ No
Type of perforator used: [size] ft.

SIZE of perfs 1/16 in. by [size] in. and no. of perfs 22 to 3000

Screens: ☐ Yes ☐ No ☐ K-Pac

Manufacturer’s Name: [size]
Type: [size] Model No.: [size]

Gravel/Filter packed: ☐ Yes ☐ No

Surface Seal: ☐ Yes ☐ No To what depth? [size] ft.
Material used in seal: [size]

Did any strata contain unusable water? ☐ Yes ☐ No
Type of water: ☐ GOOD ☐ DEEP ☐ MUD
Method of sealing strata off: [size]

PUMP: Manufacturer’s Name: [size]
Type: [size]

WATER LEVELS: Land-surface elevation above mean sea level [size] ft.
Static level: [size] ft. below top of well Date 08/08/08
Artesian pressure: [size] lbf. per square inch
Artesian water is controlled by [size] (cap, valve, etc.)

WELL TESTS: Drawdown in amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?


Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test: [size]


Airstest: 10 gal/min. with steam set at 285°F for 1.5 hrs.

Artesian flow: g.p.m. Date [size]

Temperature of water 55. Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller: ☐ ☐ Engineer: ☐ Trainee: ☐ Name (poc.) BRITT HULEN KOTT
Driller/Engineer/Trainee Signature: [size]

Driller or trainee License No: [size]

Driller’s Signature: [size]

ECY 058-1-20 (Rev 4/07)
JUERGEN LANG WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: D0046193  Elev (ft): 2730 ±10  Depth (ft): 600  Quad: Robinson Lake

Latitude: 46.775490°  Longitude: -116.980315°  decimal degrees (WGS84)

SW ¼, SW ¼, SW ¼, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3142 Foothill Road, Moscow, Idaho; on east side of road

Location Method:
Assumed a location between two small buildings; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft) From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>0</td>
<td>145</td>
</tr>
<tr>
<td>¹Clay and sand</td>
<td>145</td>
<td>260</td>
</tr>
<tr>
<td>Clay and sand, brown</td>
<td>260</td>
<td>280</td>
</tr>
<tr>
<td>²Idaho Batholith(?)</td>
<td>280</td>
<td>600</td>
</tr>
</tbody>
</table>

¹Recorded as "caving granite"
²Difficult to pick contact between sediments of Bovill and granite
Comments:
Latah County Tax Parcel RP40N05W286008, owner now is BULL, JAMES JEFFERY; 3142 FOOTHILL RD, 38.86 TAX #6525 SWSW, 28 40 5.

References Cited:
1. WELL TAG NO. D D0046193
DRILLING PERMIT NO. 846029
Water Right or Injection Well No. --

2. OWNER
Name: JUERGEN LANG
Address: PO BOX 9441
City: MOSCOW
State ID: Zip: 83843

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk., Sub., or Directions to well:
Twp. 40 Rge. 95 Sec. 28
Gov't Lot: -- County: LATAH
Address of Well Site: 3142 FOOTHILL RD

4. USE:
X Domestic  O Municipal  O Monitor  O Irrigation
O Thermal  O Injection  O Other

5. TYPE OF WORK check all that apply
X New Well  X Modify  X Abandonment  O Other

6. DRILL METHOD:
X Air Rotary  O Cable  O Mud Rotary  O Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>Seal Material</th>
<th>From</th>
<th>To</th>
<th>Weight/Volume</th>
<th>Seal Placement Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>-24</td>
<td>400</td>
<td>400</td>
<td>TOP POUR</td>
</tr>
</tbody>
</table>

Was drive shoe used?  X Y  O N  Shoe Depth(s): 280
Was drive shoe sealed?  X Y  O N  How?  AIR

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot;</td>
<td>+2</td>
<td>280</td>
<td>.250</td>
<td>Steel</td>
</tr>
</tbody>
</table>

Length of Headpipe: N/A  Length of Tailpipe: N/A

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method: SAW
Screen Type & Method of Installation: N/A

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
</table>

10. FILTER PACK
Filter Material: N/A

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Weight/Volume</th>
<th>Placement Method</th>
</tr>
</thead>
</table>

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
85 ft. below ground  Artesian pressure -- lb.
Depth flow encountered -- ft. Describe access ports or control devices: --

12. WELL TESTS:
Pump  O Baller  X Air  O Flowing Artesian

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>

Water Temp. 55
Water Quality test or comments: GOOD

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore</th>
<th>Dist</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>145</td>
<td></td>
<td>CLAY / SAND</td>
</tr>
<tr>
<td>6</td>
<td>145</td>
<td>260</td>
<td></td>
<td>CAVING GRANITE</td>
</tr>
<tr>
<td>6</td>
<td>260</td>
<td>280</td>
<td></td>
<td>MED BROWN GRANITE</td>
</tr>
<tr>
<td>6</td>
<td>280</td>
<td>600</td>
<td></td>
<td>CAVING WHITE GRANITE</td>
</tr>
</tbody>
</table>

Depth first Water Encounter 142

14. DRILLER'S CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.
Company Name: TWO U DRILLING, LLC
Firm No. 125

Principal Driller: T.U. Date: 05/24/07
Diller or Operator II: B.U. Date: 05/24/07

Operator I: Date: 
Principal Driller and Rig Operator Required. Operator I must have signature of Driller/Operator II.

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928

FORMD COPY TO WATER RESOURCES

Form provided by Forms On-A-Disk - (214) 340-9429 - www.FormsOnADisk.com
D.F. LANGE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 24, 2016

Well Log ID: NA    Elev (ft): 2460 ±10    Depth (ft): 237    7.5’    Quad: Elberton

Latitude: 46.948239    Longitude: -117.185040    decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 19, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
5701(?) Lange Road, Elberton, Wash., west side of road, north of WA 272.

Location Method:
Approximately located, based upon Walters and Glancy (1969, p. 84 and pl. 2); Whitman County Assessor; Google Earth imagery; topographic map. Elberton quadrangle Well 13 of Bush, Garwood, and Halver (2005 [2006]).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil and clay</td>
<td>0 – 20</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>20 – 95</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>95 – 120</td>
</tr>
<tr>
<td>Basalt</td>
<td>120 – 165</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>165 – 190</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>*Roza Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>190 – 220</td>
</tr>
<tr>
<td>Basalt</td>
<td>220 – 237</td>
</tr>
</tbody>
</table>
Comments:

*Elevation of this basalt appears to correspond to the top of the Roza as illustrated by Bush and Garwood (2005 [2006]).

Whitman County Tax Parcel 200004517193900, NKA LANGE RD 99130, SW1/4 LYG W OF RD, owned by LANGE FARM LLC, C/O DAVE LANGE, 116.0 acres.

References Cited:


REFERENCES CITED


APPENDIX

WELL-NUMBERING SYSTEM

Well numbers used in this report show the location of wells according to the rectangular system for subdivision of public land; that is, they indicate the township, range, section, and the 40-acre tract within the section. For example, in the well number 18/43-35P1, the two numbers preceding the hyphen indicate the township and range (T. 18 N., R. 43 E.) north and east of the Willamette base line and meridian. The first number following the hyphen indicates the section (sec. 35) and the letter (P) gives the 40-acre subdivision of the section, as follows:

<table>
<thead>
<tr>
<th>Section 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in the SE₄SW₁ sec. 35, T. 18 N., R. 43 E., would have the number 18/43-35P1, and the second well would have the number 18/43-35P2. Springs are numbered separately in the same manner, with the letter "s" added.

GROUND-WATER DATA

The following tables include basic data collected during the investigation. They include an inventory of wells (table 2) and springs (table 3), a compilation of well logs (table 4), and a tabulation of chemical analyses of well waters (table 5).
<table>
<thead>
<tr>
<th>Well no.</th>
<th>Owner or Tenant</th>
<th>Altitude (feet)</th>
<th>Depth (feet)</th>
<th>Diam. (inches)</th>
<th>Water level below land surface</th>
<th>Use</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. 17 N., R. 44 E. - Cont.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33C1</td>
<td>City of Colfax</td>
<td>2,090</td>
<td>380</td>
<td>12</td>
<td>--</td>
<td>--</td>
<td>N Was drilled for public supply, but yield is insufficient.</td>
</tr>
<tr>
<td>33G1</td>
<td>E. W. Johnson</td>
<td>2,390</td>
<td>69</td>
<td>6</td>
<td>17.22</td>
<td>10- 4-56</td>
<td>D Probably entirely in basalt.</td>
</tr>
<tr>
<td>33Q1</td>
<td>... do ...</td>
<td>2,405</td>
<td>80</td>
<td>8</td>
<td>30.18</td>
<td>10- 3-56</td>
<td>D,S</td>
</tr>
<tr>
<td>34M1</td>
<td>Paul Johnson</td>
<td>2,475</td>
<td>85</td>
<td>6</td>
<td>20</td>
<td>10- -56</td>
<td>D</td>
</tr>
<tr>
<td>34N1</td>
<td>... do ...</td>
<td>2,505</td>
<td>400</td>
<td>8</td>
<td>--</td>
<td>--</td>
<td>N Depth to water in excess of 300 ft. 10-4-56.</td>
</tr>
<tr>
<td>35F1</td>
<td>Adolf Harder</td>
<td>2,540</td>
<td>180</td>
<td>6</td>
<td>30</td>
<td>--</td>
<td>D,S</td>
</tr>
<tr>
<td>T. 17 N., R. 45 E.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4C1</td>
<td>Town of Garfield</td>
<td>2,485</td>
<td>380</td>
<td>10</td>
<td>130</td>
<td>--</td>
<td>P Drawdown 1 ft after 4 hr pumping 300 gpm. C, L.</td>
</tr>
<tr>
<td>6J1</td>
<td>J. C. Gwinn</td>
<td>2,480</td>
<td>170</td>
<td>6-4</td>
<td>72</td>
<td>--</td>
<td>D, L.</td>
</tr>
<tr>
<td>8D1</td>
<td>John Gwinn</td>
<td>2,530</td>
<td>266</td>
<td>6-4</td>
<td>180</td>
<td>12- -46</td>
<td>D, L.</td>
</tr>
<tr>
<td>13D1</td>
<td>W. S. Redman</td>
<td>2,555</td>
<td>9</td>
<td>36</td>
<td>2.77</td>
<td>12- 4-53</td>
<td>D,S</td>
</tr>
<tr>
<td>13M1</td>
<td>Harry Curtis</td>
<td>2,500</td>
<td>240</td>
<td>6</td>
<td>140</td>
<td>--</td>
<td>D</td>
</tr>
<tr>
<td>14K1</td>
<td>J. E. Miller</td>
<td>2,480</td>
<td>60</td>
<td>4</td>
<td>19</td>
<td>--</td>
<td>D,S &quot;Bedrock&quot; at 25 ft.</td>
</tr>
<tr>
<td>14P1</td>
<td>Glen Curtis</td>
<td>2,480</td>
<td>47</td>
<td>6</td>
<td>32</td>
<td>--</td>
<td>N</td>
</tr>
<tr>
<td>19K1</td>
<td>D. F. Lange</td>
<td>2,520</td>
<td>197</td>
<td>6</td>
<td>90</td>
<td>1940</td>
<td>N</td>
</tr>
<tr>
<td>19P1</td>
<td>... do ...</td>
<td>2,460</td>
<td>190</td>
<td>8-6</td>
<td>98</td>
<td>12- -55</td>
<td>D Backfilled from 237 ft. Drawdown 89 ft after 4 hrs pumping 73 gpm. L.</td>
</tr>
</tbody>
</table>
### Table 4 - Driller's logs of representative wells, Whitman County - Continued

<table>
<thead>
<tr>
<th>Materials</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Dirt and clay&quot; [soil]</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Clay and loose rock</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>&quot;Rock&quot; [basalt]</td>
<td>126</td>
<td>198</td>
</tr>
<tr>
<td>Clay, blue and yellow</td>
<td>47</td>
<td>245</td>
</tr>
<tr>
<td>&quot;Rock&quot; [basalt], honeycombed</td>
<td>15</td>
<td>260</td>
</tr>
<tr>
<td>Clay, blue and yellow</td>
<td>20</td>
<td>280</td>
</tr>
<tr>
<td>&quot;Rock&quot; [basalt], variable hardness, water-bearing</td>
<td>100</td>
<td>380</td>
</tr>
</tbody>
</table>

#### 17/45-6J1. J. C. Gwinn. Altitude about 2,480 ft.
Drilled by Ralph Smith, 1946. Cased to 160 ft.
(Log from owner's memory.)

| Clay, yellow | 20 | 20 |
| Basalt, hard | 120 | 140 |
| "Quicksand" | 1 | 141 |
| "Rock" | 16 | 157 |
| "Quicksand" | 2 | 159 |
| "Rock" | 11 | 170 |

Drilled by Oliver Zinkgraf, 1946. Cased to 252 ft.

| Silt (old well) | 46 | 46 |
| Basalt, hard | 139 | 185 |
| Sand, gray and yellow, water-bearing | 21 | 206 |
| "Rock," hard, sandy | 2 | 208 |
| Sand, soft, yellow | 10 | 218 |
| Clay, green and brown | 33 | 251 |
| "Rock," soft, porous, black | 5 | 256 |
| Basalt, hard | 10 | 266 |

Drilled by Bloyed Bros., 1955. Cased to 190 ft.

| Soil and clay | 20 | 20 |
| Basalt, hard, water-bearing ([gpm at 60 ft.]) | 75 | 95 |
| Basalt, blocky and soft, small streaks of green shale | 25 | 120 |
| Basalt, water-bearing ([gpm at 146 ft.]) | 45 | 165 |
| Shale, blue and green | 25 | 190 |
| Basalt, broken shale | 30 | 220 |
| Basalt | 17 | 237 |

Extracted from Walters and Glancy (1969, p. 150)
DAVID LANGE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 9, 2018

Well Log ID: 1598428  Elev (ft): 2420 ±10  Depth (ft): 220  7.5’  Quad: Elberton

Latitude: 46.941808°  Longitude: -117.154759°  decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 29, T. 17N, R. 45E

Well Address and (or) Other Location Information:
101 Altergott Road, Palouse, Wash.; inside northwest corner of road

Location Method:
Presumed location is for only house on north side of road (and is roughly same size as described by county assessor); Whitman County Assessor; Google Earth imagery; topographic map; site visit March 31, 2018 — well not observed

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>80</td>
<td>140</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>140</td>
<td>220</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004517291903, NKA ALTERGOTT RD 99130, NE1/4 PT W1/2 N OF RD 03-92/34302 549308, 22.0 acres; owner is LANGE FARM LLC, C/O DAVE LANGE, 1895 SW BARCLAY RIDGE DR, PULLMAN WA; one-story residence built in 1905.

References Cited:
### WATER WELL REPORT

**Department of Ecology**

**Construction/Decommission** ("x" in circle)
- Construction
- Decommission

**ORIGINAL INSTALLATION**

**Notice of Intent Number**

<table>
<thead>
<tr>
<th>PROPOSED USE:</th>
<th>Domestic</th>
<th>Industrial</th>
<th>Municipal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF WORK:</th>
<th>Owner's number of well (if more than one)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New well</td>
</tr>
<tr>
<td></td>
<td>Reconditioned</td>
</tr>
<tr>
<td></td>
<td>Method: Dug</td>
</tr>
<tr>
<td></td>
<td>Bored</td>
</tr>
<tr>
<td></td>
<td>Driven</td>
</tr>
<tr>
<td></td>
<td>Deepened</td>
</tr>
<tr>
<td></td>
<td>Cable</td>
</tr>
<tr>
<td></td>
<td>Rotary</td>
</tr>
<tr>
<td></td>
<td>Jetted</td>
</tr>
</tbody>
</table>

**DIMENSIONS:** Diameter of well [ ] inches, drilled [ ]

Depth of completed well [ ] ft.

**CONSTRUCTION DETAILS**

Casing: [ ] Welded [ ]

Diam. from [ ] ft. to [ ] ft.

Installed: [ ] Installed [ ]

Diam. from [ ] ft. to [ ] ft.

[ ] Threaded [ ]

Diam. from [ ] ft. to [ ] ft.

Perforations: [ ] Yes [ ] No [ ]

Type of perforator used [ ]

SIZE of perfor in. by in. and no. of perfor [ ] ft. to [ ] ft.

Screens: [ ] Yes [ ] No [ ]

K-Pac Location [ ]

Manufacturer's Name [ ]

Type [ ]

Model No [ ]

Diam. [ ] ft. to [ ] ft.

Diam. Slot size [ ] ft. to [ ] ft.

Diam. Slot size [ ] ft. to [ ] ft.

Gravel/Filter packed: [ ] Yes [ ] No [ ]

Size of gravel/sand [ ]

Materials placed from [ ] ft. to [ ] ft.

Surface Seal: [ ] Yes [ ] No [ ]

To what depth? [ ] ft.

Material used in seal [ ]

Bentonite Hug [ ]

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water? [ ] Depth of strata [ ]

Method of sealing strata off [ ]

**PUMP:** Manufacturer's Name [ ]

Type [ ]

_ H.P.

**WATER LEVELS:** Land-surface elevation above mean sea level [ ] ft.

Static level [ ] ft. below top of well [ ] Date 10-13-11 [ ]

Artesian pressure [ ] lbs. per square inch [ ] Date [ ]

Artesian water is controlled by [ ] (cap, valve, etc.)

**WELL TESTS:** Drawdown is amount water level is lowered below static level [ ]

Was a pump test made? [ ] Yes [ ] No [ ]

If Yes, by whom? [ ]

Yield [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.

Yield [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.

Yield [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test [ ]

Bailer test [ ] gal/min. with [ ] ft. drawdown after [ ] hrs.

Arttest [ ] gal/min. with stem set at [ ] ft. for [ ] hrs.

Artesian flow [ ] g.p.m. [ ]

Temperature of water [ ] Degree

Was a chemical analysis made? [ ] Yes [ ] No

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL**

<table>
<thead>
<tr>
<th>FROM TO</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water at 210' *</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Start Date 10-13-11** **Completed Date 10-13-11**

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainee Name (Print) [ ]

Driller/Engineer/Trainee Signature [ ]

Driller or trainee License No. [ ]

IF TRAINEE: Driller’s License No. [ ]

Driller’s Signature [ ]

Drilling Company [ ]

Address [ ]

City, State, Zip [ ]

Registration No. [ ]

**GREG LARSON WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 9, 2018

Well Log ID: D0056222  Elev (ft): 2710 ±10  Depth (ft): 450  Quad: Robinson Lake

Latitude: 46.755108°  Longitude: -116.912599°  decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 1, T. 39 N, R. 5 W

**Well Address and (or) Other Location Information:**
3971 Darby Road, Moscow, Idaho; on south side of road

**Location Method:**
Location is for house; Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 23</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>23 – 33</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite, brown and gray</td>
<td>33 – 450</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N05W013610, LARSON, GREGORY T; 3971 DARBY RD, 2.74 AC TAX #4830 SWNW, 1 39 5, MH (manufactured home).

References Cited:
**Form 238-7**

**IDAHO DEPARTMENT OF WATER RESOURCES**

**WELL DRILLER'S REPORT**

1. **WELL TAG NO.**
   D0056222

2. **OWNER:**
   Name: Greg Larson
   Address: 3971 Darby Road
   City: Moscow
   State: ID
   Zip: 83843

3. **LOCATION OF WELL by legal description:**
   Twp. 39N
   Rge. 5W
   Sec. 1
   S/W 1/4
   N/W 1/4
   County Latah
   Address of well site: 3971 Darby Road

4. **USE:**
   Domestic

5. **TYPE OF WORK:**
   New Well

6. **DRILL METHOD:**
   Air Rotary

7. **SEALING PROCEDURES:**
   Seal Placement
   Seal Material
   From To
   Bentonite 0 36 350 lbs. Pour

   Was drive shoe used? Yes
   Shoe Depth 38
   Was drive shoe seal tested? Yes
   How? air

8. **CASING/LINER:**
   Casing or Liner
   Diameter From To Guage Material Casing or Liner
   6" +2 38 250 Steel casing welded
   4" -5 450 160 PVC Liner glued

   Packer? No

9. **PERFORATIONS/SCREENS PACKER TYPE:**
   Perforation Method: Drill
   Screen Type & Method of Installation
   From To Slot Size Number Diam. Material Casing or Liner
   430 410 1" 16 4" PVC Liner
   390 370 1" 16 4" PVC Liner
   350 330 1" 16 4" PVC Liner

10. **FILTER PACK**
    Filter Material
    From To Wt./Volume Method
    NONE

11. **STATIC WATER LEVEL OR ARTESIAN PRESSURE:**
    380 ft. below ground
    Artesian pressure 390 lb.
    Depth flow encountered 390 ft.
    Describe access port or control devices: cap

12. **WELL TESTS:**
    | Pump | Bailers | Air | Flowing Artesian |
    |------|---------|-----|------------------|
    |      |         |     |                  |
    Yield gal/min Drawdown Pumping Level Time
    est 6gpm
    Water Temp: 50 deg. Bottom Hole Temp:
    Water Quality test comments: good, clear, no odor
    Depth first water encounter 355

13. **LITHOLOGIC LOG:**
    (Describe repairs or abandonment)
    | Bore Dia. | From | To | Remarks (Lithology) | Water (water quality, temp) | Y | N |
    |-----------|------|----|---------------------|-----------------------------|---|---|
    | 8"        | 0 ft. | 2 ft. | top soil             |                             | Y |   |
    | 8"        | 2 ft. | 23 ft. | brown clay           |                             | Y |   |
    | 8"        | 33 ft. | 33 ft. | brown soft granite  |                             | Y |   |
    | 6"        | 39 ft. | 105 ft. | hard brown & gray granite |                     | Y |   |
    | 6"        | 105 ft. | 115 ft. | brown granite, soft |                             | Y |   |
    | 6"        | 115 ft. | 215 ft. | gray granite, hard  |                             | Y |   |
    | 6"        | 215 ft. | 230 ft. | med. Hard granite   |                             | Y |   |
    | 6"        | 230 ft. | 270 ft. | hard gray granite   |                             | Y |   |
    | 6"        | 270 ft. | 290 ft. | med. Hard granite   |                             | Y |   |
    | 6"        | 290 ft. | 315 ft. | hard gray granite & quartz |                 | Y |   |
    | 6"        | 315 ft. | 330 ft. | med. Hard granite   |                             | Y |   |
    | 6"        | 330 ft. | 355 ft. | hard granite        |                             | Y |   |
    | 6"        | 355 ft. | 375 ft. | med. Granite, fractured rock |             | Y |   |
    | 6"        | 375 ft. | 390 ft. | hard gray granite   |                             | Y |   |
    | 6"        | 390 ft. | 420 ft. | med. Hard granite   |                             | Y |   |
    | 6"        | 420 ft. | 455 ft. | hard granite        |                             | Y |   |

14. **DRILLER'S CERTIFICATION**
    Company Name: ALL-WAYS DRILLING, INC
    FIRM #: 510
    Principal Driller
    Date: 7/1/09
    Driller or Operator 1
    Operator 2
    Date: 7/1/09
The text was already rendered as plain text properly. There is no need to convert it further.
Comments:

*Interpreted as a rafted interbed.

There are two wells on this parcel: the John Friel well (drilled in 2014), and the Denney Latham well.

Whitman County Tax Parcel 200004516311690, 8902 Parvin Road, NE 1/4 PT N 1/2 N OF RDS 5000 & 5280 29AC; owner now is FRIEL, JOHN BENNETT; grantors were LATHAM, DENNEY/RUBY on 10/25/12; one story residence built in 2004.

References Cited:
**WATER WELL REPORT**

STATE OF WASHINGTON

[Image and text content]

(1) OWNER: Name DENNEY LATHAM
Address 1181 DRISCOLL RIDGE, TROY, ID 83871

(2) LOCATION OF WELL: County WHITMAN
a) STREET ADDRESS OF WELL (or nearest address) PARVIN RD

(3) TAX PARCEL NO.

(4) TYPE OF WORK:
- Owner's number of well (if more than one)
  - New Well
  - Deepened
  - Reconditioned
  - Decommission
  - Other
- Method:
  - Drilled
  - Rotary
  - Jetted

(5) DIMENSIONS:
- Diameter of well 8 inches
- Depth of completed well 55 ft

(6) CONSTRUCTION DETAILS:
- Casing Installed:
  - Welded
- Liner installed
  - Threaded
- Perforations:
  - Yes
  - No
- Type of perforator used SAW
- Size of perforations 1/8 in. by 12 in.
- 45 perforations from 25 ft to 55 ft

(7) PUMP:
- Manufacturer's Name
- Type
- H.P.

(8) WATER LEVELS:
- Land-surface elevation above mean sea level ft
- Static level 0 ft below top of well
- Artesian pressure 1 lbs per square inch
- Artesian water is controlled by VALVE

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No
- If yes, by whom?
- Yield: gal/min. with ft. drawn down after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time (hrs)</th>
<th>Water Level (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

- Date of test
- Bailer test gal/min. with ft. drawn down after hrs.
- Airstest 20 gal/min. with stem set at 25 ft for 1 hrs.
- Artesian flow 1/8 g.p.m. Date
- Temperature of water 54

(10) WELL LOG or DECOMMISSION PROCEDURE DESCRIPTION:
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CLAY BROWN</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>BASALT HARD GRAY</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>SAND</td>
<td>29</td>
<td>55</td>
</tr>
</tbody>
</table>

(11) WELL CONSTRUCTION CERTIFICATION:
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name TED WRIGHT (Licensed Driller/Engineer)
License No. 0532
Trainee Name GARY WRIGHT (License No. 2596T)
Drilling Company MCPHERSON & WRIGHT DRILLING
Signed (Signed) (License No. 0532)
Registered Address 2246 BURRELL, LEWISTON ID,83501
Contractor's Registration No. MCPHEWD135N1 Date 1/1/02

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6606.
LAUREL DEVELOPMENT WELL

[DRILLED 2015, DEEPENED 2016]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, May 2, 2018

Well Log ID: 1116453, 1559801
Elev (ft): 2570 ±10
Depth (ft): 540
Quad: Viola

Latitude: 46.750779° Longitude: -117.092921° decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 25, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
3472 Pullman Airport Road (formerly 1902 Orville Boyd Road), Pullman, Wash.; at northeast corner of intersection with Orville Boyd Road

Location Method:
Location is for well based upon location of drill rig in photo dated 3/18/2016 from Whitman County Assessor; Google Earth imagery; topographic map; tax parcel number incorrect on driller's report

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLGIC UNITS — DESCRIPTION</th>
<th>BEGIN FT</th>
<th>END FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>25</td>
<td>175</td>
</tr>
<tr>
<td>Basalt, soft, and shale</td>
<td>175</td>
<td>271</td>
</tr>
<tr>
<td>Grande Ronde Basalt(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>271</td>
<td>362</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>362</td>
<td>400</td>
</tr>
<tr>
<td>Basalt</td>
<td>400</td>
<td>510</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>510</td>
<td>540</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515253903, 3472 PULLMAN-AIRPORT RD, SW 1/4 PT BAL BLA 729194 & SURVEY 729183; owner now is LAUREL LLLP, 1715 114TH AVE SE #212, BELLEVUE WA, 17.3 acres.

[Former entry (2016) for tax parcel stated "1902 ORVILLE BOYD RD, SW 1/4 PT BAL BLA 729194 & SURVEY 729183; owner is LAUREL LLLP, 1715 114TH AVE SE #212, BELLEVUE WA; 04/28/2015: grantor was BOYD, CHRIS DANIEL to LAUREL DEVELOPMENT CO; 06/14/16: grantor was LAUREL DEVELOPMENT CO to LAUREL LLLP; 17.3 acres; 12/7/2015: building permit issued for NEW 27,096SF COMMERCIAL MARIJUANA GROW GREENHOUSE."]

Registered agent for Laurel Development LLC is ASHBY LAW GROUP PLLC, Bellevue, Wash.; and Manager is WOODLAND, BRANDON, Clarkston, Wash. (Washington Secretary of State, 2016).

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Decommission
- ORIGINAL INSTALLATION
- Notice of Intent Number

PROPOSED USE:  
- Domestic  
- Industrial  
- Municipal  
- Commercial

TYPE OF WELL:  
- Deep well  
- Reconditioned  
- Method:  
- Test Well

DIMENSIONS:  
- Diameter of well: inches  
- Depth of completions well

CONSTRUCTION DETAILS:
- Casing:  
- Diam. from ft. to ft.
- Installed:  
- Diam. from ft. to ft.

Perforations:  
- Yes  
- No  
- K-Pac

SCREENS:
- Yes  
- No  
- Size of gravel/sand

MATERIALS PLACED FROM ft. to ft.:

WATER LEVELS:  
- Land-surface elevation above mean sea level
- Static level
- Water level Date
- Artesian pressure lbs. per square inch

WELL TESTS:
- Time Water Level
- Time Water Level
- Yield gal/min. with ft. drawdown after hrs.
- Yield gal/min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off)

WELL CONSTRUCTION CERTIFICATION:
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller  
Driller's License No.

Engineer  
City, State, Zip

Trainee  
2051 Cottonwood, TO 83522

Name (Print)

Driller/Engineer/Trainee Signature

Driller or engineer license No.

Opposite Date

Driller's License No.

Contractor's Registration No.

### CONSTRUCTION DETAILS

- **Casing:** Yes
- **Lincoln installed:** 41/2 in. Diam. from 20 ft. to 40 ft.
- **Threaded:** 41/2 in. Diam. From 20 ft. to 40 ft.

#### Perforations:
- **Yes**

#### Size of perforation:
- **41/2 in.**

#### Screen:
- **Yes**

#### Manufacturer’s Name:
- **Spencer**

#### Gravel/Filter packed:
- **Yes**

#### Surface Seal:
- **Yes**

#### Material used in seal:
- **Yes**

#### Did any strata contain unusable water?
- **No**

#### Type of water?
- **Depth of strata:**

#### Method of sealing strata:
- **None**

#### PUMP: Manufacturer’s Name:
- **Spencer**

#### WATER LEVELS:
- **Land-surface elevation above mean sea level:** 310 ft.
- **Static level:** Below top of well at 321 ft.
- **Artesian pressure:** 40 psi.
- **Date:**

#### WELL TESTS:
- **Drawdown is amount water level is lowered below static level**
- **Was a pump test made?**
- **Yes**
- **No**
- **If yes, by whom?**

#### Recovery data (time taken as zero when pump turned off (water level measured from well top to water level):
- **Time**
- **Water Level**

#### Date of test:
- **Bailer test:**
- **Arttest:**

#### Artesian flow:
- **gpm:**

#### Temperature of water:
- **Was a chemical analysis made?**
- **Yes**
- **No**

### WELL CONSTRUCTION CERTIFICATION:

I, [Name], declare under penalty of law that the information on this form is true.

### CONSTRUCTION OR DECOMMISSION PROCEDURE

#### Formation:
- **Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.**

#### MATERIAL:
- **FROM**
- **TO**

#### Well deepening:
- **RECEIVED**
- **APR 2, 2010**

#### Department of Ecology
- **Eastern Regional Office**

### Start Date:
- **3/19/2010**

### Completed Date:
- **3/21/2010**
SUZANNE LAY WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, January 19, 2018

Well Log ID: NA Elev (ft): 2625 ±10 Depth (ft): 280 7.5’ Quad: Palouse

Latitude: 46.902319° Longitude: -117.013227° decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 18, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1060 (formerly 7311) South River Road, Viola, Idaho; on north side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; legal description on driller’s report fits 1060 South River Road property parcel. Well 24 of Bush and others (2005 [2006]), which was located incorrectly in T 42 N; log of well also provided in Ralston (1996) with correct location; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 84</td>
</tr>
<tr>
<td>Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Argillite</td>
<td>84 – 280</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N05W182428, QUALMANN, GARY; 1060 S RIVER RD; 3.5 AC TAX #620 NENW, 18  41  5; 1.0 AC TAX #621 SESW, 7  41  5.

Suzanne Jayne Qualman is also known as Suzanne Jayne Lay (Whitepages.com, 2018).

Suzanne J Lay resides with Gary Qualmann at 1060 River Road, Viola (HomeMetry.com, 2018).

References Cited:


1. DRILLING PERMIT NO. 87-94 N. 36 - 000

2. OWNER: Suzanne Lay
   Name:
   Address: 7341 S RIVER RD
   City: Viola

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. PROPOSED USE:
   [ ] Domestic  [ ] Municipal  [ ] Monitor  [ ] Irrigation
   [ ] Thermai  [ ] Injection  [ ] Other

5. TYPE OF WORK
   [ ] New Well  [ ] Modify or Repair  [ ] Replacement  [ ] Abandonment

6. DRILL METHOD
   [ ] Mud Rotary  [ ] Air Rotary  [ ] Cable  [ ] Other

7. SEALING PROCEDURES
   [ ] Seal/Filter Pack
   Material: Bentonite
   Amount: 96
   Method: Pumped

8. CASING/LINER:
   Diameter: 6
   From: 1
   To: 96
   Gauge: 360
   Material: Steel

9. PERFORATIONS/SCREENS
   [ ] Perforations
   Method:
   [ ] Screens
   Screen Type:

10. STATIC WATER LEVEL OR ARTESIEN PRESSURE:
    32 ft. below ground
    Artesien pressure

11. WELL TESTS:
    Yield gal./min.
    Drawdown
    Pumping Level
    Time
    Water Temp.
    Bottom hole temp.
    Water Quality test or comments:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Remarks: Lithology, Water Quality & Temperature

13. DRILLER'S CERTIFICATION
    I/we certify that all minimum well construction standards were complied with at
    the time the rig was removed.
    Firm Name
    McPherson & Wright Drilling
    Firm No. 376
    Address:
    Lewiston, Idaho 83501
    Phone: (208) 743-7235
    Date:
    Supervisor or Operator
    Gradwright
    Date: 9-13-94

Forward White Copy to Water Resources
BILLY G. LAZELLE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018

Well Log ID: NA Elev (ft): 2640 ±10 Depth (ft): 230 7.5’ Quad: Palouse

Latitude: 46.901996° Longitude: -117.014326° decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 18, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1055 South River Road, Viola, Idaho; on south side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018. Log of well also is provided in Ralston (1996).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 37</td>
</tr>
<tr>
<td>Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Argillite</td>
<td>37 – 230</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N05W182568, owner now is STOREY, ROY E; 1055 S RIVER RD; 3.11 AC TAX #5917 NENW; 18 41 5.

Billy G. Lazelle (March 25, 1930 —January 17, 2003) is buried in the Greenwood Cemetery, Palouse, Wash. (City of Palouse, 2008).

References Cited:


1. WELL OWNER
Name: Billy G. CAZENE
Address: 810 E 5th St, Moscow, ID 83843
Owner's Permit No.: 87-92-71-20

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☑ Steel  ☐ Concrete  ☐ Other
Thickness Diameter From To
2 1/2 inches  8 inches + 1 foot  93 feet
2 1/2 inches  8 inches + 1 foot  93 feet
2 1/2 inches  8 inches + 1 foot  93 feet
Was casing drive shoe used?  ☑ Yes  ☐ No
Was a packer or seal used?  ☑ Yes  ☐ No
Perforated?  ☑ Yes  ☐ No
How perforated?  ☐ Factory  ☐ Knife  ☐ Torch  ☐ Gun
Size of perforation inches by inches

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level 87 feet below land surface.
Flowing? ☑ Yes  ☐ No
G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature °F. Quality

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☑ Air  ☐ Other
Discharge G.P.M. Pumping Level Hours Pumped
108 G.P.M. Air test

9. LITHOLOGIC LOG

10. Work started 8-29-90 finished 8-30-90

11. DRILLERS CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

M. Mershon & Wight Drilling
Firm Name: 2246 Buren
Address: Lewiston, Idaho 83501
Date: 8-90
Signed by (Firm Official): M. Mershon
and (Operator): W. H. Wight

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
LEE AND SNELL WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 5, 2016; November 9, 2017

Well Log ID: 294075    Elev (ft): 2508    Depth (ft): 273    7.5’    Quad: Pullman

Latitude: 46.712891    Longitude: -117.193153    decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 7, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1760 SW View Drive, Pullman, Wash.; on east side of road

Location Method:
Approximate location of Pullman quadrangle Well 18 of Bush and Garwood (2005 [2006]); elevation from Heinemann (1994, p. 56, "14/45 07G1 O. Lee" well). Note that "G" represents SW¼ NE¼ (as shown below and does not fit above location).

<table>
<thead>
<tr>
<th>D</th>
<th>C</th>
<th>B</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
</tr>
<tr>
<td>M</td>
<td>L</td>
<td>K</td>
<td>J</td>
</tr>
<tr>
<td>N</td>
<td>P</td>
<td>Q</td>
<td>R</td>
</tr>
</tbody>
</table>

Above, state/federal scheme used by Heinemann (1994) for labeling wells by ¼-¼ section.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil and clay</td>
<td>From 0 – 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>12 – 28</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>28 – 30</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>30 – 160</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>160 – 190</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
</tbody>
</table>
N2 magnetostratigraphic unit
Sentinel Bluffs Member
Basalt 190 – 270

Comments:
Whitman County Tax Parcel 1154200230000000, 1760 SW VIEW DR, EVERGREEN HOMES 7-14-45 LT 23 20,000SF 136SQ FT IN NE COR OF LT 24 "BLA"; owners are now DAVID, DANIEL/PAMELA; one story residence built in 1958.
References Cited:


STATE OF WASHINGTON  
DEPARTMENT OF CONSERVATION  
AND DEVELOPMENT  

WELL LOG  
No.  
Apply. 3660  

Date: Sept. 15, 1954  
Record by: Orville G. Lee Jr.  
Source: Driller's Record  

Location: State of WASHINGTON  
County: Whitman  
Area:  
Map:  

Diagram of Section  

Drilling Co.: John Spray  
Address: 308 N. Jackson, Moscow, Idaho  
Method of Drilling: Drilled  
Date: Oct. 18, 1954  
Address: Fullman, Wash.  

Land surface, datum:  

<table>
<thead>
<tr>
<th>CORRELATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top Soil &amp; clay</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Broken Basalt</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Soft Basalt-water brg.</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Dense gray basalt</td>
<td>130</td>
<td>169</td>
</tr>
<tr>
<td></td>
<td>Clay and Sand</td>
<td>30</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>Black Basalt</td>
<td>80</td>
<td>270</td>
</tr>
</tbody>
</table>

Pump Test:  
Dia: 273'8" X 6"  
SWL: 14'9"  
DD: 121'  
Yield: 110 g.p.m.  
Casing: 8" blk seamless steel casing  
Pipe from 0 to 30', 6"
<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 5/8&quot; dia Blk seamless steel casing pipe</td>
<td>from 135' to 223'4'</td>
<td></td>
</tr>
</tbody>
</table>

Perforations: None
JOHN LEENDERSTEN WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 1, 2016

Well Log ID: 161471  Elev (ft): 2520 ±10  Depth (ft): 230  7.5’  Quad: Palouse

Latitude: 46.915540  Longitude: -117.097759  decimal degrees (WGS84)

⅛, NE ⅛, NE ⅛, Sec. 2, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
15152 WA 272, Palouse, Wash., on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit but did not see a well (November 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>6</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>165</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>174</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>186</td>
</tr>
<tr>
<td>Sand, fine</td>
<td>201</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004516021190, 15152 SR 272, NE1/4 3AC N OF RD LT 1 ON EAST BORDER, owners are LEENDERSTEN, JOHN/SHIRLEY, 3.00 acres; 1½ story residence built in 1998.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: John Leendersten
Address: 1419 NE 230-1/4 Place, WA 99114

LOCATION OF WELL: Whitman County

PROPOSED USE: Irrigation

TYPE OF WORK: New well

DIMENSIONS: Diameter of well 8 1/2" inches

CONSTRUCTION DETAILS:
- Casing installed: 8 - Dia. from +1 ft. to 20 ft.
- Liner installed: Diam. from 0 ft. to 20 ft.
- Threaded: Diam. from 0 ft. to 20 ft.

Perforations: No

Gravel packed: Yes

Surface seal: Yes

WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Basalt - Conglomerate

MATERIAL FROM TO
- Basalt - Conglomerate 6 1/2 165
- Sandstone 165 184
- Sand 184 201
- Sand & Fine Gravel 201 230

PUMP: Manufacturer's Name

WATER LEVELS:
- Static level: 971 ft. below top of well
- Artesian pressure: lbs. per square inch
- Artesian water controlled by

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? No
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

WELL CONSTRUCTOR CERTIFICATION:
I, McPherson & Wright Drilling, accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information provided are based on the best knowledge and belief.

NAME
2246 Burrell
Lewiston, Idaho 83504
(208) 743-7289

Address

(Signed)

Contractor's Registration No.

License No.

ECY 050-1-20 (9/93) * 1
LEON AND KERI LEFORCE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 14, 2018

Well Log ID: D0041008 Elev (ft): 2560 ±10 Depth (ft): 280
Quad: Palouse

Latitude: 46.903335° Longitude: -117.023614° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1018 South River Road, Viola, Idaho; on northwest side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

GEOLOGIC UNITS — DESCRIPTION DEPTH (ft)

<table>
<thead>
<tr>
<th>Overburden</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Cambrian–Precambrian</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Argillite</td>
<td>8</td>
<td>280</td>
</tr>
</tbody>
</table>

¹ Chips of some argillite are difficult to distinguish from granite; however, the well is located in an area mapped as argillite-quartzite (Bush, Duncan and Garwood, 2005).
Comments:

Latah County Tax Parcel RP41N06W129992, owner now is LE FORCE, KERI A; 1018 S RIVER RD; S 1/2 SESESE (5 ACRES) 12 41 6.

Leon LeForce died in 2016 (Kramer Funeral Homes, 2016; Moscow-Pullman Daily News, 2016).

References Cited:


IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0041008
DRILLING PERMIT NO. 838083
Other IDWR No.

2. OWNER:
Name LEON & KERI LEVORCE
Address 1229 E. COVE RD
City POTLATCH
State ID Zip 83855

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

[Map Diagram]

4. USE:
X Domestic □ Municipal □ Monitor □ Irrigation
□ Thermal □ Injection □ Other

5. TYPE OF WORK: check all that apply
X New Well □ Modify □ Abandonment □ Other
(Replacement etc.)

6. DRILL METHOD:
X Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES:

<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>BENTONITE</td>
<td>0</td>
<td>22</td>
</tr>
</tbody>
</table>

Was drive shoe used? X Y N Shoe Depth(s) 22
Was drive shoe seal tested? X Y N How? 300 PSI

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
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</thead>
<tbody>
<tr>
<td>8</td>
<td>-1</td>
<td>22</td>
<td>1/4</td>
<td>STEEL</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td>4 1/2</td>
<td>10</td>
<td>280</td>
<td>200</td>
<td>PVC</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe Length of Tailpipe

9. PERFORATIONS/SCREENS:

X Perforations Method SAW
□ Screens Screen Type

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>280</td>
<td>1/8</td>
<td>120</td>
<td>4 1/2</td>
<td>PVC</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
95 ft. below ground Artesian pressure 1 lb.
Depth flow encountered: WELL CAP
Describe access port or control devices:

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>270</td>
<td></td>
<td>1 HR</td>
</tr>
</tbody>
</table>

Water Temp. 54
Water Quality test or comments: Depth first Water Encounter 253

12. LITHOLOGIC LOG:
(Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bed</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>6</td>
<td>CLAY</td>
</tr>
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<td>14</td>
<td>8</td>
<td>21</td>
<td>ARGELITE</td>
</tr>
<tr>
<td>8</td>
<td>21</td>
<td>47</td>
<td>ARGELITE</td>
</tr>
<tr>
<td>8</td>
<td>47</td>
<td>84</td>
<td>ARGELITE SOFT</td>
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<tr>
<td>8</td>
<td>84</td>
<td>95</td>
<td>ARGELITE</td>
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<td>6</td>
<td>95</td>
<td>167</td>
<td>ARGELITE</td>
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<td>6</td>
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<td>280</td>
<td>ARGELITE</td>
</tr>
</tbody>
</table>

RECEIVED

IDWR/M North

13. DRILLER'S CERTIFICATION:
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCPHERSON & WRIGHT DRILLING
Driller or Operator:

[Signatures]

Date: 1/24/2006

FORWARD WHITE COPY TO WATER RESOURCES

963
LEGUME ACRES WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 1592902 Elev (ft): 2580 ±10 Depth (ft): 460 7.5’ Quad: Albion
[Well Tag ID: BIU723]

Latitude: 46.759080° Longitude: -117.148910° decimal degrees (WGS84)

¼, ¼, ½, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
251 or 241 Warren Road, Pullman, Wash.; at northwest end of road

Location Method:
Location is for well, between two homes at northwest end of road; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 30, 2018 and verified well tag ID

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 65</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>65 – 200</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>200 – 220(?)</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>220(?) – 275</td>
</tr>
<tr>
<td>Basalt</td>
<td>275 – 315</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>315 – 331</td>
</tr>
<tr>
<td>Basalt, soft and vesicular</td>
<td>331 – 357</td>
</tr>
<tr>
<td>Basalt</td>
<td>357 – 415</td>
</tr>
<tr>
<td>Basalt</td>
<td>415 – 445</td>
</tr>
<tr>
<td>Basalt</td>
<td>445 – 460</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515286907, 251 WARREN RD, PARCEL B OF LEGUME ACRES LLC KITZMILLER CLUSTER B SHORT PLAT, owners now are NORDQUIST, DANIEL/CAROLYN; 710 NW PALOUSE VIEW CT, PULLMAN WA, 3.68 acres; 08/18/17: grantor was LEGUME ACRES LLC to NORDQUIST, DANIEL/CAROLYN; 8/4/2017: NSFR 2004SF HOME WITH 860SF ATTACHED GARAGE.

Note well house visible through overhang.

Whitman County Tax Parcel 200004515286908, 241 WARREN RD, PARCEL C OF LEGUME ACRES LLC KITZMILLER CLUSTER B SHORT PLAT, owners now are HATHAWAY, THADDEUS/DIANE; 525 NW DARROW ST, PULLMAN WA, 3.41 acres; 08/08/17: grantor was LEGUME ACRES LLC to HATHAWAY, THADDEUS/DIANE; 7/7/2017: NSFR 2440SF MAIN FLOOR 233SF COVERED PORCHES 732SF ATTACHED GARAGE.

Well is to left (west) of well house; 241 Warren residence is at right; 251 Warren is to the left (out of view).

Other parcels in Legume Acres:

Whitman County Tax Parcel 200004515286906, 291 WARREN RD, PT N 1/2 PARCEL A OF LEGUME ACRES LLC KITZMILLER CLUSTER B SHORT PLAT; owner is LEGUME ACRES LLC, 18 CRESCENT KEY, BELLEVUE WA; 5.63 acres.

Whitman County Tax Parcel 200004515286909, 231 WARREN RD, 99 - Undeveloped, PARCEL D OF LEGUME ACRES LLC KITZMILLER CLUSTER B SHORT PLAT, owners now are BASHAW, ROBERT &SHERYL; 7.87 acres; 03/09/18: grantor was LEGUME ACRES LLC to BASHAW, ROBERT &SHERYL.
References Cited:
**WATER WELL REPORT**

**Proposed Use:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**Type of Work:**
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Drill, Bored, Rotated
- Drilled, Deepened, or Cased
- Diameter: 12 inches, drilled 18 ft.
- Depth of completed well 140 ft.

**Construction Details**
- casing: Waxed 16 in.
- Diameter: Diam. ft. 32 ft.
- Installed: Well drilled 12 ft., Diam. 18 ft.
- Threaded: Diam. ft. 10 ft.
- Size of perforation:
- Type of perforation used: Saw Cut
- Size of perforation: 1/8 in. by 1 in.
- No. of perforations: 12

**Screens:**
- Yes
- No
- K-Fac Location

**Manufacturer's Name:**
- Model No:
- Diameter: Diam. ft.
- Slot size: Slot size ft.
- Distance: ft.

**Gravel/Filter:**
- Yes
- No
- Size of gravel/sand

**Materials placed from:**
- Diameter: Diam. ft.
- Depth: ft.

**Surface Seal:**
- Yes
- No
- What depth: 75 ft.

**Material used in seal:**
- Bentonite

**Any strata contain usable water:**
- Yes
- No

**Type of water:**
- Depth of strata

**Method of sealing strata off:**
- Pump Manufacturer's Name:
- Type:
- H.P.

**Water Levels:**
- Land-surface elevation above mean sea level ft.
- Static level 342 ft. below top of well Date 1-28-14
- Artesian pressure lbs. per square inch: Date (cap, valve, etc.)

**WELLS TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made?
- Yes
- No
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after yrs.
- A test: 30 gal./min. with stem set at 460 ft. for 1 hrs.
- Artesian flow g.p.m.
- Temperature of water °F

**CONSTRUCTION OR DECOMMISSION PROCEDURE**
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL**
- FROM
- TO
- Silt
- Clay 0 3
- fine black loam 3 10
- fine black loam 10 50
- fine black loam 200 475
- fine black loam 375 515
- yellow fine yellow fine 351 387
- yellow fine 415 445
- yellow fine 445 480

**RECEIVED**
- Jul 20 2017

**Department of Ecology**
Eastern Regional Office

**WELL CONSTRUCTION CERTIFICATION:**
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**Driller**
- Driller's License No.
- Date

**Engineer**
- Engineer's License No.
- Date

**Trainee**
- Trainee Name (Print)
- Date

**Drilling Company**
- Drilling Company
- Address
- City, State, Zip
- Contractor's License No.
- Registration No.
- Date

LENTIL ESTATES WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 1592915
Elev (ft): 2640 ±10
Depth (ft): 520
7.5’ Quad: Viola

Latitude: 46.754668°
Longitude: -117.098728°
decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 26, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
Orville Boyd Road, Pullman, Wash.; on north side of road

Location Method:
Location is for well, east of well house; Whitman County Assessor; Google Earth imagery;
topographic map; driller reported incorrect subsections; site visit March 14, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, green</td>
<td>3 – 18</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>18 – 47</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>47 – 180</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green, and basalt</td>
<td>180 – 240</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>240 – 285</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>285 – 350</td>
</tr>
<tr>
<td>Basalt</td>
<td>350 – 395</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>395 – 465</td>
</tr>
<tr>
<td>Basalt</td>
<td>465 – 520</td>
</tr>
</tbody>
</table>
**Comments:**

Whitman County Tax Parcel 200004515264690, SE PT NORTH OF RD, LENTIL ESTATES LLC, 18 CRESCENT KEY, BELLEVUE WA; 20.0 acres; 12/22/15: grantor was J-S FARMLAND HOLDINGS LLC, 1 parcel, to LENTIL ESTATES LLC ($0).

Well is behind (east) of well house.

**References Cited:**
WATER WELL REPORT
Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission (“x” in circle)
□ Construction
□ Decommission

ORIGINAL INSTALLATION
Notice of Intent Number

PROPOSED USE: □ Domestic □ Industrial □ Municipal
□ DrDeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: Owner’s number of well (if more than one) __________________________
□ New well □ Reconditioned □ New # of wells ____________
□ Deepened □ Method: □ Dug □ Bored □ Driven
□ Cased □ Cable □ Rotary □ Jetted

DIMENSIONS: Diameter of well ______ inches, drilled ______ ft.
Depth of completed well ______ ft.

CONSTRUCTION DETAILS
Casing □ Yes □ No
Installed ______ ft. Diam. ______ ft. to ______ ft.
□ Threaded ______ ft. Diam. From ______ ft. to ______ ft.

Perforations: □ Yes □ No
□ Type of perforator used ______
□ Size of perforation ______
□ Size of gravel/sand ______
□ No.

Screens: □ Yes □ No □ K-Pac □ Location

Manufacturer’s Name

Type __________________ Model No. __________________
Diam ___________ ft. Slot size ______ ft. to ______ ft.
Diam ___________ ft. Slot size ______ ft. to ______ ft.
Gravel/Filter packed: □ Yes □ No Size of gravel/sand ______
Materials placed from ______ ft. to ______ ft.

Surface Seal: □ Yes □ No To what depth ______ ft.
□ Surface seal ______
Did any strata contain unusable water? □ Yes □ No
□ Type of water ______
□ Depth of strata ______

Method of sealing strata off ______

PUMP: Manufacturer’s Name __________________

Type __________________ H.P. __________________

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level ______ ft. below top of well Date ______
Artesian pressure ______ lbs. per square inch Date ______
Artesian water is controlled by ______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? □ Yes □ No If yes, by whom? __________________________
Yield ______ gal./min. with ______ ft. drawdown after ______ hrs.
Yield ______ gal./min. with ______ ft. drawdown after ______ hrs.
Yield ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well to water level)

Time Water Level Time Water Level Time Water Level
________________________________________

Date of test __________________________

Boiler test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Aitstest ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date __________________________

Temperature of water ______ Was a chemical analysis made? □ Yes □ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller □ Engineer □ Trainee Name (Print) ______
Drilling Engineer/Trainee Signature ______
Driller or trainee License No. ______

Drilling Company ______
Address ______
City, State, Zip ______
Contractor’s Registration No. ______

WARREN LEVECKE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

Well Log ID: NA Elev (ft): 2730 Depth (ft): 253 7.5’ Quad: Robinson Lake

Latitude: 46.768905° Longitude: -116.932524° decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 35, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3727 Moscow Mountain Road, Moscow, Idaho; on south side of road

Location Method:
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 163, well sample 9); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>0 – 125</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>125 – 243</td>
</tr>
<tr>
<td>*Sand and clay</td>
<td>243 – 253</td>
</tr>
</tbody>
</table>

*Driller recorded as granite but is interpreted here as sediments of Bovill
Comments:

Latah County Tax Parcel RP40N05W352425, owner is LEVECKE, WARREN C; 3727 MOSCOW MTN RD; E 26 AC NENW; SENW; E 1/2 SW, 35 40 5.

References Cited:

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL OWNER
Name: Warren Loveche
Address: Moscow
Owner’s Permit No.: 87-87-N-9

2. NATURE OF WORK
- New well
- Deepened
- Replacement
- Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic logs)

3. PROPOSED USE
- Domestic
- Irrigation
- Test
- Municipal
- Industrial
- Stock
- Waste Disposal or Injection
- Other (specify type)

4. METHOD DRILLED
- Rotary
- Air
- Hydraulic
- Reverse rotary
- Cable
- Dug
- Other

5. WELL CONSTRUCTION
Casing schedule:
- Steel
- Concrete
- Other

- Diameter
- Thickness
- From
- To

Was casing drive shoe used? Yes
Was a packer or seal used? Yes
Was a weather seal used? No

- Size of perforation
- Number of perforations
- Perforations from
- To

Well screen installed? Yes
Manufacturer’s name:

Type
Diameter
Slot size
Set from
To

Placed from
To

Surface seal depth
Material used in seal:

Packing
Sealing procedure used:

Method of joining casing:

Describe access port

6. LOCATION OF WELL
Sketch map location must agree with written location.

Subdivision Name
Lot No.
Block No.
County: Latah

7. WATER LEVEL
Static water level 75 G.P.M. flow
Flowing: Yes
Artesian closed-in pressure: 14.6 p.s.i.
Controlled by: Valve
Temperature: 60°F

8. WELL TEST DATA
Discharge G.P.M.: 100
Pumping Level:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore No.</th>
<th>Depth Diam. From</th>
<th>To</th>
<th>Material</th>
<th>Water Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>125</td>
<td>Overburden clay, sandy quartz</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>125</td>
<td>234</td>
<td>Clay, sand, gravel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>234</td>
<td>348</td>
<td>Sand, gravel, silt, fine sand</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>348</td>
<td>450</td>
<td>Gravel, sand, silt, fine sand</td>
<td></td>
</tr>
</tbody>
</table>

10. Work started: 9/11/82 finished: 9/30/87

11. DRILLERS CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Earl Witt

Date: 9/30/87

Signed by (Firm Official)

(Operator)

973

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
PHIL LIEBE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 25, 2016

Well Log ID: 157523  Elev (ft): 2230 ±10  Depth (ft): 88  Quad: Elberton

Latitude: 46.983206  Longitude: -117.225538  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Elberton, Wash., north of the river

Location Method:
Approximate location of Elberton quadrangle Well 4 of Bush and others (2005 [2006]); Google Earth imagery; topographic map. Area visit (September 14, 2016), did not locate well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td>Overburden</td>
<td>0</td>
</tr>
<tr>
<td>Modern sediments</td>
<td>1</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>5</td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td>7</td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt</td>
</tr>
</tbody>
</table>
Comments:

The approximate location is on a bench of Grande Ronde N2 basalt (Bush and others, 2005 [2006]).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name DALLAS LEAS
Address 404 WASH AVE, BOX 113

(2) LOCATION OF WELL: County WHITMAN
Section 24, T. 17 N., R. 44 E., W.M.

(3) PROPOSED USE: Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner’s number of well
New well ☑ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8" inches.
Drilled 88' ft. Depth of completed well 88' ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8’ Diam. from 71’ ft. to 20’ ft.
Threaded ☐ Diam. from ☑ ft. to ft.
Welded ☐ Diam. from ☑ ft. to ft.

Perforations: Yes ☑ No ☐
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☑ No ☐
Manufacturer’s Name
Type Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☑ No ☐ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☑ No ☐ To what depth? 30’ ft.
Material used in seal
Did any strata contain unusable water? Yes ☑ No ☐
Type of water? ☑ SALT ☐ DEPTH of strata
Method of sealing strata:

(7) PUMP: Manufacturer’s Name

(8) WATER LEVELS: Land-surface elevation above mean sea level 2205
Static level 7 ft. below top of well Date 11-22-74
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☑ No ☐ If yes, by whom?
Yield: gal/min. with hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
Date

Date of test Water Level
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☑ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOP SOIL</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CLAY SANDY BROWN</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>BARE &amp; CHEROY</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>BASALT MED BROWN</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>BASALT MED HARD BLACK</td>
<td>30</td>
<td>59</td>
</tr>
<tr>
<td>BASALT MED HARD GRY</td>
<td>59</td>
<td>86</td>
</tr>
<tr>
<td>BASALT MED HARD BROWN WATER</td>
<td>86</td>
<td>86</td>
</tr>
</tbody>
</table>

RECEIVED
DEC 9 1974

DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started 11-12 1974 Completed 11-33 1974

WELL DRILLER’S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Ray McPherson
(Person, firm, or corporation) WELLE DRILLING
(Type or print)

Address: BOX 332, IDAHO WASH 99113

(Signed) Ray McPherson
(Well Driller)

License No. 0303 Date 13-3 1974

S.F. No. 7356 (Rev. 4-71)

(USE ADDITIONAL SHEETS IF NECESSARY)
BLAIR AND KATIE LIERMAN WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018

Well Log ID: 1556755    Elev (ft): 2640 ±10    Depth (ft): 200    7.5’ Quad: Viola

Latitude: 46.751102°    Longitude: -117.068490° decimal degrees (WGS84)

  ¼, SE ¼, SW ¼, Sec. 30, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
4813 Pullman Airport Road, Pullman, Wash.; on south side of road, new home is south of Airway Hills Golf Range

Location Method:
Location is for well on west side of gravel road to top of hill; Whitman County Assessor; Google Earth imagery; topographic map; driller reported incorrect location (¼-¼ section and section). Site visit March 14, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>1Saddle Mountains Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>85 – 90</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>90 – 95</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>95 – 190</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>190 – 195</td>
</tr>
<tr>
<td>Basalt</td>
<td>195 – 200</td>
</tr>
</tbody>
</table>

1This basalt is interpreted to be the basalt of Lewiston Orchards based on (1) an area mapped as basalt of Lewiston Orchards by Hooper and Webster (1982) 2 mi to the east and (2) a thin occurrence in IDWR well 4 (Bush, 2006).
**Comments:**

Whitman County Tax Parcel 200004615303910; 4813 PULLMAN-AIRPORT RD, PULLMAN 99163; AIRWAY HILLS SHT PLT #1 LOT C-1; owners are LIERMAN, BLAIR THOMAS/KATHERINE MICHELLE; PO BOX 363, PULLMAN WA; 2.1 acres; 10/26/15: grantors were GROPP, LAWRENCE/PATTY; 2/22/2016: NEW HOME: 3193SF MAIN AND 2ND FL 618SF ATTACHED GARAGE.

Well is uphill (south) from house

**References Cited:**


Hooper, P.R., and Webster, G.D., 1982, Geology of the Pullman, Moscow West, Colton, and Uniontown 7.5-minute quadrangles, Washington and Idaho: Washington Division of Geology and Earth Resources Geologic Map 26, scale 1:62,000. (Also available at http://www.dnr.wa.gov/Publications/ger_gm26_geol_map_pullman_moscow_colton_uniontown_62k.pdf.)
WATER WELL REPORT

Construction/Decommission (“X” in circle)
- [ ] Construction
- [ ] Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE:
- [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] DeWater
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

TYPE OF WORK:
- [ ] Owner’s number of well (if more than one)
- [ ] New well
- [ ] Reconditioned

Method:
- [ ] Drilled
- [ ] Bored
- [ ] Rotated
- [ ] Jetted

DIMENSIONS:
- Diameter of well
- Depth of completed well

CONSTRUCTION DETAILS

Casing:
- [ ] Welded
- [ ] Diam. from
- [ ] Diam. from

Installed:
- [ ] Liner installed
- [ ] Diam. from
- [ ] Diam. from

Perforations:
- [ ] Yes
- [ ] No

Material used in sealing strata off

Gravel/Filter packed:
- [ ] Yes
- [ ] No

Materials placed from

Screen:
- [ ] Yes
- [ ] No

Manufacturer’s Name

Model No.

Diam. Slot size

Diam. Slot size

Surface Seal:
- [ ] Yes
- [ ] No

To what depth?

Did any strata contain unusable water?
- [ ] Yes
- [ ] No

Method of sealing strata off

PUMP:
- Manufacturer’s Name

Type:

WATER LEVELS:

Land-surface elevation above mean sea level

Static level

Artesian pressure

Artesian water is controlled by

WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made?
- [ ] Yes
- [ ] No

Yield:

Yield:

Yield:

Recovery data (time taken as zero when pump turned off)

Time Water Level

Time Water Level

Time Water Level

Date of test

Bailer test

Arttest

Artesian flow

Temperature of water

Was a chemical analysis made?
- [ ] Yes
- [ ] No

WELL CONSTRUCTION CERTIFICATION:

Driller

Engineer

Trainee

Driller/Engineer/Trainee’s Signature

Driller or trainee License No.

IF TRAINEE: Driller’s License No.

Driller’s Signature:

CURRENT

Notice of Intent No. WE23545

Unique Ecology Well ID Tag No. BIU 855

Water Right Permit No. __________

Property Owner Name Blair and Katie Liesman

Well Street Address: 4878 Pullman Airport Road

City: Pullman

County: Whitman

Location

Lat./Long

Tax Parcel No. (Required) 20000461530910

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL

FROM

TO

Clay

0

85

Brown Basalt

85

90

Clay

90

95

Basalt

95

190

Fractured Basalt

190

195

Basalt

195

200

RECEIVED

APR 14, 2016

Department of Ecology

Eastern Regional Office

Start Date 04/08/16

Completed Date 04/11/16

Drilling Company: Suivena Vessey Drilling

Address: PO Box 549

City, State: Pullman, WA

Contractor’s Registration No. STIUVD914PT

Date 02/05/16

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6349.
**BETTY LINDSAY WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 7, 2018

Well Log ID: D0013182  
Elev (ft): 2610 ±10  
Depth (ft): 104  
7.5’ Quad: Potlatch

Latitude: 46.894985°  
Longitude: -116.988082°  
decimal degrees (WGS84)

### Well Address and (or) Other Location Information:

1107 Walker Road, Viola, Idaho; on south side of road

### Location Method:

Location is for well, west of northwest corner of large equipment shed that is southeast of house; Latah County Assessor; Google Earth imagery; topographic map; incorrect Section and ¼-¼ Section recorded by driller; site visit March 23, 2018

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>No description</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>50</td>
<td>104</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N05W172217, now owned by LUSBY, JAY; 1107 WALKER RD, 5.03 AC TAX #6677 AND TAX #6764 NWSE, 17 41 5.

Above, well is in front of narrow trailer, at right with white extended sides.

References Cited:
**1. WELL TAG NO. D 13182**

**DRILLING PERMIT NO.**

Other IDWR No. 765-398

**2. OWNER:**

Name: Betty Lindsay

Address: 1107 E Walker Rd.

City: Viola

State: ID

Zip: 83872

**3. LOCATION OF WELL by legal description:**

Sketch map location must agree with written location.

![Map Diagram]

**4. USE:**

- Domestic
- Municipal
- Monitor
- Irrigation
- Thermal
- Injection
- Other

**5. TYPE OF WORK:**

- New Well
- Modify
- Abandonment
- Other

**6. DRILL METHOD:**

- Air Rotary
- Cable
- Mud Rotary
- Other

**7. SEALING PROCEDURES**

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>bentonite</td>
<td>0.55</td>
<td>30/165 dry</td>
</tr>
</tbody>
</table>

Was drive shoe used? N

Was drive shoe seal tested? N

**8. CASING/LINER:**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>+1</td>
<td>5</td>
<td>50</td>
<td>Steel</td>
</tr>
</tbody>
</table>

Length of Headpipe: 0

Length of Tailpipe: 0

**9. PERFORATIONS/SCREENS**

<table>
<thead>
<tr>
<th>Perforations</th>
<th>Method</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Screens</th>
<th>Screen Type</th>
</tr>
</thead>
</table>

**10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:**

- 5 ft. below ground
- Artesian pressure: 1 lb.

Depth flow encountered: 41 ft.

Describe access port or control devices: 5 W 9

**11. WELL TESTS:**

- Yield: approx. 7
- Drawdown
- Pumping Level
- Time

Water Temp.: Bottom hole temp.

Water Quality test or comments:

**12. LITHOLOGIC LOG:**

<table>
<thead>
<tr>
<th>Core Dia.</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks: Lithology, Water Quality &amp; Temperature</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>6 50 50</td>
<td>overburden</td>
<td></td>
</tr>
<tr>
<td>18 50 55</td>
<td>basalt firm</td>
<td></td>
</tr>
<tr>
<td>8 53 104</td>
<td>basalt firm</td>
<td></td>
</tr>
</tbody>
</table>

**13. DRILLER'S CERTIFICATION**

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: Witt Wll Drilling

Firm No.: 58

Firm Official: Rogere Witt

Date: 9/10/60

Driller or Operator: (Sign once if Firm Official & Operator)

**RECEIVED SEP 12 2000**

**IDAHINO DEPARTMENT OF WATER RESOURCES**

**WELL DRILLER'S REPORT**

**Office Use Only**

**Twp:** 1/4 1/4 1/4

**Rge:** 1/4 1/4 1/4

**Sec:** 1/4 1/4 1/4

**Lat:**

**Long:**

**Department of Water Resources**

**Completed Depth: 104 (Measurable)**

**Date: Started 2/10/60 Completed 2/10/60**
### AL LIOTTA WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 10, 2018

| Well Log ID: | 294413 | Elev (ft): | 2250 ±10 | Depth (ft): | 204 | 7.5’ Quad: | Colfax South |
|-------------|--------|-----------|----------|------------|-----|------------|
| Latitude:   | 46.811661° | Longitude: | -117.258408° | decimal degrees (WGS84) |
| SW ¼, ¼, SW ¼, Sec. 3, T. 15 N, R. 44 E |

**Well Address and (or) Other Location Information:**  
3302 Albion-Parvin Road, Pullman, Wash., on north side of road

**Location Method:**  
Location is for house, at address recorded by driller; Whitman County Assessor; Google Earth imagery; topographic map

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>No description</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td>Basalt, firm</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
</tr>
<tr>
<td></td>
<td>Basalt, firm</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Unnamed interbed</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Roza Member</td>
</tr>
<tr>
<td></td>
<td>Basalt, firm</td>
</tr>
<tr>
<td></td>
<td>Basalt, porous</td>
</tr>
<tr>
<td></td>
<td>Basalt, firm</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured</td>
</tr>
<tr>
<td></td>
<td>Basalt, firm</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
</tbody>
</table>
Grande Ronde Basalt
N2 magnetostratigraphic unit
Sentinel Bluffs Member

| Basalt | 198 – 204 |

Comments:
Whitman County Tax Parcel 200004415033901, 3302 ALBION-PARVIN RD, SW 1/4 PT N OF RR, owners now are FOX, LAWRENCE/SHELLEY; 22.8 acres; 2-story residence built in 1908; 2016: roof-mounted solar array on barn.

Al Liotta died in 2012 (Bruning Funeral Home, 2012); his wife Corienne Liotta died in 2018 (The Spokesman-Review, 2018).

References Cited:

**WATER WELL REPORT**

STATE OF WASHINGTON

(1) OWNER: Name **AL LOTT**  Address: **362 Albion Haven Rd, Pullman 99163**

(2a) LOCATION OF WELL: **COUNTY:** Whitman

(2b) STREET ADDRESS OF WELL: **Nearest address:** Samt

(3) PROPOSED USE:  
- [ ] Domestic  
- [ ] Irrigation  
- [ ] Industrial  
- [ ] Municipal  
- [ ] DeWater  
- [ ] Test Well  
- [ ] Other

(4) TYPE OF WORK:  
- [ ] Abandoned  
- [X] New well  
- [ ] Reconditioned  
- [ ] Deepened  
- [ ] Drilled  
- [ ] Bored  
- [ ] Cased  
- [ ] Rotary  
- [ ] Jetted

(5) DIMENSIONS:  
- Diameter of well: **8 inches.**
- Depth of completed well: **20 ft.**

(6) CONSTRUCTION DETAILS:  
- Casing installed: **8**
- Diam. from **+1 ft. to -14 ft.**
- Perforations: **Yes [√]**
- Type of perforator used: **Saw**
- Size of perforations: **1/4 x 8 in.**
- Perforations from **18 ft. to 20 ft.**

(7) PUMP: Manufacturer's Name: **H.P.**

(8) WATER LEVELS:  
- Static level: **119 ft.**  
- Artesian pressure: **lbs. per square inch**  
- Artesian water is controlled by **(Cap, valve, etc.)**

(9) WELL TESTS:  
- Drawdown is amount water level is lowered below static level
- Was a pump test made? **Yes [X]**  
- Yield: **gal./min. with ft. drawdown after hrs.**

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:  
- **Formation:** Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silt sandy</td>
<td>0</td>
<td>69</td>
</tr>
<tr>
<td>Silt</td>
<td>29</td>
<td>39</td>
</tr>
<tr>
<td>Soft basalt</td>
<td>39</td>
<td>47</td>
</tr>
<tr>
<td>Soft basalt</td>
<td>47</td>
<td>48</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>48</td>
<td>51</td>
</tr>
<tr>
<td>Clay</td>
<td>51</td>
<td>71</td>
</tr>
<tr>
<td>Silt sandy</td>
<td>71</td>
<td>78</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>78</td>
<td>81</td>
</tr>
<tr>
<td>Porous basalt</td>
<td>81</td>
<td>88</td>
</tr>
<tr>
<td>Fine sand, firm</td>
<td>88</td>
<td>156</td>
</tr>
<tr>
<td>Fract. basalt</td>
<td>156</td>
<td>159</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>159</td>
<td>191</td>
</tr>
<tr>
<td>Black basalt</td>
<td>191</td>
<td>194</td>
</tr>
<tr>
<td>Green sand</td>
<td>194</td>
<td>198</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>198</td>
<td>202</td>
</tr>
</tbody>
</table>

(11) RECEIVED:  
- DEPARTMENT OF ECOLOGY  
- EASTERN REGIONAL OFFICE  
- **NOV. 20, 1997**

(12) WELL CONSTRUCTOR CERTIFICATION:  
- **I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.**

<table>
<thead>
<tr>
<th>NAME</th>
<th><strong>W. P. DILLING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRESS</td>
<td>291 South Grace St, Yakima, WA 83535</td>
</tr>
<tr>
<td>(SIGNED)</td>
<td>[Signature]</td>
</tr>
<tr>
<td>License No.</td>
<td>0673</td>
</tr>
</tbody>
</table>

Work Started: **10/2/97**  Completed: **10/10/97**

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-8006.
PETE LISH WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 29, 2016

Well Log ID: D0033814  Elev (ft): 2615 ± 10  Depth (ft): 168  Quad: Moscow East

Latitude: 46.711779  Longitude: -116.951190  decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 22, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
2396 Mill Road, Moscow, Idaho, on east side of road, uphill from junction with Lenville Road

Location Method:
Location is for small shed (believed to be well house) at northwest corner of large blue metal shed/building; Latah County Assessor; Google Earth imagery, topographic map. PLSS subdivision on driller’s report is incorrect. Site visit (September 20, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNIT</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td>overburden,  clay</td>
<td>0 – 123</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
<td>123 – 155</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td></td>
<td>155 – 159</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>159 – 168</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N05W224207, 2396 MILL RD; owner is LISH, PETER F; 7.0 acres.

Left, small brown shed may be well house(?)

References Cited:
1. WELL TAG NO. D 00385/4
   DRILLING PERMIT NO. 8/8 4/5
   Water Right or Injection Well No.

2. OWNER:
   Name: Pete Lish
   Address: 117 Public Ave
   City: Moscow
   State: Id
   Zip: 83843

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub, or Directions to well.
   Twp: 39
   Rge: 5
   Sec: 22
   Gov't Lot: 1/4
   County: Latah
   Address of Well Site: Junction of mill Rd & lenvill Rd

4. USE:
   Domestic [ ]
   Municipal [ ]
   Thermal [ ]
   Injection [ ]
   Monitor [ ]
   Irrigation [ ]
   Other [ ]

5. TYPE OF WORK check all that apply
   New Well [ ]
   Modify [ ]
   Abandonment [ ]
   Other [ ]

6. DRILL METHOD:
   Air Rotary [ ]
   Cable [ ]
   Mud Rotary [ ]
   Other [ ]

7. SEALING PROCEDURES
   Seal Material: Bentonite
   From: 0
   To: 127
   Weight / Volume: 350 lbs
   Dry
   Seal Placement Method: 
   
   Was drive shoe used? [ ]
   Shoe Depth(s): [ ]
   Was drive shoe seal tested? [ ]
   How? [ ]

8. CASING/LINER:
   Diameter: 8" + 1.75"
   From: 107
   To: 250
   Gauge: Steel 1
   Material: 
   Casing [ ]
   Liner [ ]
   Welded [ ]
   Threaded [ ]
   Length of Headpipe [ ]
   Length of Tailpipe [ ]
   Packer [ ] Y [ ]
   N [ ]
   Type [ ]

9. PERFORATIONS/SCREENS PACKER TYPE
   Perforation Method: 
   Screen Type & Method of Installation:
   From: [ ]
   To: [ ]
   Slot Size: [ ]
   Number: [ ]
   Diameter: [ ]
   Material: [ ]
   Casing [ ]
   Liner [ ]
   [ ]
   [ ]

10. FILTER PACK
    Filter Material: 
    From: [ ]
    To: [ ]
    Weight / Volume: [ ]
    Placement Method:
    [ ]

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    988 ft below ground
    Artesian pressure [ ]
    lb.
    Depth flow encountered [ ]
    ft. Describe access port or control devices:

12. WELL TESTS:
    [ ] Pump
    [ ] Bailer
    [ ] Air
    [ ] Flowing Artesian
    Yield gal/min: approx. 18
    Drawdown: 158'
    Pumping Level: 1 Hr.
    Time:
    Water Temp: 
    Bottom hole temp: 
    Water Quality test or comments: 

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature
    6 0 143 overburden, clay
    10 123 157 basalt, firm
    8 127 155 basalt, firm
    8 155 159 Fract. basalt
    8 159 168 Clay

14. DRILLER'S CERTIFICATION
    I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Witt Well Drilling
    Firm No. 58
    Principal Driller: Roger Witt
    Date: 8/16/74
    Driller or Operator II: 
    Date: 
    Operator I: 
    Date: 
    Principal Driller and Rig Operator Required.
    Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
# ROBERT LLOYD WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 18, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>616860</th>
<th>Elev (ft):</th>
<th>2660 ±10</th>
<th>Depth (ft):</th>
<th>462</th>
<th>7.5’</th>
<th>Quad: Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.708772°</td>
<td>Longitude: -117.216578°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>¼, ¼, SW ¼, Sec. 12, T. 14 N, R. 44 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**

461 Country Club Road, Pullman, Wash.; on north side of road

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>112</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>138</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>156</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>321</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>359</td>
</tr>
<tr>
<td>Shale(?), black</td>
<td>442</td>
</tr>
</tbody>
</table>
*The lack of rock chip chemistry in this area means that the interpreted sequence may not be correct.

Comments:

Whitman County Tax Parcel 200004414123593, 461 COUNTRY CLUB RD, GERARDO RODRIGUEZ COUNTRY CLUB RD SHPLT, Lot C; owners are LLOYD, ROBERT/KATHLEEN; 10.103 acres; 04/15/09: grantors were RODRIQUEZ, GERARDO/MEL to LLOYD, ROBERT/KATHLEEN;

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Robert Lloyd
Address: 10305SW La Tour Peak Pullman WA 99163

LOCATION OF WELL: County Whitman
Street Address: 461 Country Club Rd Pullman WA 99163

PROPOSED USE: Domestic

TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐
New well ☑
Method: Dug ☑
Deepened ☐
Cable ☐
Driven ☐
Reconditioned ☐
Rotary Drill ☐
Jetted ☐

DIMENSIONS: Diameter of well 8" over 6" inches.
Diameter of well drilled 46 ft.
Depth of completed well 462 ft.

CONSTRUCTION DETAILS:
Casing Installed: 8 ft. Diam. from 4 ft. to 117 ft.
Walled: 6 ft. Diam. from 100 ft. to 157 ft.
Threaded: 6 ft. Diam. from 100 ft. to 157 ft.

Perforations: Yes ☑
Size of perforations in. by in.
Perforations from ft. to ft.
Perforations from ft. to ft.
Perforations from ft. to ft.

Screens: Yes ☑
Manufacturer's Name
Type
Model No.
Diam. Slot size
Diam. Slot size
Gravel packed: Yes ☑
Size of gravel
Gravel placed on
Surface seal: Yes ☑
To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes ☑
Depth of strata

PUMP: Manufacturer's Name
Type

WATER LEVELS:
Static level 46 ft. below top of well Date 6/1969
Amenity pressure lbs. per square inch Date
Amenity water is controlled by

WELL TESTS:
Was a pump test made? Yes ☑
Yield: gal./min.
Water Level: ft.
drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Bailer test gal./min.
drawdown after hrs.

Amenity flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☑

WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>overburden</td>
<td>0</td>
<td>112</td>
</tr>
<tr>
<td>basalt firm</td>
<td>0</td>
<td>112</td>
</tr>
<tr>
<td>clay</td>
<td>112</td>
<td>138</td>
</tr>
<tr>
<td>basalt firm</td>
<td>138</td>
<td>156</td>
</tr>
<tr>
<td>black shale</td>
<td>156</td>
<td>168</td>
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<tr>
<td>basalt firm</td>
<td>168</td>
<td>198</td>
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<tr>
<td>black shale</td>
<td>198</td>
<td>335</td>
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<td>basalt firm</td>
<td>335</td>
<td>361</td>
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<tr>
<td>black shale</td>
<td>361</td>
<td>368</td>
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<tr>
<td>basalt firm</td>
<td>368</td>
<td>404</td>
</tr>
<tr>
<td>black shale</td>
<td>404</td>
<td>404</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: Witt Well Drilling
(PERSON, FIRM OR CORPORATION)
ADDRESS: 2017 South Grant Rd Julesbak ID
(Signed) Roger Witt
LICENSE NO.: 8673

Contractor's Registration:
No. 1217035C Date 6/11/93

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
## KELLY LUCEY WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 26, 2016

Well Log ID: 162073  Elev (ft): 2410 ±10  Depth (ft): 385  7.5’  Quad: Colfax North

Latitude: 46.977202  Longitude: -117.298520  decimal degrees (WGS84)

SW ¼, SW ¼, SW ¼, Sec. 8, T. 17 N, R. 44 E

### Well Address and (or) Other Location Information:
1001 Mullen Road, Colfax, Wash., on west side of road

### Location Method:
Location is for only house in SW¼ of sec. 8; Whitman County Assessor; Google Earth imagery; topographic map; Colfax North quadrangle Well 16 of Bush, Garwood, and Oakley (2005 [2006]). Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>19</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>53</td>
</tr>
<tr>
<td>Basalt</td>
<td>58</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, brown, with basalt chips</td>
<td>127</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>135</td>
</tr>
<tr>
<td>Basalt, and clay, gray</td>
<td>166</td>
</tr>
<tr>
<td>Basalt</td>
<td>175</td>
</tr>
</tbody>
</table>

*Grande Ronde Basalt
NZ magnetostratigraphic unit
Sentinel Bluffs Member

| Basalt, hard | 245 – 360 |
| Basalt      | 360 – 377 |
| Basalt, fractured | 377 – 385 |

Comments:

*The lack of an interbed at the Vantage horizon makes it difficult to pick the top of the Grande Ronde, but water level shows the well to be in the Grande Ronde.


Mr. Farrell Cochran died in 1995; his daughter is Kelly Lucey of Sacramento, Calif. (The Spokesman Review, 1995).
References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

Address 612 E 23RD AVE SPokane, WA 99203

- SW 1/4 SW 1/4 Sec 8 T 17 N., R 44E WM

WELl LOG

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPSOIL</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CLAY BROWN</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>BASALT BLACK MEDIUM</td>
<td>19</td>
<td>53</td>
</tr>
<tr>
<td>BASALT FRACCURATED W/WATER</td>
<td>53</td>
<td>58</td>
</tr>
<tr>
<td>BASALT BLACK MEDIUM</td>
<td>58</td>
<td>127</td>
</tr>
<tr>
<td>BASALT CLAY BROWN</td>
<td>127</td>
<td>135</td>
</tr>
<tr>
<td>BASALT BLACK HARD</td>
<td>135</td>
<td>166</td>
</tr>
<tr>
<td>BASALT BLACK WITH</td>
<td>166</td>
<td>175</td>
</tr>
<tr>
<td>----- CLAY GRAY</td>
<td>166</td>
<td>175</td>
</tr>
<tr>
<td>BASALT BLACK MEDIUM</td>
<td>175</td>
<td>245</td>
</tr>
<tr>
<td>BASALT GRAY HARD</td>
<td>245</td>
<td>360</td>
</tr>
<tr>
<td>BASALT BLACK MEDIUM</td>
<td>360</td>
<td>377</td>
</tr>
<tr>
<td>BASALT MEDIUM FRACTURED</td>
<td>377</td>
<td>377</td>
</tr>
<tr>
<td>----- W/WATER</td>
<td>377</td>
<td>385</td>
</tr>
</tbody>
</table>

PERFORATIONS:

Type of perforator used: SKILL SAW

SIZES of perforations: 1/8 in. by 6 in.

80 perforations from 345 ft. to 385 ft.

CHANGING DETAILS:

Casing installed: 6 ft. Dia. from +1.5 ft. to 60 ft.
Liner 4 ft. Dia. from -10 ft. to 385 ft.

Perforations:

Type of perforator used: SKILL SAW

SIZES of perforations: 1/8 in. by 6 in.

80 perforations from 345 ft. to 385 ft.

Gravel packed: NO

Size of gravel:

Gravel placed from ft. to ft.

Surface seal: YES

To what depth?: 60 ft.

Material used in seal: BENTONITE

Did any strata contain unusable water?: YES

Type of water: SURFACE & OTHER

Depth of strata: 53 ft.

Method of sealing strata off: CASING

WELL TESTS:

Drawdown is amount water level is lowered below static level.

Was a pump test made?: NO

If yes, by whom?

Yield: gal./min with ft. drawdown after hrs.

Recovery data:

Time Water Level Time Water Level

Date of test: / / Bailer test gal/min. ft. drawdown after hrs.

Air test 20 gal/min. w/ stem set at 370 ft. for 2 hrs.

Artesian flow g.p.m. Date

Temperature of water was a chemical analysis made?: NO

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

NAME: Fogle Pump & Supply, Inc.

(Person, firm, or corporation) (Type or print)

ADDRESS: 1450, Airway Bls. WA.

[SGNED] Todd Lively

License No. 2321

Contractor's

Registration No. FOGLPS095L4 Date 10/09/97
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 19, 2016

Well Log ID: 160112 Elev (ft): 2800 ±10 Depth (ft): 250 7.5’ Quad: Viola

Latitude: 46.856520 Longitude: -117.052983 decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 20, T. 46 N, R. 16 E

Well Address and (or) Other Location Information:
3401 Palouse Cove Road, Palouse, Wash., on south side of road; about 0.75 mi up long lane on northern flank of Parker Butte

Location Method:
Location is for large building/shed (~40 ft by 30 ft) east of house; Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden and Latah Formation (sediments of Bovill)</td>
<td>From</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>0</td>
</tr>
<tr>
<td>*Clay, sandy</td>
<td>97</td>
</tr>
<tr>
<td>*Clay, sandy, brown</td>
<td>120</td>
</tr>
</tbody>
</table>
Comments:

*Driller reported decomposed granite.

There are two wells on this property: Walt Lunsford well 1 and Walter Lunsford well 2 (drilled in 2001).

Most likely Whitman County Tax Parcel 200004616203690, NA PALOUSE COVE RD, PARCEL C PARKER BUTTE SHORT PLAT; owner is LUNSFORD, WALTER (3401 PALOUSE COVE RD); 33.0 acres.

[Formerly Whitman County Tax Parcel 200004616203692 (Retired), 3401 PALOUSE COVE RD; owner is LUNSFORD, WALTER; home built in 2004.]
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Malt Lundford
Address: 2015 Garden Rd, WA, 98752
County: Kittitas

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE:
   • Domestic
   • Irrigation
   • DeWater

(4) TYPE OF WORK:
   Owner's number of well
   • New well
   • Deepened
   • Reconditioned
   • Other
   Method: Dug
   • Cable
   • Rotary
   • Jetted
   Bored

(5) DIMENSIONS:
   Diameter of well __________ inches.
   Depth of completed well __________ ft.
   Feet. Drilled __________
   Depth of completed well __________

(6) CONSTRUCTION DETAILS:
   Casing Installed:
   • Diam. from __________ ft. to __________ ft.
   Welded Liner Installed:
   • Diam. from __________ ft. to __________ ft.
   Threaded
   • Diam. from __________ ft. to __________ ft.
   Perforations: Yes [ ] No [ ]
   • Type of perforator used:
   • Size of perforations __________ in. by __________ in.
   • Perforations from __________ ft. to __________ ft.
   • Perforations from __________ ft. to __________ ft.
   • Perforations from __________ ft. to __________ ft.
   Screens: Yes [ ] No [ ]
   • Manufacturer's Name:
   • Type:
   • Model No.:
   • Diam. __________ ft.
   • Slot size __________ ft.
   Gravel packed: Yes [ ] No [ ]
   • Size of gravel __________ ft.
   • Gravel placed from __________ ft. to __________ ft.
   Surface seal: Yes [ ] No [ ]
   • Depth: __________ ft.
   Material used in seal: __________
   Did any strata contain unusable water? Yes [ ] No [ ]
   • Type of water:
   • Depth of strata __________ ft.
   Method of sealing strata off:

(7) PUMP:
   Manufacturer's Name:
   Type:
   H.P. __________

(8) WATER LEVELS:
   • Land-surface elevation:
   • Above mean sea level:
   • ft. below top of well:
   • Date: 10/2/96
   • Artesian pressure:
   • lbs. per square inch:
   • Date:
   • Artesian water is controlled by:
   * (Cap, valve, etc.)

(9) WELL TESTS:
   • Drawdown is amount water level is lowered below static level
   • Was a pump test made? Yes [ ] No [ ] if yes, by whom?
   • Yield:
   • gal./min. with __________ ft. drawdown after __________ hrs.
   • __________
   • __________
   • __________
   • __________
   • Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
   • Time: __________
   • Water Level: __________
   • Time: __________
   • Water Level: __________
   • Date: __________

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>97</td>
</tr>
<tr>
<td>97</td>
<td>120</td>
</tr>
<tr>
<td>120</td>
<td>250</td>
</tr>
</tbody>
</table>

3 3/4" pipe

DECEIVED
DEPT 12 1996

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: Malt Lundford
Drilling

Address: 2015 Garden Rd, WA, 98752
Licence No.: 10-40

Contractor's Registration Date: Dec 12 1996

(USE ADDITIONAL SHEETS IF NECESSARY)
WALTER LUNSFORD WELL 2

[DRILLED IN 2001]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 19, 2016

Well Log ID: 318112  Elev (ft): 2790 ±10  Depth (ft): 450  7.5’  Quad: Viola

Latitude: 46.856700  Longitude: -117.053616  decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 19, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
3401 Palouse Cove Road, Palouse, Wash., on south side of road; about 0.75 mi up long lane on northern flank of Parker Butte

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Last name misspelled on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 27</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy, various colors</td>
<td>27 – 250</td>
</tr>
<tr>
<td>Clay, sandy, brown</td>
<td>250 – 298</td>
</tr>
<tr>
<td>*Basement (Precambrian–Cambrian?)</td>
<td></td>
</tr>
<tr>
<td>Quartzite, siltite, and schist(?)</td>
<td>298 – 450</td>
</tr>
</tbody>
</table>

999
Comments:

*Regional mapping suggests a variety of metasediments (and not granite as reported by driller).

There are two wells on this property: Walt Lunsford well 1 (drilled in 1996) and Walter Lunsford well 2. Most likely Whitman County Tax Parcel 200004616203690, NA PALOUSE COVE RD, PARCEL C PARKER BUTTE SHORT PLAT; owner is LUNSFORD, WALTER (3401 PALOUSE COVE RD); 33.0 acres.

[Formerly Whitman County Tax Parcel 200004616203692 (Retired), 3401 PALOUSE COVE RD; owner is LUNSFORD, WALTER; home built in 2004.]

References Cited:
WATER WELL REPORT
Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission (*x in circle) 107515

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New Well ☐ Reconditioned Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well, 36 inches, drilled 450 ft.
Depth of completed well, 450 ft.

CONSTRUCTION DETAILS
Casing: ☐ Wpled ☐ Installed
Installed: ☐ Liner installed, 450 ft.
Diam. from 7 ft. to 775 ft.
Diam. from 1160 ft. to 1600 ft.

Perforations: ☐ Yes ☐ No
Type of perforator used, 3/16 in.

SIZE OF PERFS: 3 in. by 3/16 in. and no. of perforations: 200 from 390 ft. to 450 ft.

SCREENS: ☐ Yes ☐ No ☐ K-Pac Location
Manufacturer's Name:
Type: Model No.
Diam. Slot Size from ft. to ft.
Diam. Slot Size from ft. to ft.

Gravel/Filter packed: ☐ Yes ☐ No ☐ Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 70 ft.
Materials used in seal
Did any strata contain unstable water? ☐ Yes ☐ No

Type of water: Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name
Type:

WATER LEVELS: Land-surface elevation above mean sea level
Static level, 20 ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield: gal/min. with ft. drawdown after hrs.
Yield: gal/min. with ft. drawdown after hrs.
Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level

Date of test:
Bailer test gal/min. with ft. drawdown after hrs.
Airstest 2 gal/min. with stem set at 700 ft. for 11/2 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.
☐ Driller ☐ Engineer ☐ Trainee Name (Print): Wm. Herkshott
Driller/Engineer/Trainee Signature: Wm. Herkshott
Driller or Trainee License No.: 1740

If trainee, licensed driller's Signature and License no.

CURRENT
Notice of Intent No. W065633
Unique Ecology Well ID Tag No. AAW758
Water Right Permit No.

Property Owner Name: Wlter Lundsford

Well Street Address:
City: Palouse County: Whitman
Location: NE 1/4 1/4 + EWM circle Sec 19
Lot/Long: Lat Deg Lat Min/Sec
(required) Long Deg Long Min/Sec

Tax Parcel No.

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
(USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL FROM TO
Dirt 0 2
Clay 77 87
Sand or gravel 27 280
dam, or lenses 27 280
Silt 9 280
Silt + gravel 29 380
Gravel 29 380
dam 13 460

RECEIVED
DEC 28 2001
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

JAN 4 2002

Drilling Company: Wm. Herkshott
Address: 1740 Blvd 20
City, State, Zip: Ferns 83531
Contractor's Registration No.: 1001-201
Date: 1001-201

Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 24, 2018

Well Log ID: 1624872  Elev (ft): 2870 ±10  Depth (ft): 360  7.5’  Quad: Viola

Latitude: 46.855941°  Longitude: -117.059850°  decimal degrees (WGS84)

SEC. ¼, SE ¼, NW ¼, Sec. 19, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
3403 Palouse Cove Road, Palouse, Wash.; on southwest side of road, west of other two Walter Lunsford wells, new home site

Location Method:
Location is for home site based on plat map showing it in Lot B; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 10</td>
</tr>
<tr>
<td>Cambrian—Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Siltites and fine-grained quartzites</td>
<td>10 – 360</td>
</tr>
</tbody>
</table>

1Driller reported as "potlatch basalt" (in reference to the Oligocene-age Onaway basalt). He is correct that some of the Onaway basalt is pinkish, but the location suggests more of the pinks and reds that are associated with older Precambrian rocks.
Comments:

Whitman County Tax Parcel 200004616194901; 3403 PALOUSE COVE RD, PALOUSE 99161; PARCEL B PARKER BUTTE SHORT PLAT; owner is LUNSFORD, WALTER; 55.0 acres; 10/13/10: grantors were LUNSFORD, WALT/JOY to LUNSFORD, WALTER; 7/12/2016: building permit issued for NEW 900SF GARAGE; 7/28/2016: building permit issued for NEW HOME: 1296SF MAIN FL 264SF 2ND FL 1296SF BASEMENT.

Above center, pad for new garage in Lot B (orange on plat map at left)

References Cited:
WATER WELL REPORT
Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)
☐ Construction
☐ Decommission

ORIGINAL INSTALLATION
Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner’s number of well (if more than one) ______
☐ New well ☐ Reconditioned ☐ Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well ______ inches, drilled ______ ft.
Depth of completed well ______ ft.

CONSTRUCTION DETAILS
Casing ☐ Welded ______ ft. Diam. from ______ ft. to ______ ft.
 Installed: ☐ Liner installed ______ ft. Diam. from ______ ft. to ______ ft.
☐ Threaded ______ ft. Diam. From ______ ft. to ______ ft.

Perforations: ☐ Yes ☐ No
Type of perforator used __________
SIZE of perfor ______ in. by ______ in. and no. of perfor ______
Screeb: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer’s Name __________
Type __________ Model No. __________
Diam ______ ft. Slot size ______ ft. to ______ ft.
Diam ______ ft. Slot size ______ ft. to ______ ft.
Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand ______
Materials placed from ______ ft. to ______ ft.

Surface Seal: ☐ Yes ☐ No To what depth? ______ ft.
Material used in seal __________
Did any strata contain unusable water? ☐ Yes ☐ No
Type of water __________ Depth of strata ______ ft.
Method of sealing strata off __________

PUMP: Manufacturer’s Name __________
Type __________ H.P. __________
WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level ______ ft. below top of well Date ______
Artesian pressure __________ lbs. per square inch Date ______
Artesian water is controlled by __________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom? __________
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
______ ______ ______ ______ ______
Date of test __________
Bailer test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Airtest 7 gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date __________
Temperature of water ______ °F Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

driller ☐ engineer ☐ trainee Name (Print) __________
Driller or trainee License No. __________
If trainee, driller’s signature __________

Drilling Company __________
Address __________
City, State, Zip __________
Contractor’s __________
Registration No. __________ Date __________

The Department of Ecology does NOT warrant the Data and/or Information on this Form.

ROBERT LYLE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 1, 2016

Well Log ID: 914861  Elev (ft): 2145 ±10  Depth (ft): 100  7.5'
Quad: Ewartsville

Latitude: 46.735988  Longitude: -117.325000  decimal degrees (WGS84)

¼, ¼, SW ¼, Sec. 31, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
14671 WA 194, Pullman, Wash., on southwest side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Street number incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Asotin Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, black</td>
<td>6</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, red, soft</td>
<td>47</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>54</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415313891, 14671 SR 194, BJ LYLE SR 194 SHORT PLAT, owners are LYLE, ROBERT/LETA; 4.62 acres; one story residence built in 2014; building permit issued 10/28/2014 to SET TRIPLEWIDE.

References Cited:
**Notice of Intent Number:** WE18045

**Property Owner Last Name:** Lyle  
**First Name:** Robert  
**Date:** MAY 20 2014

**Method (Circle One):**
- Cable
- Dug
- Jetted
- Driven
- Rotar

**Type of Work (Circle One):**
- Alteration
- Hydrofracturing
- Deepened Well
- Replaced
- Other

**Well Use (Circle All That Apply):**
- Agricultural Irrigation
- Commercial
- Domestic
- Group Domestic
- Municipal
- Individual Irrigation
- Stockwater
- Parks and Recreation
- Test Well
- Other

**Drilling Start Date:** 4-11-14  
**Drilling Completion Date:** 4-14-14

**Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):**
- Well Street Address: 14681 SE 194
- Well City: Pullman  
- Well County: Whitman
- Well Zip Code: 99163
- Tax Parcel Number: 200004415313790
- If claiming tax parcel exemption (Circle One): Tribal

**Tribal: Federal Property: Right of Way: Railroad Land:**
- Township: 15 N  
- Range: 44  
- Circle One: East or West
- Section: 31 NWSE
- SW NW SE
- SW SE

**CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.**

**Diameter of Well (ft):** 10 in, Drilled 18 ft in  
**Depth of Completed Well (ft):** 100 ft in

**Casings (At least one Casing must have 6 in of stickup and all fields must be filled out for each casing entered):**
- Type (Circle One): Concrete  
- Plastic  
- Steel  
- Other
- Diameter: 10 inches  
- Stickup: 24 inches  
- Depth: 2 ft in, TO: 12 ft in

**Liners? Circle One: Yes No**

- Type 1 (Circle One): PVC  
- Steel  
- Other
- Diameter: 4 1/2 in, From: 20 ft in, TO: 100 ft in

- Type 2 (Circle One): PVC  
- Steel  
- Other
- Diameter: 8 in, From: 20 ft in, TO: 100 ft in

**Perforations? Circle One: Yes No**

- Type of Perforator (Circle One): Drill  
- Mills Knife  
- Saw Cut  
- Star  
- Torch Cut  
- Other
- Perforation size: 1/8 in by 4 in  
- Total Perforations: 5/8

- Perforation 1: From 100 ft in, TO 100 ft
- Perforation 2: From 100 ft in, TO 100 ft

**Screens? Circle One: Yes No**

- Mfr 1: 
- Type:  
- Diam: in  
- Slot Size:  
- From: ft in, TO: 100 ft in

- Mfr 2: 
- Type:  
- Diam: in  
- Slot Size:  
- From: ft in, TO: 100 ft in
Sand/Gravel Packing? (Circle One) Yes ☑️ Yes, then complete the below fields that apply

<table>
<thead>
<tr>
<th>Packing Material 1</th>
<th>10-20</th>
<th>20-40</th>
<th>8-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Sand Pea Gravel From ft in To ft in</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Packing Material 2</th>
<th>10-20</th>
<th>20-40</th>
<th>8-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Sand Pea Gravel From ft in To ft in</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surface Seal

Was there an existing surface seal? Yes ☑️ No

Depth of Seal ______ ft in

Type of Seal Material (Circle 1)

Bentonite

Bentonite Slurry

Concrete

Dry Bentonite

Neoatement

Neoatement Grout

Pump Installed? (Circle One) Yes ☑️ No

If yes, Mfr Name

Pump Type

Static Water Level (Circle One and fill in the blanks if needed)

Yes

Measured Level (Below top of well) ______ ft in Date Measured 4-14-14

Flowing Artesian (Circle One) Greater Than or Equal To ______ GPM PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)

Dry Hole

Unusable Water Strata? (Circle One) Yes ☑️ No

If Yes is circled, method of sealing strata off

Strata 1 (Specify Usable Water Type) From ft in To ft in

Strata 2 (Specify Usable Water Type) From ft in To ft in

General Well Tests (Circle all that apply and fill in the blanks)

Ballast Test Date of test ______ (Circle One) Greater Than or Equal To ______ GPM, with ______ Drawdown after ______ hrs ______ min

Air Test Date of test ______ (Circle One) Greater Than or Equal To ______ GPM, with stem set at ______ ft in

Test Duration ______ hrs ______ min

Pump Test Date of test ______ Test performed by

Note: Drawdown-the amount the water level is lowered below the static level

Yield ______ gpm, with ______ ft in Drawdown after ______ hrs ______ min; Drawdown after ______ hrs ______ min

Yield ______ gpm, with ______ ft in Drawdown after ______ hrs ______ min; Drawdown after ______ hrs ______ min

Yield ______ gpm, with ______ ft in Drawdown after ______ hrs ______ min; Drawdown after ______ hrs ______ min

Note: Recovery-The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording

Time ______ hrs ______ min; Water Level ______ ft in Time ______ hrs ______ min; Water Level ______ ft in Time ______ hrs ______ min; Water Level ______ ft in

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Med. black basalt</td>
<td>6</td>
<td>47</td>
</tr>
<tr>
<td>Soft red basalt</td>
<td>47</td>
<td>54</td>
</tr>
<tr>
<td>Med. black basalt</td>
<td>54</td>
<td>100</td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

(Circle One) Driller Trainee Engineer Name/Print

Driller/Trainee/PE License No.

If TRAINEE, Mentor Driller License No.

Mentor Driller Signature

BRETT UNLENKOTT

BRETT UNLENKOTT DRILLING

PO BOX 283

Cottonwood, ID 83522

962-3200

cuhlenkott@hotmail.com
JOYCE AND GLENN LYON WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 1, 2016

Well Log ID: 169318 Elev (ft): 2560 ±10 Depth (ft): 155 7.5’ Quad: Moscow West

Latitude: 46.700048 Longitude: -117.039906 decimal degrees (WGS84)

NE ¼, SE ¼, NE ¼, Sec. 17, T. 14 N, R. 46 E

Well Address and (or) Other Location Information:
6351 Sand Road, Pullman, Wash., on southeast side of road; well is south of house, in triangular area surrounded by driveways to the former Lyon house (in Washington) and the Paul and Shirley Kramer house (in Idaho).

Location Method:
Located at well for only house on southeast side of Sand Road in sec. 17; Whitman County Assessor; Google Earth imagery; topographic map. Street number, PLSS subdivisions, and owner’s first name incorrect on driller’s report. Site visit (September 20, 2016).

GEOLOGIC UNITS — DESCRIPTION

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DEPTH (ft)</td>
</tr>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>

Overburden

| Soil     | 0 – 2        |
| Clay     | 2 – 8        |

Wanapum Basalt

<table>
<thead>
<tr>
<th>Priest Rapids Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td>Basalt</td>
</tr>
<tr>
<td>Basalt, weathered</td>
</tr>
<tr>
<td>Basalt</td>
</tr>
<tr>
<td>Basalt, weathered</td>
</tr>
</tbody>
</table>

Latah Formation

<table>
<thead>
<tr>
<th>Vantage Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, white</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004614171890, 6351 SAND RD, NE1/4 PT LTS 1&2 SE OF COUNTY RD, owner is now SAND ROAD LAND CO LLC, C/O NORM DRUFFEL (2653 SAND RD, PULLMAN); 24.0 acres; grantors were LYON, GLENN E/JOYCE to HOUSEHOLD FINANCE CORPORATION on 10/02/09, and then HOUSEHOLD FINANCE CORPORATION to SAND ROAD LAND CO LLC on 12/10/09.

Left, well is in front of larger circular structure with tires on top.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Name: JAY & GLEN (YOUD)

**LOCATION OF WELL:** County: WHITMAN

**STREET ADDRESS OF WELL** (or nearest address): No.

**PROPOSED USE:**
- [ ] Domestic
- [ ] Irrigation
- [ ] Industrial
- [ ] Municipal
- [ ] Test Well
- [ ] Other

**TYPE OF WORK:**
- [ ] Abandoned
- [ ] New well
- [ ] Deepened
- [ ] Reconditioned
- [ ] Other

**DIMENSIONS:**
- Diameter of well: 8½ inches
- Drilled: 155 feet
- Depth of completed well: 155 ft

**CONSTRUCTION DETAILS:**
- Casing installed: Diam. from to
- Welded: Diam. from to
- Threaded: Diam. from to
- Perforations: [ ] Yes
- Type of perforator used
- SIZE of perforations in. by in.
- Screens: [ ] Yes
- Manufacturer's Name
- Type
- Model No
- Diam. from ft. to ft.
- Slot size from ft. to ft.
- Gravel packed: [ ] Yes
- Size of gravel
- Gravel placed from ft. to ft.
- Surface seal: [ ] Yes
- To what depth
- Material used in seal
- Did any strata contain unusable water?: [ ] Yes
- Type of water?
- Method of sealing strata off

**PUMP:**
- Manufacturer's Name
- Type
- H.P.

**WATER LEVELS:**
- Static level: 84 ft below top of well
- Artesian pressure: lbs. per square inch
- Artesian water is controlled by

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made?: [ ] Yes
- If yes, by whom:
- Yield:
- gpm
- ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** McPHerson & WRIGHT DRILLING

**ADDRESS:** 2246 Barstall Lewiston, Idaho 83501

**WELL DRILLER:**

**License No.** 0523

**Contractor's Registration No.** No.

**Date Started:** 10-23-19

**Date Completed:** 10-24-19

**USE ADDITIONAL SHEETS IF NECESSARY**
LYLE MADER WELL

Geologic Interpretation of Water Well Driller’s Log
By
John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 436215 Elev (ft): 2610 ±10 Depth (ft): 428 7.5’ Quad: Albion

Latitude: 46.751966 Longitude: -117.141865 decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 28 , T. 15 N , R. 45 E

Well Address and (or) Other Location Information:
13 Carriage Hill Court, Pullman, Wash., on west side of road, off Eagle Lane

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>No description</td>
<td>To</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>92 – 236</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>236 – 258</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>258 – 352</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td>Basalt, soft</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>352 – 383</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>383 – 428</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515284910, 13 CARRIAGE HILL, SE1/4 LOT RC-2 CARRIAGE HILL SHPLT, owners now are HAMILTON, SCOTT/SARAH; 3.5 acres; grantors were MUNSON, JOHN/MARY, on 08/01/07; house was built in 2006.

References Cited:
**WATER WELL REPORT**

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

**Construction/Decommission** ("x" in circle) 193623

**PROPOSED USE:**
- [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] DeWater
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

**TYPE OF WORK:** Owner's number of well (if more than one):
- [ ] New Well
- [ ] Reconditioned
- [ ] Method: [ ] Dug
- [ ] Bored
- [ ] Driven
- [ ] Deepened
- [ ] Cable
- [ ] Rotary
- [ ] Jetted

**DIMENSIONS:** Diameter of well 8 inches, drilled _____ ft.
Depth of completed well _____ ft.

**CONSTRUCTION DETAILS**
- Casing: [ ] Welded 8 ft.
- Dia. from 1 ft. to 96 ft.
- Installed: [ ] Liner installed 8 ft.
- Dia. from 1 ft. to 488 ft.
- Perforations: [ ] Yes [ ] No
Type of perforator used: [ ] Saw
SIZE of perforations: 3/8 in. by in., no. of perforations: 36 from 488 ft. to 488 ft.

**Screens:**
- [ ] Yes [ ] No
- [ ] K-Pac Location

Manufacturer's Name:
- [ ] Type: [ ] Model No.
- Dia. Slot Size: from ft. to ft.
- Dia. Slot Size: from ft. to ft.

Gravel/Filter packed: [ ] Yes [ ] No
Size of gravel/sand: [ ] ft.

**Surface Seal:**
- [ ] Yes [ ] No
To what depth: 96 ft.
Materials used in seal: [ ] Bentonite

**PUMP:**
- Manufacturer's Name:
- [ ] Type: [ ] H.P.

**WATER LEVELS:**
- Land-surface elevation above mean sea level: 8 ft.
- Static level: 880 ft. below top of well Date: 9/18/65
- Artesian pressure: lbs. per square inch Date: [ ]
- Artesian water is controlled by: (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? [ ] Yes [ ] No
- If yes, by whom?
  - Yield: gal./min. with ft. drawdown after hrs.
  - Yield: gal./min. with ft. drawdown after hrs.
  - Yield: gal./min. with ft. drawdown after hrs.
  - Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test:
- [ ] Bailer test: gal./min. with ft. drawdown after hrs.
- [ ] Airtest: gal./min. with stem set at ft. for hrs.
- [ ] Artesian flow: g.p.m. Date: [ ]
- Temperature of water: [ ] Was a chemical analysis made? [ ] Yes [ ] No

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.
- [ ] Driller
- [ ] Engineer
- [ ] Trainee

Driller/Engineer/Trainee Name (Print): Roger Witt
Driller or Trainee License No.: 06230

**CURRENT**
- Notice of Intent No. 193623
- Unique Ecology Well ID Tag No. APN.25
- Water Right Permit No. [ ]

**Property Owner:**
- Name: Lyle Mader

**Well Street Address:**
- 13 Carriage Hill Court

**City:** Pullman
**County:** Whitman
**Location:** 1/4-1/4 Sec. 28 Twp. 15N, 45W W.M. circle

**Lat/Long:**
- Lat Deg: 45.35.2
- Lat Min/Sec: 35.2
- Long Deg: 115.38.3
- Long Min/Sec: 38.3

**Tax Parcel No.:**

**CONSTRUCTION OR DECOMMISSION PROCEDURE**
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
- USE ADDITIONAL SHEETS IF NECESSARY.

**MATERIAL**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>236</td>
<td>28</td>
</tr>
<tr>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>38</td>
<td>2</td>
</tr>
</tbody>
</table>

**RECEIVED**
- APR 14 2006
- DEPARTMENT OF ECOLOGY
- EASTERN REGIONAL OFFICE

**FISCAL BUDGET**

**Start Date:** 9/18/65
**Completed Date:** 9/18/65

**Drilling Company:** Wittwell Drilling
**Address:** 681 South Grade Rd
**City, State, Zip:** Pullman, WA 83515
**Contractor's Registration No:** WSWP0552X
**Date:** 9/18/65

Ecology is an Equal Opportunity Employer. ECO 050-1-20 (Rev 4/01)
**KENNETH MARBLE WELL**

*Geologic Interpretation of Water Well Driller’s Log*

By John H. Bush, August 8, 2016

Well Log ID: **D0017523**  Elev (ft): **2610 ±10**  Depth (ft): **165**  7.5’  Quad: **Moscow East**

Latitude: **46.745172**  Longitude: **-116.990449**  decimal degrees (WGS84)

¼,  SW ¼,  SE ¼,  Sec. 5  T. 39 N,  R. 5 W

**Well Address and (or) Other Location Information:**
1040 Rodeo Drive, Moscow, Idaho; east of intersection with N Polk Extension; Palouse-Clearwater Environmental Institute (PCEI) Nature Center

**Location Method:**
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile, "PCEI" well); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 55</td>
</tr>
<tr>
<td>*Sand</td>
<td>55 – 70</td>
</tr>
<tr>
<td>Clay</td>
<td>70 – 75</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>75 – 165</td>
</tr>
</tbody>
</table>
Comments:

*Sand, poorly sorted, can look like granite when in chips from well.

Latah County Tax Parcel RPM00000058630, 1040 RODEO, now owned by Palouse-Clearwater, 7.60 acres.

References Cited:
RECEIVED

IDAH0 DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL TAG NO. D 801 7523
   DRILLING PERMIT NO.
   Other IDWR No. 270 704

2. OWNER:
   Name: Kenneth L. Mauble
   Address: PO. Box 191
   City: Lander
   State: WY
   Zip: 82201

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.
   Twp: 39
   Rge: 5
   Sec: 3SW 1/4
   Gov't. Lat: 8
   Gov't. Long: 8
   Address of Well Site: 1040 Redee
   City: Moscow

4. USE:
   - Domestic
   - Municipal
   - Monitor
   - Irrigation
   - Thermal
   - Injection
   - Other

5. TYPE OF WORK check all that apply
   - New Well
   - Modify
   - Abandonment
   - Other

6. DRILL METHOD
   - Air Rotary
   - Cable
   - Mud Rotary
   - Other

7. SEALING PROCEDURES
   - Seal/Filter Pack
   - Amount
   - Method

8. CASING/LINER:
   - Diameter
   - Gauge
   - Material
   - Casing
   - Liner
   - Welded
   - Threaded

9. PERFORATIONS/SCREENS
   - Performance
   - Method
   - Screen
   - Screen Type

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    - 55 ft. below ground
    - Artesian pressure

11. WELL TESTS:
    - Yield gallon
    - Drawdown
    - Pumping Level
    - Time
    - Water Temp.
    - Bottom hole temp.
    - Water Quality test or comments:
    - Depth first Water Encounter

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
    - Remarks: Lithology, Water Quality & Temperature
    - Y N

13. DRILLER’S CERTIFICATION
    - We certify that all minimum well construction standards were complied with at the time the rig was removed.
    - Company Name
    - Firm Official
    - Date
    - Driller or Operator
    - Date

RECEIVED

FORWARD WHITE COPY TO WATER RESOURCES
JACK MARINEAU WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November, 2016

Well Log ID: NA Elev (ft): 2680 ±10 Depth (ft): 405 7.5’ Quad: Robinson Lake

Latitude: 46.752396 Longitude: -116.985133 decimal degrees (WGS84)

SW ¼, SE ¼, NE ¼, Sec. 5 , T. 39 N , R. 5 W

Well Address and (or) Other Location Information:
1820 Orchard Avenue, Moscow, Idaho, on east side of road

Location Method:
Location is for house at street address for Jack Marineau (City of Moscow, 1993); Latah County Assessor; Google Earth imagery, topographic map. PLSS subdivisions incorrect on driller's report if the well was drilled at this address/tax parcel.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>0 – 158</td>
</tr>
<tr>
<td>Clay, blue (gray?)</td>
<td>158 – 168</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>168 – 186</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>186 – 356</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue (gray?)</td>
<td>356 – 390</td>
</tr>
<tr>
<td>Sand</td>
<td>390 – 405</td>
</tr>
</tbody>
</table>
Comments:

*Top probably in Palouse loess; not sure where contact with sediments of Bovill occurs.

Latah County Tax Parcel RPM07360000020, 1820 ORCHARD, ORCHARDVIEW ACRES 3RD ADD, LOT 2 (2.34 AC), owner is now CODDINGTON, JOHN W, H/W.

Mr. Jack Marineau died in 1999 (AP News Archive, 1999).

References Cited:


**WELL LOG AND REPORT OF THE STATE RECLAMATION ENGINEER OF IDAHO**

**Permit No.:** 87-66-N-2  
**Well No.:** 1  
**County:** Saline

**Owner:** Jack Marineau
**Address:** Archdiocese Mission, Idaho
**Driller:** Phil Alum
**Address:** Boy & Son, Idaho

**Well location:** S.E. 1/4 N.W. 1/4 Sec. 5, T. 31 N., R. 5 W.

**Size of drilled hole:** 8" to 6"

---

**Total depth of well:** 405

**Give depth to standing water from the ground:** 410  
**Water temp.:** 

**On "Pumping Test" delivery was:** 14 g.p.m. or c.f.s.  
**Drawdown was:** 42 feet.

**Size of pump and motor used to make test:** 14 gal./min.

**Length of time of test:** 1 hour 15 minutes.

If flowing well, give flow c.f.s. or g.p.m. and of shut off pressure.

---

If flowing well, described control works:

**TYPE AND SIZE OF VALVE, ETC.:**

**Water will be used for:**

**Weight of casing per linear foot:**

**Thickness of casing:** 6.05  
**Casing material:** steel

**Diameter, length and location of casing:**

---

### CASING RECORD

<table>
<thead>
<tr>
<th>Diam.</th>
<th>From Feet</th>
<th>To Feet</th>
<th>Length</th>
<th>Remarks—seals, grouting, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>0</td>
<td>159</td>
<td>159</td>
<td>none</td>
</tr>
<tr>
<td>6&quot;</td>
<td>0</td>
<td>395</td>
<td>395</td>
<td>none</td>
</tr>
</tbody>
</table>

---

**Number and size of perforations:** located 395 feet to 405 feet from ground

---

**Date of commencement of well:** April 1, 1966  
**Date of completion of well:** Oct 15, 1966

---

**SE NW S.E. 39N W**
# WELL LOG

<table>
<thead>
<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Type of Material</th>
<th>Water-bearing Potential</th>
<th>Corrosive Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>158</td>
<td>Yellow Clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>158</td>
<td>168</td>
<td>Shale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>168</td>
<td>186</td>
<td>Brown Clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>356</td>
<td>Very hard, gravel rock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>356</td>
<td>390</td>
<td>Soft blue clay</td>
<td></td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>465</td>
<td>Gravel, sand and water</td>
<td></td>
<td>Yes, screen</td>
</tr>
</tbody>
</table>

If more space is required use Sheet No. 2

# WELL DRILLER'S STATEMENT

This well was drilled under my supervision and the above information is complete, true and correct to the best of my knowledge and belief.

Signed: [Signature]

By: [Signature]

Dated: Aug 29, 1966

License No: 214
MARTIN MARLER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: 318110
[Well Tag ID: AAV 231]
Elev (ft): 2195 ±10
Depth (ft): 78
7.5’
Quad: Colfax South

Latitude: 46.847898° Longitude: -117.277861° decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 28, T. 16 N, R. 44 W

Well Address and (or) Other Location Information:
3601 Parvin Road, Colfax, Wash.; on south side of road

Location Method:
Location is for well, just southeast of grain bins; Latah County Assessor; Google Earth imagery; topographic map; driller recorded incorrect section subdivisions; site visit March 31, 2018 and verified well tag ID

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 9</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating soft and hard</td>
<td>9 – 78</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004416282490, SW1/4 7AC IN SE1/4 SO OF CO RD#5000 BINS & GRANGE HALL, owner is MARLER, MARTIN J; 7.0 acres.

Above, well is in parking area southeast of grain bins.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Martin Master
Address: 4102 Shavine Rd Pullman WA 99163

LOCATION OF WELL: Whitman

STREET ADDRESS OF WELL: 4102 Shavine Rd

PROPOSED USE: Domestic

TYPE OF WORK: Owner’s number of well

DIMENSIONS: Diameter of well 8 inches

CONSTRUCTION DETAILS:

Perforations: Yes [ ] No [ ]

SIZE of perforations: 1/8 x 1/8 in.

Gravel packed: Yes [ ] No [ ]

Surface seal: Yes [ ] No [ ]

WATER LEVELS:

Artesian pressure: lbs. per square inch

WELL TESTS:

Bailier test: gal./min. with ft. drawdown after hrs.

Airtest: 30 gal./min. with stem set at ft. for min.

Artesian flow: g.p.m.

Temperature: °F

WELL CONSTRUCTOR CERTIFICATION:

Name: Witt Well Drilling
Address: 6031 3rd Ave S West Seattle, WA

Contractor’s Registration No.: 07200358

Date: 09/18/00

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6800. The TDD number is (206) 674-8317.
**MATTHEW MASSEY WELL**

**[MASS A EFFECT]**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 30, 2018


Latitude: 46.751512°  Longitude: -117.087088° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
3631 Pullman Airport Road, Pullman, Wash.; on south side of road

Location Method:
Location is for large, industrial building (gray with red roof, windows on second level); Whitman County Assessor; Google Earth imagery; topographic map; tax parcel number and ¼-¼ and ⅛ sections incorrect on driller's report; site visit (March 14, 2018)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 0 – To 49</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 49 – To 55</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 55 – To 187</td>
</tr>
<tr>
<td>Grande Ronde Basalt (?) N2 magnetostratigraphic unit (?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 187 – To 198</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 198 – To 330</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit (?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>From 330 – To 380</td>
</tr>
</tbody>
</table>

1Contact between Wanapum and Grande Ronde Basalts is difficult to pick.
Comments:

Whitman County Tax Parcel 200004515253893; DOR Code: 39 - Commercial - Misc Commercial; 3631 PULLMAN-AIRPORT RD, PULLMAN 99163; S1/2 OF SW1/4 LOT 3 CHRIS BOYD SHPLT#698897; owner is MASSEY, MATTHEW; 3631 AIRPORT RD; 3.3 acres; 07/29/14: grantor was BOYD, CHRIS to MASSEY, MATTHEW; 05/24/17: grantor was MASSEY, JACOB to MASSEY, MATTHEW; 10/23/2014: building permit issued for NEW 2400SQFT POLE BUILDING.

References Cited:
WATER WELL REPORT

Notice of Intent Number: WE 19235

Property Owner Last Name:
First Name: Matthew
Organization Name:
Well Tag ID Number (e.g., AAA-001): BCP CX7
Variance Granted? (Circle One) Yes No

Well Use (Circle One That Apply):
- Agricultural Irrigation
- Commercial
- Domestic
- Individual Irrigation
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing New
- Replacement
- Deepened Well
- Other

Method (Circle One):
- Cable
- Dug
- Jetted
- Rotary

Drilling Start Date: 9/14/14
Drilling Completion Date: 9/22/14

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):
1361 Airport Rd

Well Street Address:

Well City: Pullman
Well County: Whitman
Well Zip Code: 99163

Tax Parcel Number: 20000451525390200

If claiming tax parcel exemption (Circle One) Tribal Federal Property Right of Way Railroad Land

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: ______ ft ______ in, Drilled ______ ft ______ in

Depth of Completed Well: ______ ft ______ in

Casing (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered):
Type (Circle One) Concrete Plastic Steel Other
Diameter: ______ inches Stickup: ______ inches Depth: ______ ft ______ in, TO ______ ft ______ in

Joints? Circle One Yes No (If yes, then complete the below fields that apply)
Type 1 (Circle One) PVC Steel Other
Diameter: ______ in, From ______ ft ______ in TO ______ ft ______ in

Type 2 (Circle One) PVC Steel Other
Diameter: ______ in, From ______ ft ______ in TO ______ ft ______ in

Perforations? Circle One Yes No (If yes, then complete the below fields that apply)
Type of Perforator (Circle One) Drill Mills Knife Saw Cut Star Torch Cut Other
Perforation size: ______ in by ______ in Total Perforations: ______

Perforation 1 from ______ ft ______ in, TO ______ ft ______ inches

Perforation 2 from ______ ft ______ in, TO ______ ft ______ inches

Screens? (Circle One) Yes No (If yes, then complete the below fields that apply)
Type 1 ______ Diam ______ in Slot Size ______ ft ______ in TO ______ ft ______ in

Type 2 ______ Diam ______ in Slot Size ______ ft ______ in TO ______ ft ______ in

...
Sand/Gravel Packing? (Circle One) Yes [No] (If yes, then complete the below fields that apply)

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel
From ______ ft _____ in TO ______ ft _____ in
Packing Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel
From ______ ft _____ in TO ______ ft _____ in

Surface Seal Was there an existing surface seal? Yes [No] Depth of Seal ______ ft _____ in
Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes [No] If yes, Mfr Name ______ Pump Type ______ HP ______
Static Water Level (Circle One and fill in the blanks if needed)
Yes Measured Level (Below top of well) ______ ft _____ in Date Measured ______ GPM ______ PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)
Flowing Artesian (Circle One) Greater Than or Equal To ______ GPM ______ Drawdown after ______ hrs ______ min
Dry Hole

Unusable Water Strata? (Circle One) Yes [No] If Yes is circled, method of sealing strata off
Strata 1 (Specify Unusable Water Type) From ______ ft _____ in TO ______ ft _____ in
Strata 2 (Specify Unusable Water Type) From ______ ft _____ in TO ______ ft _____ in

General Well Tests (Circle all that apply and fill in the blanks)
Bailer Test Date of test ______ GPM, with ______ Drawdown after ______ hrs ______ min
Air Test Date of test ______ GPM, with ______ Drawdown after ______ hrs ______ min
Test Duration ______ hrs ______ min
Pump Test Date of test ______ Test performed by ______

Note: Drawdown—the amount the water level is lowered below the static level
Yield ______ gpm, with ______ ft _____ in; Drawdown after ______ hrs ______ min Yield ______ gpm, with ______ ft _____ in; Drawdown after ______ hrs ______ min
Yield ______ gpm, with ______ ft _____ in; Drawdown after ______ hrs ______ min Yield ______ gpm, with ______ ft _____ in; Drawdown after ______ hrs ______ min
Yield ______ gpm, with ______ ft _____ in; Drawdown after ______ hrs ______ min Yield ______ gpm, with ______ ft _____ in; Drawdown after ______ hrs ______ min

Note: Recovery—the time taken at zero when the pump is turned off. Water level is measured from the well top to…Ask Lars for wording
Time ______ hrs ______ min; Water Level ______ ft _____ in Time ______ hrs ______ min; Water Level ______ ft _____ in
Time ______ hrs ______ min; Water Level ______ ft _____ in Time ______ hrs ______ min; Water Level ______ ft _____ in
Time ______ hrs ______ min; Water Level ______ ft _____ in Time ______ hrs ______ min; Water Level ______ ft _____ in
Time ______ hrs ______ min; Water Level ______ ft _____ in Time ______ hrs ______ min; Water Level ______ ft _____ in

Well Lithology Details—Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>Soft black bsalt</td>
<td>49</td>
<td>55</td>
</tr>
<tr>
<td>Med black bsalt</td>
<td>55</td>
<td>187</td>
</tr>
<tr>
<td>Soft black bsalt</td>
<td>187</td>
<td>198</td>
</tr>
<tr>
<td>Hard black bsalt</td>
<td>198</td>
<td>330</td>
</tr>
<tr>
<td>Broken rocky bsalt</td>
<td>330</td>
<td>380-Water</td>
</tr>
</tbody>
</table>

Comments—Enter any other important well construction and/or location details here.

CERTIFICATION—I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

(Circle One) Driller Trainee Engineer. Name/Print ________ Drilling Company ________
Address ________
City, State, Zip ________ Date ________
Phone Number ________
Email Address ________

Driller/Trainee/PE License No. ________
Mentor Driller License No. ________
Mentor Driller Signature ________
TOM MAYS WELL

Well Location
By John H. Bush, November 1, 2016

Well Log ID: 560981   Elev (ft): 2590 ±10   Depth (ft): 500   Quad: Moscow West

Latitude: 46.707711   Longitude: -117.107909   decimal degrees (WGS84)

SEC. ¼, SW ¼, SE ¼, Sec. 11, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
2702 Old Moscow Road, Pullman, Wash., on north side of road

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 18, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
</table>

*Interpretation not provided.*
Comments:

*Log on driller's report is overgeneralized and not useful. I believe he drilled through interbeds without noticing them; cannot pick any contacts. This is a Grande Ronde well.

Whitman County Tax Parcel 200004514118901, LT 1 AIKEN STABLES S.PLAT 2AC, S1/2 11-14-45, owners are MAYS, THOMAS A/CLAUDIA A (2702 OLD MOSCOW RD); 2.0 acres; one story residence built in 1998.

Well is to the left (west) of retainer wall.

References Cited:
WATER WELL REPORT

Notice of Intent No. W 178091
Unique Ecology Well ID Tag No. AHF 829
Water Right Permit No.

Property Owner Name TOM MAYS
Well Street Address 2702 OLD MOSCOW ROAD
City PULLMAN County 38 - WHITMAN
Location 1/4/1/4 N 1/4 Sec 11 Twn 14N R 45 EWM Or
(s, t, r Still REQUIRED)

Lat/Long Lat Deg ______ Lat Min/Sec ______
Long Deg ______ Long Min/Sec ______
Tax Parcel No. (Required) 200004514118901

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL FROM TO
DIRT 0 24
HARD BLACK BASALT 24 365
HARD GRAY BASALT 365 460
SOFT BLACK BASALT 460 500

RECEIVED
NOV 26 2008
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

DEC 3 2008
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE 500

Start Date 10/17/08 Completed Date 10/19/08

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller [ ] Engineer [ ] Trainer [ ] Name (Pss) BRETT UHLENKITT
Driller/Engineer/Trainer Signature

Drilling Company TWO U DRILLING, LLC
Address PO BOX 104
City, State, Zip COTTONWOOD, ID, 83522
Contractor's Registration No RAYUHLO770A Date 10-19-08

Driller or trainee License No. 2697
IF TRAINEE: Driller's License No:

Driller's Signature

ECY 050-1-20 (Rev 4/07)

ECY is an Equal Opportunity Employer
LEE MCCOY WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, March 17, 2016

Well Log ID: 923890    Elev (ft): 2610 ±10    Depth (ft): 68    7.5’    Quad: Viola

Latitude: 46.830383    Longitude: -117.051300    decimal degrees (WGS84)

    ¼,  SW  ¼,  NW  ¼,  Sec. 32,  T. 16 N,  R. 46 E

Well Address and (or) Other Location Information:
402 McCoy Road, Palouse, Wash., on east side of road; newer home on hill

Location Method:
Latitude and longitude from driller's report; elevation estimated from topographic map; [Graphic of PLSS subdivisions on driller's report does not fit driller's coordinates.] Site visit (April 15, 2016), visual of both houses.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 43</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>43 – 53</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>53 – 68</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004616322800, 422 MCOY RD, NW S 1/2 BAL; owner now is KLM PROPERTIES LLC; grantors were MCOY, LEE/KATHLEEN on 11/18/10; one story residence built in 1897, 77.0 acres.

There is no mention of the newer residence on the property tax records (as of December 31, 2016), but the new house is likely in Whitman County Tax Parcel 200004616322380, MCOY MCOY RD SHORT PLAT; owners are MCOY, LEE/KATHLEEN (402 MCOY RD); grantor was KLM PROPERTIES LLC on 05/26/16; 2.0 acres.

References Cited:
**WATER WELL REPORT**

**Notice of Intent Number:** W360.654

**Property Owner Last Name:** McCoy

**Organization Name:**

**Well Tag ID Number (e.g., AAA-001):** APN 299

**Variance Granted? (Circle One) Yes [ ] No [X]**

**Water Right Permit Required? (Circle One) Yes [ ] No [X]**

If Yes, enter Water Right Permit Here (Required):

**Well Use (Circle All That Apply):**
- [ ] Agricultural Irrigation
- [X] Domestic
- [ ] Individual Irrigation
- [ ] Parks and recreation
- [ ] Test Well
- [ ] Other

**Type of Work (Circle One):**
- [ ] Alteration
- [ ] Hydrofracturing
- [ ] Deepened Well [X]
- [ ] Replacement
- [ ] Other

**Method (Circle One):**
- [ ] Cable
- [ ] Dug
- [ ] Jetted
- [X] Rotary

**Drilling Start Date:** 2/14

**Drilling Completion Date:** 7/12/14

**Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):**

- **Well Street Address:** 427 McCoy Rd.
- **Well City:** Palouse
- **Well County:** Whitman
- **Tax Parcel Number:** 2000461632280
- **Well Zip Code:** 99161

**If claiming tax parcel exemption (Circle One):**
- [ ] Tribal
- [ ] Federal Property
- [ ] Right of Way
- [ ] Railroad Land

**If claiming tax parcel exemption (Circle One):**
- [ ] Tribal
- [ ] Federal Property
- [ ] Right of Way
- [ ] Railroad Land

**CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.**

**Diameter of Well:** 8 in, Drilled 168 ft in

**Depth of Completed Well:** 68 ft in

**Casings (At least one Casing must have 6 in of stickup and all fields must be filled out for each casing entered):**

- **Type (Circle One):** Concrete, Plastic, Steel, Other
- **Diameter:** 8 inches Stickup 12 inches Depth +1 ft in, TO 44 ft in

**Type (Circle One):**
- **Concrete, Plastic, Steel, Other
- **Diameter:** inches Stickup inches Depth ft in, TO ft in

**Liners? Circle One Yes [ ] No [X] (If yes, then complete the below fields that apply):**

- **Type 1 (Circle One):** PVC, Steel, Other
- **Diameter:** in, From ft in TO ft in

- **Type 2 (Circle One):** PVC, Steel, Other
- **Diameter:** in, From ft in TO ft in

**Perforations? Circle One Yes [ ] No [X] (If yes, then complete the below fields that apply):**

- **Type of Perforator (Circle One):** Drill, Mills Knife, Saw cut, Star, Torch Cut, Other
- **Perforation size:** in by in Total Perforations

- **Perforation 1 from ft in, TO ft inches Perforation 2 from ft in, TO ft inches

**Screens? (Circle One) Yes [ ] No [X] (If yes, then complete the below fields that apply):**

- **Mfr 1:**
  - **Type:**
  - **Diam:** in Slot Size From ft in TO ft in

- **Mfr 2:**
  - **Type:**
  - **Diam:** in Slot Size From ft in TO ft in

**ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warrant the Data and/or Information on this Well Report.**

If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes (No) (If yes, then complete the below fields that apply)

<table>
<thead>
<tr>
<th>Packing Material 1 Circle One</th>
<th>10-20</th>
<th>20-40</th>
<th>8-12</th>
<th>Coarse Sand</th>
<th>Pea Gravel</th>
<th>From ft in TO ft in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing Material 2 Circle One</td>
<td>10-20</td>
<td>20-40</td>
<td>8-12</td>
<td>Coarse Sand</td>
<td>Pea Gravel</td>
<td>From ft in TO ft in</td>
</tr>
</tbody>
</table>

Surface Seal: Was there an existing surface seal? Yes No Depth of Seal 44 ft in

Type of Seal Material (Circle One) Bentonite Bentonite Silt/concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Installed? (Circle One) Yes No If yes, Mfr Name Pump Type HP

Static Water Level (Circle One): Yes No If yes, depth in ft in

Flowing Artesian (Circle One): Greater Than or Equal To GPM PSI Artesian Water Controlled by (e.g., Cap, Valve, etc.)

Dry Hole

Usable Water Strata? (Circle One): Yes No If Yes is circled, method of sealing strata off

Strata 1 (Specify Unusable Water Type): From ft in TO ft in

Strata 2 (Specify Unusable Water Type): From ft in TO ft in

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test Date of test (Circle One): Greater Than or Equal To GPM, with Drawdown after hrs min

Air Test Date of test 2014/07/22 (Circle One): Greater Than or Equal To GPM, with stem set at ft in

Pump Test Date of test Test performed by

Note: Drawdown = the amount the water level is lowered below the static level

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Note: Recovery = the time taken at zero when the pump is turned off. Water level is measured from the well top to... Ask Lars for wording

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Well Lithology Details - Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
<td>Soft basalt</td>
<td>43</td>
<td>53</td>
</tr>
<tr>
<td>Fract. basalt</td>
<td>53</td>
<td>68</td>
</tr>
</tbody>
</table>

Comments - Enter any other important well construction and/or location details here.

CERTIFICATION - I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

Irle O'Neal Driller/Trainee Engineer Name/Print

Driller/Trainee Signature

if Trainee, Mentor Driller License No.

Mentor Driller Signature

Roger Witt Drilling Company

Address

City, State, Zip

Phone Number

Email Address
DENNIS MCDONALD WELL 1
[DRILLED IN 1987]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August, 2016

Well Log ID: 151545  Elev (ft): 2030 ±10  Depth (ft): 305  Quad: Colfax North

Latitude: 46.924387  Longitude: -117.316036  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 31, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
North Palouse Road, Colfax, Wash., on northwest side of road

Location Method:
Location is at best guess for a house; Google Earth imagery, topographic map; Colfax North quadrangle Well 9 of Bush and others (2005 [2006]). Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>2 – 11</td>
</tr>
<tr>
<td>*Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>11 – 42</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>42 – 73</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>73 – 104</td>
</tr>
<tr>
<td>Basalt</td>
<td>104 – 169</td>
</tr>
<tr>
<td>Basalt, soft, brown</td>
<td>169 – 174</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>174 – 241</td>
</tr>
<tr>
<td>Basalt, soft, red</td>
<td>241 – 256</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>256 – 305</td>
</tr>
</tbody>
</table>
Comments:

*Probably starts in N2 magnetostratigraphic unit, but data from well rock chemistry does not exist.

Whitman County Tax Parcel 801004417313691, NKA N PALOUSE RIVER RD, SW1/4 PT N1/2 TT 1; owners now are KRAUSE, TODD/KELLEY; 11.45 acres; grantor was 2011-SIP-2- PROPERTY, LLC, on 07/01/14; previous grantors were WINSTON & CASHATT, ELIZABETH TELLESSEN on 05/20/14.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: H. A. Mcclure
Address: 801 Park Ave., Coos Bay, Ore.

LOCATION OF WELL: County: Clatsop
Township: 4N, Range: 33E, Sec. 4, T. 7 N., R. 17 W.

(3) PROPOSED USE: Domestic ☑ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one):
New well ☑ Method: Dug ☑ Bored ☐ Deepened ☐ Method: Cable ☑ Driven ☐ Reconditioned ☐ Method: Rotary ☐ Jetted ☐

(5) DIMENSIONS:
Diameter of well: 6" inches
Drilled: 305 ft. Depth of completed well: 305 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from 1 ft. to 20 ft.
Threaded ☐ Welded ☐
Perforations: Yes ☑ No ☐ Type of perforator used: Slotted
Size of perforations: 1/4 in. by 1/2 in.
60 perforations from 250 ft. to 290 ft.
Gravel packed: Yes ☑ No ☐ Size of gravel:
Gravel placed from 250 ft. to 290 ft.
Surface seal: Yes ☑ No ☐ To what depth? 20 ft.
Material used in seal: Cement
Did any strata contain unusable water? Yes ☑ No ☐
Type of water:...
Method of sealing strata off:...

(7) PUMP: Manufacturer's Name:
Type: H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 140 ft.
Static level: 140 ft. below top of well Date: 9-21-87
Artesian pressure: lbs. per square inch Date: 
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☑ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Date of test:
Temperature of water: Was a chemical analysis made? Yes ☑ No ☐

1038

USE ADDITIONAL SHEETS IF NECESSARY

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Dr. B. W. Price
Address: 224 East 11th, Coos Bay, Ore.

[Signed] Dr. B. W. Price

License No. 0302 Date: 10-21-87

OCT 30 1987
DENNIS MCDONALD WELL 2

[DRILLED SEPTEMBER 2, 2001]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August, 2016

Well Log ID: 453419    Elev (ft): 2020 ±10    Depth (ft): 300    7.5’    Quad: Colfax North

Latitude: 46.921146    Longitude: -117.331236    decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 36, T. 17 N, R. 43 E

Well Address and (or) Other Location Information:
3000 North Palouse Road, Colfax, Wash., south of road; well is in yard east of house

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery, topographic map; Colfax North quadrangle Well 8 of Bush and others (2005 [2006]), which was plotted too far east. Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 — To 3</td>
</tr>
<tr>
<td>Clay</td>
<td>From 3 — To 27</td>
</tr>
<tr>
<td>*Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>From 27 — To 36</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 36 — To 130</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 130 — To 197</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 197 — To 264</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 264 — To 300</td>
</tr>
</tbody>
</table>
Comments:

*Probably starts in N2 magnetostratigraphic unit, but data from well rock chemistry does not exist.

Whitman County Tax Parcel 801004317363491, 3000 N PALOUSE RD, W1/4 PT SE1/4 TT2, FELDNER, CURTIS A/JANET L; 5.0 acres.

References Cited:

**WATER WELL REPORT**

**CONSTRUCTION/DECOMMISSION** ("x" in circle)
- Construction
- Decommission

**PROPOSED USE:**
- Domestic [ ]
- Industrial [ ]
- Municipal [ ]
- DeWater [ ]
- Irrigation [ ]
- Test Well [ ]
- Other

**TYPE OF WORK:**
- Owner's number of well (if more than one)
- New Well [ ] Reconditioned [ ]
- Method: Dug [ ] Bored [ ] Driven [ ]
- Deepened [ ] Cased [ ] Rotary [ ] Jetted [ ]

**DIMENSIONS:** Diameter of well ______ inches, drilled ______ ft.
- Depth of completed well ______ ft.

**CONSTRUCTION DETAILS**
- **Casing:**
  - Welded [ ]
  - Diam. from ______ ft. to ______ ft.
- **Installed:**
  - Liner installed [ ]
  - Diam. from ______ ft. to ______ ft.
  - Threaded [ ]
  - Diam. from ______ ft. to ______ ft.

**Perforations:**
- Yes [ ] No [ ]
- Type of perforator used [ ]
- Size of perfs ______ in. by ______ in. and no. of perfs ______ from ______ ft. to ______ ft.

**Screens:**
- Yes [ ] No [ ]
- K-Pac [ ]
- Location ______

**Manufacturer's Name:**
- Type [ ]
- Model No. ______
- Diam ______ Slot Size ______ from ______ ft. to ______ ft.
- Diam ______ Slot Size ______ from ______ ft. to ______ ft.

**Gravel/Filter packed:**
- Yes [ ] No [ ]
- Size of gravel/sand ______ from ______ ft. to ______ ft.

**Surface Seal:**
- Yes [ ] No [ ]
- To what depth? ______ ft.

**WATER LEVELS:**
- Land-surface elevation above mean sea level ______ ft.
- Static level ______ ft. below top of well ______
- Artesian pressure ______ lbs. per square inch ______

**PUMP:**
- Manufacturer's Name ______
- Type ______
- H.P. ______

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? Yes [ ] No [ ]
- If yes, by whom? ______
- Yield ______ gal/min. with ______ ft. drawdown after ______ hrs.
- Yield ______ gal/min. with ______ ft. drawdown after ______ hrs.
- Yield ______ gal/min. with ______ ft. drawdown after ______ hrs.

**Recovery data (time taken as zero when pump turned off/water level measured from well top to water level):**
- Time ______
- Water Level ______
- Time ______
- Water Level ______
- Time ______
- Water Level ______

**DATE OF TEST:**
- Date ______
- Bailie test ______ gal/min. with ______ ft. drawdown after ______ hrs.
- Air test ______ gal/min. with stem set at ______ ft. for ______ hrs.
- Artesian flow ______ g. p. m. ______
- Temperature of water ______°
- Was a chemical analysis made? Yes [ ] No [ ]

**WELL CONSTRUCTION CERTIFICATION:**
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**Driller [ ]**
**Engineer [ ]**
**Trainee [ ]**

Driller/Engineer/Trainee Name (Print) ______

Driller or Trainee License No. ______

If trainee, licensed driller's Signature and License no. ______

---

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

**Formation:**
- Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3 dirt</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3-27 clay</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>27-36 fine sand</td>
<td>27</td>
<td>36</td>
</tr>
<tr>
<td>36-130 fine sand</td>
<td>36</td>
<td>130</td>
</tr>
<tr>
<td>Hard sands</td>
<td>130</td>
<td>19.7</td>
</tr>
<tr>
<td>Medium sands</td>
<td>19.7</td>
<td>23.4</td>
</tr>
<tr>
<td>Fine sands</td>
<td>23.4</td>
<td>30.0</td>
</tr>
</tbody>
</table>

**RECEIVED**

SEP 1 1 2001

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

**RECEIVED**

SEP 1 1 2001

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

**Drilling Company:**
**W Harekott Drilling**

**Address:**
**P. O. Box 20, Fenn, D. D.**

**City, State, Zip:**
28571

**Contractor’s Registration No.:**
1740

**Date:**
9/2/01

Eco Systems is an Equal Opportunity Employer. E CY 050-1-20 (Rev 4/01)
ROBERT AND JENNIFER MCDONALD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D0053789  Elev (ft): 2640 ±10  Depth (ft): 155  Quad: Potlatch

Latitude: 46.913076°  Longitude: -116.999718°  decimal degrees (WGS84)

  ¼,  SW ¼,  NW ¼,  Sec. 8,  T. 41 N,  R. 5 W

Well Address and (or) Other Location Information:
1013 North River Road, Potlatch, Idaho; on south side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; site visit
March 26, 2018 — well not observed from road

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>0 – 2</td>
</tr>
<tr>
<td>Loess, clay</td>
<td></td>
<td>2 – 27</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td>27 – 155</td>
</tr>
</tbody>
</table>

1042
Comments:

Latah County Tax Parcel RP41N05W083768, owner is MC DONALD, ROBERT I; 1013 N RIVER RD, 4.62 AC TAX #6726; SWNW, 8 41 5.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D
DRILLING PERMIT NO. 847838
Water Right or Injection Well No. ENTERED

2. OWNER:
Name: Robert M. McDonald
Address: Do Boy 111
City: Pocatello
State: ID 7p 83855

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.

Twp: 51 N or S
Rge: 2 E or W
Sec: 1 1/4
Gov't Lot: 4
County:

Lat: 39 1/4
Long: 116 1/4
Address of Well Site: East River Road

4. USE:
Domestic []
Municipal []
Monitor []
Irrigation [ ]
Thermal [ ]
Injection []
Other [ ]

5. TYPE OF WORK check all that apply (Replacement etc.)
New Well [ ]
Modify [ ]
Abandonment [ ]
Other [ ]

6. DRILL METHOD:
Rotary [ ]
Cable [ ]
Mud Rotary [ ]
Other [ ]

7. SEALING PROCEDURES

Seal Material: Bentonite
From: 0
To: 38
Weight/Volume: 400
Seal Placement Method: Top Pour

8. CASING/LINER:

Diameter: 4" 6" 8" 10" 12" 14" 16" 18" 20" 24" 28" 30" 32" 36" 40"
Material: Steel Liner PVC
Casing Liner: Top Pour
Gauge: 4.5 - 30 155 100

Length of Headpipe: [ ]
Length of Tailpipe: [ ]

Packer: Y [ ]
Type: [ ]

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method: Saw
Screen Type & Method of Installation:

From: 115 155
To: 155 155
Slot Size: 4.5 4.5
Number: 1 1
Diameter: 42 42
Material: PVC 4.5
Casing Liner: Top Pour

10. FILTER PACK
Filter Material: [ ]
From: [ ]
To: [ ]
Weight/Volume: [ ]
Placement Method: [ ]

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
40 ft. below ground
Artesian pressure [ ]

Depth Flow encountered: 104 ft. Describe access port or control devices:

12. WELL TESTS:
Pump [ ]
Bailer [ ]
Flowing Artesian [ ]
Yield gal/min. Drawdown Pumping Level Time

Water Temp. 55° Bottom hole temp.
Water Quality test or comments: Good

13. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

14. DRILLER'S CERTIFICATION
I certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: [ ]
Number: [ ]

Principal Driller: [ ]
Date: 7-16-07
Driller or Operator II: [ ]
Date: [ ]

Operator I: [ ]
Date: [ ]

Principal Driller and Rig Operator Required. Operator I must have signature of Driller/Operator II.
**Well Log ID:** D0054488  
**Elev (ft):** 2610 ±10  
**Depth (ft):** 398  
**Quad:** Palouse

**Latitude:** 46.982056°  
**Longitude:** -117.018668°  
**decimal degrees (WGS84)**

---

**Well Address and (or) Other Location Information:**
1075 Garfield Road, Potlatch, Idaho; on south side of road

---

**Location Method:**
Location is for home; Latah County Assessor; Google Earth imagery; topographic map

---

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 0 – 42</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>42 – 55</td>
</tr>
<tr>
<td>Basalt</td>
<td>55 – 58</td>
</tr>
<tr>
<td>Basalt</td>
<td>58 – 140</td>
</tr>
<tr>
<td>Basalt</td>
<td>140 – 142</td>
</tr>
<tr>
<td>Basalt</td>
<td>142 – 185</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>185 – 210</td>
</tr>
<tr>
<td>Clay, gray and tan</td>
<td>210 – 290</td>
</tr>
<tr>
<td>Precambrian(?)</td>
<td>Shale and clay, multicolors</td>
</tr>
<tr>
<td></td>
<td>290 – 398</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP42N05W183608, MC GRAW, RICK; 1075 GARFIELD RD; 1.31 AC TAX #4550 OF GOVT LT 3; 18 42 5; MH.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D
   DRILLING PERMIT NO. 851350
   Water Right or Injection Well No.

2. OWNER:
   Name: Ricky McGraw
   Address: 1075 Garfield Rd.
   City: Potlatch
   State: ID
   Zip: 83855

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well.
   Twp: 42
   N. or South: N
   Sec: 18
   W. or E.: W
   Gov't Lot: NE/4
   Lat: ______
   Long: ______
   Address of Well Site: 1075 Garfield City: Potlatch
   (Give at least one of lot or distance to Road or landmark)
   Lt. Blk. Sub. Name:

4. USE:
   Domestic □ Municipal □ Monitor □ Irrigation
   Thermal □ Injection □ Other 

5. TYPE OF WORK check all that apply
   (Replacement etc.)
   New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD:
   Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   Seal Material From To Weight / Volume Seal Placement Method
   Bentonite 0.58 15.5x Pour Around Pipe
   Was drive shoe used? Y □ N
   Shoe Depth(s) 58
   Was drive shoe seal tested? Y □ N
   How? Air

8. CASING/LINER:
   Diameter From To Material Casing Liner Welded Threaded
   8 -2 -58 Steel
   6 -20 -398 200 PVC
   Length of Headpipe
   Packer □ Y □ N Type Formation packer @ 350

9. PERFORATIONS/SCREENS Packer TYPE
   Perforation Method: Saw
   Screen Type & Method of Installation
   From To Slot Size Number Diameter Material Casing Liner
   -160 -180 3/16 10 6" PVC
   -398 -398 3/16 32 6" PVC

10. FILTER PACK
    Filter Material From To Weight / Volume Placement Method
    None

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    Depth flow encountered 140 ft. Describe access port or control devices:

12. WELL TESTS:
    Yield gal/min. 15 gpm
    Pumping Level Flowing Artesian

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
    10 0 42 Clay Brown 42.55 Basalt Broken 55 58 Basalt
    8 58 140 Basalt Gray 140 142 Basalt Uplift
    142 185 Basalt Gray 185 210 Clay-Brown 210 240 Gray Clay
    240 290 Clay- Tan
    330 338 Multi color shale & clay 338 380 Shale Gray
    380 398 Shale Gray / water 12 gpm

14. DRILLER’S CERTIFICATION
    I certify that all minimum well construction standards were complied with at the
time the rig was removed.
    Company Name: ACTION DRILLING INC. Firm No. 618
    Principal Driller: ALVIN CARRIS Date 6-3-08
    Driller or Operator II: ALVIN CARRIS Date 6-3-08
    Operator I: Date

Office Use Only
Well ID No. 
Inspected by
Twp ______ Rge ______ Sec ______
Lat: ______ Long: ______

Water Temp. 50° Bottom hole temp.
Water Quality test or comments: Slightly cloudy

RECEIVED
JUN 05 2008
IDWR/North

FORWARD WHITE COPY TO WATER RESOURCES
## DANIEL MCGREEVY WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, March 18, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 293558</th>
<th>Elev (ft): 2531.64</th>
<th>Depth (ft): 324</th>
<th>7.5’ Quad: Viola</th>
</tr>
</thead>
</table>

Latitude: 46.787880   Longitude: -117.116295   decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 14, T. 15 N, R. 45 E

### Well Address and (or) Other Location Information:
651 McGreevy Road, Pullman, Wash., on east side of road

### Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Whitman County Assessor; Google Earth imagery; topographic map.

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>From 0 – To 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>From 12 – To 19</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 19 – To 43</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>From 43 – To 95</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 95 – To 159</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>From 159 – To 163</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown and green</td>
<td>From 163 – To 178</td>
</tr>
<tr>
<td>*Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>From 178 – To 199</td>
</tr>
</tbody>
</table>

1048
<table>
<thead>
<tr>
<th></th>
<th>Start</th>
<th>End</th>
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</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>199</td>
<td>218</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>218</td>
<td>283</td>
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<tr>
<td>Basalt, fractured</td>
<td>283</td>
<td>294</td>
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<td>Basalt, porous</td>
<td>294</td>
<td>303</td>
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<td>Basalt, fractured</td>
<td>303</td>
<td>305</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>305</td>
<td>324</td>
</tr>
</tbody>
</table>

**R2 magnetostratigraphic unit**

**Meyer Ridge Member(?)**

<table>
<thead>
<tr>
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<th>Start</th>
<th>End</th>
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</thead>
<tbody>
<tr>
<td>Basalt, porous</td>
<td>294</td>
<td>303</td>
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<tr>
<td>Basalt, fractured</td>
<td>303</td>
<td>305</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>305</td>
<td>324</td>
</tr>
</tbody>
</table>

**Comments:**

*Grande Ronde Basalt subdivision into N2 and R2 is based upon comparisons to stratigraphic determinations by Conrey and Wolff (2010) for the DOE Pullman Observation and Test Well and Washington State University wells.*

Whitman County Tax Parcel 200004515142900, NW1/4 PT W'LY OF RR; owner is now MCGREEVY, MARIANNE (651 MCGREEVY RD); house built in 1912; 16.0 acres.
Mr. Daniel McGreevy died in 2010; Marianne McGreevy is one of his daughters; Timothy a son (Kimball Funeral Home and Crematory, 2010).

[The adjacent agricultural parcel to the north is Whitman County Tax Parcel 200004515142790, NW1/4 PT NW'LY OF RR; owners are now MCGREEVY, TIMOTHY/CHRISTINE; 57.0 acres.]

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name MCGREEVY, Daniel
Address Rt. 1, Box 76, Pullman, 99163

(2) LOCATION OF WELL: County Whitman
(2a) STREET ADDRESS OF WELL (or nearest address) Rt. 1, Box 76 Pullman

(3) PROPOSED USE: Domestic ☐ Irrigation ☐ DeWater ☐ Industrial ☐ Municipal ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 1
Abandoned ☐ New well ☒ Method: Dug ☐ Bored ☐ Drilled ☐
Deepened ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 12 & 8 inches.
Drilled 324 feet. Depth of completed well 324 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 10' Diam. from +1 ft. to 26.5 ft.
Welded ☐ Threaded ☒ PVC 6' Diam. from -8 ft. to 324 ft.
Perforations: Yes ☒ No ☐ Type of perforator used: sawcut - PVC
SIZE of perforations 7 in. by 1/8 in.
180 perforations from 246 ft. to 322 ft.

Screens: Yes ☐ No ☒
Manufacturer's Name
Type
Diam. from ft. to ft.
Diam. from ft. to ft.
Gravel packed: Yes ☐ No ☒ Size of gravel
Gravel placed from ft. to ft.
Surface seal: Yes ☒ No ☐ To what depth? 26.5 ft.
Material used in seal: cement grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water?
Depth of strata?
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type

(8) WATER LEVELS: Land-surface elevation above mean sea level
Static level 235 ft. below top of well Date 6-26-90 ft.
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level

Date of test

BAITER test gal./min. with ft. drawdown after hrs.
AIREST gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME DeTRAY DRILLING
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address Clarkston, WA 99403

(Signed) (M/E/DRILLER) License No. 0099
Contractor's Registration No. DETRAD 110MU Date June 28, 1990.

(USE ADDITIONAL SHEETS IF NECESSARY)
**ALEX McGROR ELL**

Geologic Interpretation of Water Well Driller’s Log By John H. Bush, March 18, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>Elev (ft): 2555 ±10</th>
<th>Depth (ft): 353</th>
<th>Quad: Albion</th>
</tr>
</thead>
<tbody>
<tr>
<td>163024</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Latitude: 46.781422 | Longitude: -117.127913 | decimal degrees (WGS84) |

### Well Address and (or) Other Location Information:

202 McGreevy Road, Pullman, Wash., west side of road, driveway is about 0.4 mi long.

### Location Method:

Location is for driveway area south of house; Whitman County Assessor; Google Earth imagery; topographic map, and Albion quadrangle Well 6 of Bush and Garwood (2005 [2006]). Site visit, (April 20, 2016)

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
<td>No description</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, soft</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td></td>
<td>Clay, brown and gray</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N2 magnetostratigraphic unit</td>
</tr>
<tr>
<td></td>
<td>Sentinel Bluffs Member</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured</td>
</tr>
</tbody>
</table>
Basalt, hard 233 – 288

R2 magnetostratigraphic unit
Meyer Ridge Member(?)

Basalt, porous 288 – 308
Basalt, hard 308 – 353

Comments:

Subdivision of Grande Ronde Basalt into Sentinel Bluffs and Meyer Ridge Members is based upon elevation and thickness comparisons to surrounding wells. Note the same porous zone in the Daniel McGreevy Well about 3,500 ft to the northeast (on McGreevy Road in Albion 7.5-minute quadrangle).

Whitman County Tax Parcel 200004515158900, (HOME-SITE) S1/2 PT E1/2 OF E1/2 OF SW1/4 & PT SE1/4, owners are MCGREGOR, ALEXANDER/LINDA; 22.0 acres; one story residence built in 1997.

References Cited:

LOCATION OF WELL: County: Whitman

STREET ADDRESS OF WELL (or nearest address): McGreevy Rd.

PROPOSED USE: Domestic ☐ Irrigation ☐ Municipal ☐

TYPE OF WORK: New well ☐ Method: Dug ☐ Reconditioned ☐

Abandoned ☐ Deepened ☐ Cable ☐ Rated ☐ Bored ☐

Reconditioned ☐ Driven ☐ Jetted ☐

DIMENSIONS: Diameter of well: 8 inches. Depth of completed well: 353 feet.

CONSTRUCTION DETAILS:
- Casing installed: 8 feet, diam. from 71 to 66 feet.
- Liner installed: 8 feet, diam. from 71 to 66 feet.
- Threaded: 8 feet, diam. from 71 to 66 feet.

Perforations: Yes  No  ✔
- Perforations from 0 to 1 inch long, in. from 71 to 66 feet.

Screen: Yes  No  ✔
- Manufacturer's Name: 
- Model No.
- Diam. from 71 to 66 feet.
- Slot size from 71 to 66 feet.

Gravel pack: Yes  No  ✔
- Size of gravel: 
- Gravel placed from 0 to 1 inch long, in. from 71 to 66 feet.

Surface seal: Yes  No  ✔
- Bentonite cement: 6 feet.

WATER LEVELS:
- Static level: 310 ft. below top of well. Date: 11/11/93.
- Artesian pressure: lbs. per square inch. Date: 
- Artesian water is controlled by: 

WELL TESTS:
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? Yes  No  ✔
- Yield: gal./min. with ft. drawdown after hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Date of test: 
- Boiler test gal./min. with ft. drawdown after hrs.
- Artesian flow: gpm. Date: 
- Artesian flow: ± 15.0 ft. for 30 min. hrs.
- Temperature: °F.
- Was a chemical analysis made? Yes  No  ✔

WELL LOG OR ABANDONMENT PROCEDURE DESCRIPTION:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
-october sand 0 455 1 6 61 7 63 2 5 3 2
cretet basalt 8 25 8 23
basalt firm 8 25 8 23
basalt firm 8 23 176
b逅ck brown shale 126 8 23
grey shale 18 19
-pact basalt 197 233
basalt firm 233 233
basalt firm 35 353

PUMP:
- Manufacturer's Name: 
- H.P.

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.  

NAME: Witt Well Drilling  
Address:  
License No. 0623

(Contractor's Registration No. 1377 Pb Date 9/12/93)

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-8600. The TDD number is (206) 407-6006.
McGregor Co. Well 4

(McGregor Company Well 4)

[Drilled in 2002]

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, March 19, 2016; November 9, 2017

Well Log ID: 338864     Elev (ft): 2430 ±10     Depth (ft): 355     Quad: Albion

Latitude: 46.758928     Longitude: -117.167347     decimal degrees (WGS84)

SW ¼, NE ¼, Sec. 29, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
101 Whelan Road, Pullman, Wash., on south side of road; well is just east of Kitzmiller Road and north of the railroad tracks

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 16, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>27</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>62</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
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<tr>
<td>Sentinel Bluffs Member</td>
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<tr>
<td>Basalt</td>
<td>87</td>
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<tr>
<td>Basalt, weathered</td>
<td>111</td>
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<tr>
<td>Basalt</td>
<td>172</td>
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</table>
R2 magnetostratigraphic unit
Meyer Ridge Member(?)
Basalt, three weathered zones, 13-, 22-, and 31-ft thick

Comments:
The N2–R2 contact was picked solely on thickness trends of the Spokane Falls flows in the upper part of Washington State University wells and Pullman city wells. There are two wells in this parcel: McGregor Co. well 2 (Albion quadrangle Well 3 of Bush and Garwood (2005 [2006]) which is a 220-ft-deep well drilled in 1963) and McGregor Co. well 4.

Whitman County Tax Parcel 200004515291906, PULLMAN NE1/4 PART, owner is MCGREGOR CO, 10.0 acres.

Above, well is protected by two large concrete barrier blocks, just left of elevated water tank.
References Cited:


1. **Owner:** MCGREGORS
   - **Address:** 101 WHELAN RD, PULLMAN, WA 99163

2. **Location of Well:** County WHITMAN
   - **Street Address:** 101 WHELAN RD PULLMAN WA 99163

3. **Proposed Use:**
   - Domestic
   - Industrial
   - Municipal
   - Irrigation
   - Test Well
   - DeWater

4. **Type of Work:**
   - Owner's number of well (if more than one)
   - New Well
   - Method
   - Deepened
   - Dog
   - Bored
   - Reconditioned
   - Cable
   - Driven
   - Commission
   - Rotary
   - Jetted

5. **Dimensions:**
   - Diameter of well drilled: 355 feet
   - Depth of completed well: 355 feet

6. **Construction Details:**
   - **Casing installed:**
     - Welded: 8 diam from 1 ft to 42 ft
     - Liner installed: 6 diam from 15 ft to 355 ft
   - **Perforations:**
     - Yes
     - Type of perforator used: SAW
   - **Size of perforations:**
     - 90 perforations from 295 ft to 355 ft
   - **Screens:**
     - Yes
     - Model No.
     - Manufacturer's Name
     - Diameter: 1/8 in
     - Slot size from ft to ft
     - Length: 12 in
     - Slot size from ft to ft
   - **Gravel/Filter packed:**
     - Yes
     - Size of gravel/sand: 1/2 ft to 1 ft
   - **Surface seal:**
     - Yes
     - Method of sealing strata off
     - BENTONITE
   - **Artesian pressure:** 245 lbs per square inch
   - **Artesian water is controlled by:** (Cap valve etc)

7. **Pump:**
   - Manufacturer's Name: H P

8. **Water Levels:**
   - Land surface elevation above mean sea level: 4/11/2002

9. **Well Tests:**
   - Drawdown in static level (water level is lowered below static level)
   - Was a pump test made? Yes
   - Yield gal/min with ft drawdown after hrs
   - Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
   - Date of test
   - Artesian flow gpm Date
   - Temperature of water: 54

10. **WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:**
    - Formation: Describe by color, character, size, thickness, and any other factor.
    - Nature of the material in each stratum penetrated with at least one entry for each change of information.

    | MATERIAL                | FROM | TO |
    |-------------------------|------|----|
    | CLAY                    | 0    | 27 |
    | BASALT MEDIUM GRAY      | 27   | 62 |
    | BASALT & CLAY           | 62   | 87 |
    | BASALT MEDIUM GRAY      | 87   | 104|
    | BASALT MEDIUM GRAY      | 104  | 111|
    | BASALT WEATHERED BROWN  | 111  | 172|
    | BASALT MEDIUM GRAY      | 172  | 185|
    | BASALT WEATHERED BROWN  | 185  | 207|
    | BASALT MEDIUM GRAY      | 207  | 289|
    | BASALT WEATHERED BROWN  | 289  | 297|
    | BASALT MEDIUM GRAY      | 297  | 328|
    | BASALT WEATHERED BROWN  | 328  | 341|
    | BASALT MEDIUM GRAY      | 341  | 355|

**WELL CONSTRUCTION CERTIFICATION**

I, the undersigned, hereby certify that I have constructed and/or accept responsibility for the construction of this well and its compliance with all applicable construction standards. The materials used and the information reported above are true to the best of my knowledge and belief.

- **Print Name:** TED WRIGHT
- **License No:** 0532
- **Test Name:** GARY WRIGHT
- **License No:** 2596T
- **Drilling Company:** MCPHERSON & WRIGHT DRILLING

**Address:** 2246 BURRELL, LEWISTON ID, 83501

**Contractor:** MCPHEWDT3519

- **Date:** 6/9/02

**USE ADDITIONAL SHEETS IF NECESSARY**

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs contact the Washington Water Resources Program at (360) 407 6000. The TDD number is (360) 407 6006.
McGregor Co. well 2

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT Appl. #6908

WELL LOG

Date: November 4, 1963

Record by: Driller

Source: Driller's Record

Location: State of WASHINGTON

County: Whitman

Map: SW¼ NE¼, T. 15 N., R. 15 E., E. Barnett Flbg. & Well Drilling

Drilling Co.: Box 104, Lind Washington

Address: Box 736, Colfax, Washington

Owner: McGregor Company

Method of Drilling: Cable Date: Sept. 5, 1963

Land surface, datum: ft. above

<table>
<thead>
<tr>
<th>Consistency</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal domestic well.</td>
<td>Rock fill</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Sand &amp; silt</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Gravel</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Broken black basalt</td>
<td>22</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Gray basalt</td>
<td>30</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>Shale &amp; small rock, little wtr.</td>
<td>67</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>Shale</td>
<td>87</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Gray basalt rock</td>
<td>97</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>Black soft rock</td>
<td>132</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td>Brown broken rock</td>
<td>165</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Brown porous rock</td>
<td>170</td>
<td>215</td>
</tr>
<tr>
<td></td>
<td>Lots of water, gr. basalt rock</td>
<td>215</td>
<td>220</td>
</tr>
<tr>
<td></td>
<td>Casing: 12&quot; from 0 to 25'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8&quot; from 0 to 45'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Turn up Sheet of sheets
No perforations
No screens
SML: 117'

Yields 100 gpm with 0' ID after 12 hours
September 5, 1963

Pump: 71/2 HP, Turbine
GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil, clay</td>
<td>0</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roza Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, abundant plagioclase phenocrysts</td>
<td>15</td>
<td>85</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latah Formation</th>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>85</td>
<td>95</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grande Ronde Basalt</th>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard, very fine-grained</td>
<td>95</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft, very fine-grained</td>
<td>190</td>
<td>212</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R2 magnetostratigraphic unit</th>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>212</td>
<td>235</td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Mr. McIntosh saved rock chip samples from various drilling intervals in glass jars in 1984. These samples were analyzed at the WSU GeoAnalytical Lab in 2006 and those data are included (table 1). The Roza was identified from well samples characterized by abundant plagioclase phenocrysts and by geochemical analyses (sample nos. BUS RM 15–20, BUS RM 20–30). The Grande Ronde samples were fine-grained and two analyses (sample nos. BUS RM 100–135, BUS RM 135–190) suggest the presence of the Spokane Falls flow.

The well is located near the Lolo-Roza contact (Bush and Garwood, 2005 [2006]). A diagrammatic cross section through this well showing stratigraphic relationships is in Bush and others (2016, fig. 15). Water was encountered at a Grande Ronde flow top.

Whitman County Tax Parcel 200004416253902, 351 MCINTOSH RD, SW UND 1/2 INT, owner now is ENGLISH, JEAN M ETAL; 77.0 acres.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Nathan M. McIntosh
Address: 741 Box 1135, Colville, WA

(2) LOCATION OF WELL:
County: Colville

(3) PROPOSED USE: Domestic

(4) TYPE OF WORK:
Owner's number of well
New well
Method: Dug
Irrigation
Test Well
Reconditioned

(5) DIMENSIONS:
Drilled Diameter of well: 15 inches
Depth of completed well: 355 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 355 ft. from 24 ft. to 34 ft.
Threaded
Welded

Perforations: Yes, 150 perforations from 150 ft. to 300 ft.

Screens: Yes
Manufacturer's Name
Model No.
Diam. Slot size

Gravel packed: Yes
Screen depth

Surface seal: Yes

Material used in seal

Did any strata contain unusable water? No
Type of water

Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type

(8) WATER LEVELS:
Land-surface elevation above mean sea level...
Static level...
Artesian pressure...

Artesian water is controlled by...

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.

Yield:
gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well to water level)

Time Water Level

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO

(FEB 11, 1985)

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Detran Dilling
Address: 103624 S. Clarkson, WA

License No. 0059 Date 10/11/84

USE ADDITIONAL SHEETS IF NECESSARY
DARIN MCKEE WELL 1_OSPREY LANE HOMEOWNERS ASSOCIATION WELL

[DARIN MCKEE DOMESTIC WELL 1 DRILLED JULY 5, 2005;
OSPREY LANE HOA GROUP DOMESTIC WELL DEEPENED AUGUST 1, 2016]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, April 30, 2018

Well Log ID: 436213

Latitude: 46.754778° Longitude: -117.135359° decimal degrees (WGS84)

⅛, NW ¼, SW ¼, Sec. 27, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
122 Osprey Lane, Pullman, Wash.; on east side of lane

Location Method:
Location is for well, north of driveway; Whitman County Assessor; Google Earth imagery; topographic map; driller reported former tax parcel number; site visit March 27, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>48</td>
</tr>
<tr>
<td>Basalt</td>
<td>51</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>161</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>183</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>285</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>312</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>401</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515273794, 122 OSPREY LANE, SW1/4 MCKEE SHPLT #2 CLUSTER A LOT A-4, owners now are PAN, WEI-JIAN/MARGARET; 3.87 acres; 07/21/11: grantors were BRYAN, JEFFREY/MARGARET to PAN, WEI-JIAN/MARGARET.

Above, well is to right of house and along north side of driveway.

References Cited:
**WATER WELL REPORT**

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

**Construction/Decommission** ("x" in circle) 193622

**Type of Use:**
- ☐ Domestic
- ☐ Industrial
- ☐ Municipal
- ☐ DeWater
- ☐ Irrigation
- ☐ Test Well
- ☐ Other

**Type of Work:**
- ☐ New Well
- ☐ Reconditioned
- ☐ New Pipe
- ☐ Deepened
- ☐ Cased
- ☐ Jetted
- ☐ Other

**DIMENSIONS:**
- Diameter of well: 12 inches
- Drilled: 194 ft.
- Depth of completed well: 194 ft.

**Construction Details:**
- Casing: Welded 8" Diam. from 19 ft. to 356.6 ft.
- Perforated: No
- Type of perforator used: No
- Screens: YES
- Manufacturer's Name: K-Pac
- Model No: Location
- Diam.: Slot Size: from ft. to ft.

**Gravel/Filter packed:**
- Size of gravel/sand: from ft. to ft.

**Surface Seal:**
- To what depth? 55' 6" ft
- Materials used in seal: Benjonite
- Did any strata contain unusable water? No
- Type of water: Depth of strata

**Pump:**
- Manufacturer's Name:
- Type: H.P.

**Water Levels:**
- Land-surface elevation above mean sea level: 50 ft.
- Static level: 50' 5" ft below top of well Date 7/5/65
- Artesian pressure: lbs. per square inch Date
- Artesian water is controlled by:

**Well Tests:**
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? Yes
- Yield: 12 gal/min. with ft. drawdown after hrs.
- Artificial test: 12 gal/min. with stem set at 190 ft. for 1 hrs.
- Artesian flow: g.p.m. Date
- Date of test 7/5/65

**Drilling Company:** Witt Well Drilling

**Driller:** Roger Lutz
Driller or Trainee Name (First & Last Initial)

**WELL CONSTRUCTION CERTIFICATION:** I have constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller's License No.

**If trainee, licensed driller's**

**Signature and License no.**
Notice of Intent Number: W366651

Property Owner Last Name: Ossyard
First Name: Hane OWNERS ASSN.
Organization Name: OSYREY LANE

Well Tag ID Number (e.g., AAA-001): AH J 881
Variance Granted? (Circle One): Yes

Water Right Permit Required? (Circle One): Yes or No

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Commercial
- Domestic (Group Domestic)
- Individual Irrigation
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Deepened Well
- Hydrofracturing
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Hydrofracturing
- Jetted
- Rotary
- Other

Drilling Start Date: 7/6/16
Drilling Completion Date: 8/4/16

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)

Well Street Address:

Well City: Pullman
Well County: Whitman
Well Zip Code: 99163

Tax Parcel Number: 200004515273790

If claiming tax parcel exemption (Circle One): Tribal
Federal Property
Right of Way
Railroad Land

Township: 15
Range: 45
Circle One: East or West
Section: 27

Latitude: N 45° 45.15273790
Decimal Degrees; Longitude: W 117° 08.119

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: __________ ft __________ in. Drilled: __________ ft __________ in. Depth of Completed Well: __________ ft __________ in.

Casings (At least one Casing must have 6 in. of stickup and all fields must be filled out for each casing entered)

Type (Circle One): Concrete
Plastic
Steel
Other

Diameter: __________ inches
Stickup: __________ inches
Depth: __________ ft __________ in.
TO __________ ft __________ in.

Liners? (Circle One): Yes or No
If yes, then complete the below fields that apply

Type 1 (Circle One): PVC
Steel
Other

Diameter: __________ in.
From: __________ ft __________ in.
TO __________ ft __________ in.

Type 2 (Circle One): PVC
Steel
Other

Diameter: __________ in.
From: __________ ft __________ in.
TO __________ ft __________ in.

Perforations? (Circle One): Yes or No
If yes, then complete the below fields that apply

Type of Perforator (Circle One): Drill
Mills Knife
Saw cut
Star
Torch Cut
Other

Perforation size: __________ in. by __________ in.
Total Perforations: __________

Perforation 1 from: __________ ft __________ in.
TO __________ ft __________ in.
Perforation 2 from: __________ ft __________ in.
TO __________ ft __________ in.

Screens? (Circle One): Yes or No
If yes, then complete the below fields that apply

Mfr 1 Type __________
Diam __________ in.
Slot Size: __________
From: __________ ft __________ in.
TO __________ ft __________ in.

Mfr 2 Type __________
Diam __________ in.
Slot Size: __________
From: __________ ft __________ in.
TO __________ ft __________ in.

ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.
If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes [ ] No [x] (If yes, then complete the below fields that apply)

Packing Material 1 Circle One 10-20 15-40 8-12 Coarse Sand Pea Gravel From ________ ft ________ in TO ________ ft ________ in
Packing Material 2 Circle One 10-20 15-40 8-12 Coarse Sand Pea Gravel From ________ ft ________ in TO ________ ft ________ in

Surface Seal: Was there an existing surface seal? (Yes or No) Depth of Seal ________ ft ________ in
Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes [ ] No [x] If yes, Mfr Name ________ Pump Type ________ HP ________

Static Water Level (Circle One and fill in the blanks if needed)
Yes ________ Measured Level (Below top of well) ________ ft ________ in Date Measured ________
Flowing Artesian (Circle One) Greater Than or Equal To ________ GPM ________ PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.) ________
Dry Hole ________
Unusable Water Strata? (Circle One) Yes [ ] No [x] If Yes is circled, method of sealing strata off ________
Strata 1 (Specify Unusable Water Type) ________ From ________ ft ________ in TO ________ ft ________ in
Strata 2 (Specify Unusable Water Type) ________ From ________ ft ________ in TO ________ ft ________ in

General Well Tests (Circle all that apply and fill in the blanks)
Bailer Test Date of test ________ Greater Than or Equal To ________ GPM, with ________ Drawdown after ________ hrs ________ min
Air Test ________ Date of test ________ Greater Than or Equal To ________ GPM, with stem set at ________ ft ________ in
Test Duration ________ hrs ________ min
Pump Test ________ Date of test ________ Test performed by ________

Note: Drawdown=the amount the water level is lowered below the static level
Yield ________ gpm, with ________ ft ________ in; Drawdown after ________ hrs ________ min Yield ________ gpm, with ________ ft ________ in; Drawdown after ________ hrs ________ min
Yield ________ gpm, with ________ ft ________ in; Drawdown after ________ hrs ________ min Yield ________ gpm, with ________ ft ________ in; Drawdown after ________ hrs ________ min
Yield ________ gpm, with ________ ft ________ in; Drawdown after ________ hrs ________ min Yield ________ gpm, with ________ ft ________ in; Drawdown after ________ hrs ________ min

Note: Recovery=The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording
Time ________ hrs ________ min; Water Level ________ ft ________ in Time ________ hrs ________ min; Water Level ________ ft ________ in
Time ________ hrs ________ min; Water Level ________ ft ________ in Time ________ hrs ________ min; Water Level ________ ft ________ in
Time ________ hrs ________ min; Water Level ________ ft ________ in Time ________ hrs ________ min; Water Level ________ ft ________ in

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>basalt, firm</td>
<td>196</td>
<td>285</td>
</tr>
<tr>
<td>soft basalt</td>
<td>285</td>
<td>312</td>
</tr>
<tr>
<td>basalt, firm</td>
<td>312</td>
<td>401</td>
</tr>
<tr>
<td>Fract., basalt</td>
<td>401</td>
<td>403</td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Material’s used and the information reported within the Well Report are true to my best knowledge and belief.

Circle One: Driller/Trainee Engineer Name (Print) Roger Witt Drilling Company WittWell Drilling
Driller/Trainee Engineer Signature Roger Witt
Driller/Trainee/PE License No. 660008
City, State, Zip Kent, WA 98247
Phone Number (253) 839-7645
Email Address Wittwell68@gmail.com

The Department of Ecology does NOT warrant the data and/or information on this form. If TRAINEE, Mentor Driller License No. Mentor Driller Signature

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Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018


Latitude: 46.756443° Longitude: -117.135179° decimal degrees (WGS84)
NE ¼, NW ¼, SW ¼, Sec. 27, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
30 Osprey Lane, Pullman, Wash.; on east side of lane

Location Method:
Location is for well, in field at southeast corner of Kitzmiller Road and Osprey Lane; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 27, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From — To</td>
</tr>
<tr>
<td>No description</td>
<td>0 — 58</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>58 — 80</td>
</tr>
<tr>
<td>Basalt</td>
<td>80 — 163</td>
</tr>
</tbody>
</table>
Whitman County Tax Parcel 200004515273791, PARCEL A-1 MCKEE SHPLT #2 CLUSTER A, owners now are HILL, HERBERT/JANNETTE; 1735 SW VIEW DR, PULLMAN WA; 3.25 acres.

Below right, plat map: Lot A-1 is highlighted in yellow [Lot A-2 is west of it (2201 Kitzmiller Road), Lot A-3 is adjacent to the south (80 Osprey Lane), and Lot A-4 (122 Osprey Lane) is at lower right, south of Lot A-3].

Above, well is at left, in field; 80 Osprey Lane home is at right.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission** ("x" in circle) 193620

**Proposed Use:**
- [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] DeWater
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

**Type of Work:** Owner's number of well (if more than one)
- [ ] New Well
- [ ] Reconditioned
- [ ] Method: [ ] Dug
- [ ] Bored
- [ ] Driven
- [ ] Deepened
- [ ] Cable
- [ ] Rotary
- [ ] Jetted

**Dimensions:** Diameter of well 8 inches, drilled 163 feet.
Depth of completed well 163 feet.

**Construction Details**

Casing: [ ] Yes
- Diam from ft. to ft.
- Installed: [ ] Liner installed
- Diameter from ft. to ft.
- [ ] Threaded
- Diameter from ft. to ft.

Perforations: [ ] Yes
- Type of perforator used
- Size of perforations in. by in. and no. of perforations from ft. to ft.

Screens: [ ] Yes
- K-Pac
- Location
- Manufacturer's Name
- Type
- Model No.
- Diameter
- Slot Size
- From ft. to ft.
- Diameter
- Slot Size
- From ft. to ft.

Gravel Filter packed: [ ] Yes
- Size of gravel/sand
- Materials placed from ft. to ft.

Surface Seal: [ ] Yes
- To what depth? 63 feet
- Materials used in seal: Bentonite
- Did any strata contain unusable water? [ ] Yes [ ] No
- Type of water?
- Depth of strata
- Method of sealing strata off

**Pump:**
- Manufacturer's Name
- H.P.

**Water Levels:**
- Land-surface elevation above mean sea level ft.
- Static level 41 6 feet below top of well 9/13/65
- Artesian pressure lbs. per square inch
- Artesian water is controlled by (cap, valve, etc.)

**Well Tests:**
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? [ ] Yes [ ] No
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- Yield: gal./min. with ft. drawdown after hrs.
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) water level measured from well top to water level:
- Time Water Level Time Water Level Time Water Level
- Date of test
- Bail test gal./min. with ft. drawdown after hrs.
- Air test gal./min. with stem set at ft. for hrs.
- Artesian flow: g.p.m. Date
- Temperature of water: Was a chemical analysis made? [ ] Yes [ ] No

**Well Construction Certification:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller [ ]
- Engineer [ ]
- Trainee [ ] Name (Print)
- Roger Wilt
- Driller/Engineer/Trainee Signature
- Roger Wilt
- Driller or Trainee License No.
- 0623
- If trainee, licensed driller's signature and license no.

**Drilling Company:**
- Wilt Well Drilling
- Address: 1091 South Gate Rd.
- Juliaetta Id.
- Drilling Company's City, State, Zip
- Contractor's Registration No.
- 1479165
- Drilling Company's Date 1479165
- Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)
**DARIN MCKEE WELL 3**

**[MUNICIPAL WELL Drilled September 19, 2005]**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 19, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 450800</th>
<th>Elev (ft): 2590 ±10</th>
<th>Depth (ft): 378</th>
<th>7.5’ Quad: Albion</th>
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</thead>
<tbody>
<tr>
<td>[Well Tag ID: APN253]</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Latitude: 46.752680° Longitude: -117.136082° decimal degrees (WGS84)

Well Address and (or) Other Location Information:
190 Osprey Lane, Pullman, Wash., on southeast side of lane

Location Method:
Location is for well, northeast of well house between driveways to 170 and 190 Osprey Lane; Whitman County Tax Assessor; Google Earth imagery, topographic map; site visit March 27, 2018 and verified well tag ID

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
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<tbody>
<tr>
<td>Overburden</td>
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<tr>
<td>No description</td>
<td>0 – 91</td>
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<tr>
<td>Wanapum Basalt</td>
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<tr>
<td>Priest Rapids Member</td>
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<td>Basalt of Lolo</td>
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<tr>
<td>Basalt, hard</td>
<td>91 – 209</td>
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<tr>
<td>Latah Formation</td>
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<td>Vantage Member</td>
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<tr>
<td>Clay, green</td>
<td>209 – 229</td>
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<td>Grande Ronde Basalt</td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
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<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>229 – 331</td>
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<tr>
<td>Basalt, soft</td>
<td>331 – 358</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>358 – 378</td>
</tr>
</tbody>
</table>
Comments:

Stratigraphy correlates well with the Allen and Laura Risley well to the west on Eagle Lane.

Whitman County Tax Parcel 200004515273903, 190 OSPREY LANE, SW1/4 MCKEE SHRT PLT 2 C-3 CLUSTER C, owners now are BRINKMAN, CAMERON/JOREEN; year built 2010; 8.42 acres.

Well is in center of photo, above, on first rock terrace to left (east) of tan metal shed.

References Cited:
WATER WELL REPORT

Construction/Decommission: ORIG. CONSTRUCTION Notice

PROPOSED USE: ☐ Domestic ☑ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one):
☐ New Well ☑ Reconditioned Method: ☐ Drilled ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well: 8 inches, drilled 378 ft.
Depth of completed well: 378 ft.

CONSTRUCTION DETAILS
Casing:
☐ Yes ☐ No
Installed:
☐ New installed
☐ Diameter:

Perforations:
☐ Yes ☐ No
Type of perforator used:

SIZE of perfor.

Screens:
☐ Yes ☐ No ☐ K-Pac Location:

Manufacturer's Name:

Manufacturer's Model No.:

Diam. Slot Size from ft. to ft.
Diam. Slot Size from ft. to ft.

Gravel/Filter packed:
☐ Yes ☐ No ☐ Size of gravel/sand:

Materials placed from ft. to ft.:

Surface Seal:
☐ Yes ☐ No To what depth: 97 ft
Materials used in seal:

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water:

Method of sealing strata off:

PUMP: Manufacturer's Name:

Type:

WATER LEVELS:

Land/surface elevation above mean sea level:

Static level:

Artesian pressure:

Artesian water is controlled by:

WELL TESTS:

Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield:

Recovery data (time taken as zero when pump turned off/water level measured from well top to water level):

Time Water Level Time Water Level Time Water Level

Date of test:

Bailer test:

Airest:

Artesian flow:

Temperature of water:

Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (Print):

Driller/Engineer/Trainee Signature:

Driller or Trainee License No.:

If trainee, licensed driller's Signature and License no.:
### Table 1. Geochemical analyses by Washington State University GeoAnalytical Lab for samples from the Rod McIntosh well (John H. Bush, unpub. data, 2007). Note: Sample no. BUS RM 212–235 may have been contaminated.

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<tr>
<th></th>
<th>BUS RM 15-20</th>
<th>BUS RM 20-30</th>
<th>BUS RM 100-135</th>
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<td>21</td>
<td>23</td>
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</tbody>
</table>
**Darin McKee Well 4**

[Drilled in 2009]

Geologic Interpretation of Water Well Driller’s Log By

John H. Bush, March 19, 2016; November 9, 2017


Latitude: 46.756298  Longitude: -117.139754  decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 28, T. 15 N, R. 45 E

**Well Address and (or) Other Location Information:**

12 Eagle Lane, Pullman, Wash., on east side of road; well is in front yard, east of driveway.

**Location Method:**

Location is for well (site visit, April 16, 2016); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 62</td>
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<td>Wanapum Basalt</td>
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</tr>
<tr>
<td>Priest Rapids Member</td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>62 – 69</td>
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<tr>
<td>Basalt, hard</td>
<td>69 – 180</td>
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<tr>
<td>Latah Formation</td>
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<td>Vantage Member</td>
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<tr>
<td>Clay, black and gray</td>
<td>180 – 209</td>
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<td>Grande Ronde Basalt</td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
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<td>Sentinel Bluffs Member</td>
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<td>Meyer Ridge Member(?)</td>
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</table>
Basalt, hard 328 – 413
Basalt, fractured 413 – 414
Basalt, hard 414 – 428

Comments:

Whitman County Tax Parcel 200004515284904, MCKEE’S SHORT PLAT #1 LT A-4 5AC, 12 EAGLE LANE RD, owners are MCKEE, DARIN/STACIA.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Darin McKee
Address: 12 Eagle Ln, Pullman WA 99163

LOCATION OF WELL: County: Whitman
Street Address: Sam

PROPOSED USE: Domestic

TYPE OF WORK: Owner's number of well
Abandoned
New well
Deepened
Reconditioned

DIMENSIONS:
Diameter of well: 8 inches
Drilled Depth: 428 ft

CONSTRUCTION DETAILS:
Casing Installed: 8 ft
Diam. from 41 ft to 73 ft

Perforations: Yes
Type of perforator used
SIZE of perforations in, by in.

Screens: Yes
Manufacturer's Name
Type
Diam. Slot size from ft to ft

Gravel packed: Yes
Size of gravel
Gravel placed from ft to ft

Surface seal: Yes
To what depth? 23 ft

WATER LEVELS:
Static level 315 ft
Anesian pressure

WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes
Yield: gal/min

Recuperation data: (time taken as zero when pump turned off)
Time Water Level Time Water Level Time Water Level

Date of test
Bailer test: 10 gal/min
Artesian flow: gpm

TEMPERATURE OF WATER: Was a chemical analysis made? Yes

WELL LOG OR ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
Ouerburden 0 66
Soft basalt 66 180
Basalt, firm 180 269
Black and green slate 269 301
Soft basalt 301 328
Basalt, firm 328 413
Pract. basalt, water 413 419
Black and firm basalt 419 428

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: WITT WELL DRILLING
Address: 2691 South Grade Rd, Pullman ID
(Signed) Rogers Witt
License No. W 2071

Contractor's Registration No.

ECY 050-1-20 (9/93) **
PHIL McMURRAY WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 20, 2016

Well Log ID: D0061105   Elev (ft): 2690 ±10   Depth (ft): 300   Quad: Viola

Latitude: 46.753383   Longitude: -117.009617   decimal degrees (WGS84)

1/4, SW 1/4, NE 1/4, Sec. 6, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1637 Mix Road, Moscow, Idaho; on west side of road; well is in field northeast of house.

Location Method:
Latitude and longitude from well driller’s report; Latah County Assessor; Google Earth imagery; topographic map; Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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<tr>
<td>Latah Formation</td>
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<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 95</td>
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<tr>
<td>Sand</td>
<td>95 – 125</td>
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<tr>
<td>Idaho Batholith(?)</td>
<td></td>
</tr>
<tr>
<td>Granite(?)</td>
<td>125 – 300</td>
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</tbody>
</table>
Comments:

This entire well could be in sediments of Bovill. Chips from coarse-grained sediments in the Moscow area look similar to weakly consolidated granite. The high gallons per minute (50 gpm) and the use of a liner to the bottom of the well suggest weak sediments and not hard granite. The location is in an area where granite would not be expected. The water level is consistent with the upper aquifer. Another possibility is that the driller missed the basalt altogether: it has happened.

Latah County Tax Parcel RP39N05W064830, 1637 MIX; owner is now CASEBOLT, DAVID J; 3.73 AC.

References Cited:
1. WELL TAG NO. D 0061105

Drilling Permit No. 804179
Water right or injection well #

2. OWNER: Phil McMurray

Name: Phil McMurray
Address: 2200 N Polk, Moscow, ID 83843
City: Moscow
County: Latah
State: ID Zip: 83843

3. WELL LOCATION:

Twp. 39 North or South, Rge. 5 East or West
Sec. 60
Gov't Lot

Lat. 46° 00' 52.23" (Deg. and Decimal minutes)
Long. 117° 00' 57.71' (Deg. and Decimal minutes)

Address of Well Site: 1637 Mix Rd., Moscow, ID

4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other

5. TYPE OF WORK:

☐ New well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other

6. DRILL METHOD:

☐ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES:

Seal material: Bentonite
From (ft): 138
To (ft): 265
Quantity (lbs or ft?): 1
Placement method/procedure: Four Around Pipe

8. CASING/LINER:

Diameter (nominal) From (ft) To (ft) Gauge or Schedule Material Casing Liner Threaded Welded
6 +2.138 250 Steel ☐ ☐ ☐
14-20 300 200 PVC ☐ ☐ ☐

Was drive shoe used? ☑ Y ☐ N
Shoe Depth(s): 138

9. PERFORATIONS/SCREENS:

Perforations ☑ Y ☐ N Method: Drill
Manufactured screen ☐ Y ☑ N Type

Method of installation: Lower in hole

From (ft) To (ft) Slot size Number/ft Diameter (nominal) Material Gauge or Schedule
240 300 3/4 32 4 PVC 200

Length of Headpipe: none
Length of Tailpipe: none
Packer ☑ Y ☐ N Type

10. FILTER PACK:

Filter Material From (ft) To (ft) Quantity (lbs or ft?) Placement method
none

11. FLOWING ARTESIAN:

Flowing Artesian? ☑ Y ☐ N Artesian Pressure (PSIG): 39

Describe control device: Well Cap

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft): 275
Static water level (ft): 192

Water temp. (°F): 50
Bottom hole temp. (°F):

Describe access port: Well Cap

Well test:

Drawdown (foot): 50 gpm
Discharge or yield (gpm): Air Lift From 300
Test duration (minutes): ☑ Pump ☐ Air ☐ Other

Flowing artesian:

Water quality test or comments: Clear, no odor

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in) From (ft) To (ft) Remarks, lithology or description of repairs or abandonment, water temp.
17 0-40 Clay Tan
8 40-95 Clay Tan
250 138 Decomposed Granite
138 275 Granite
275 280 Granite Water 50 gpm
280 300 Granite

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SEP 20 2012
IDWR / NORTH

Completed Depth (Measurable): 300

Date Started: 8-15-12
Date Completed: 8-20-12

14. DRILLER'S CERTIFICATION:

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: Action Drilling Inc Co. No.: 618

Principal Driller: Alvin Carris Date: 9-18-12

Driller Date:

Operator Date: 9-18-12
Operator I:

* Signature of Principal Driller and rig operator are required.
RAY McPHERSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016

Well Log ID: 157837  Elev (ft): 2510  Depth (ft): 245  7.5’ Quad: Palouse

Latitude: 46.919475  Longitude: -117.083081  decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 36, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
18341 WA 27, Palouse, Wash., on northeast side of street; well is on southeast side of house.

Location Method:
Personal knowledge (deceased acquaintance); Whitman County Assessor; Google Earth imagery; topographic map. PLSS section is incorrect on driller’s report. Site visit (April 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>1 – 3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>3 – 5</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>5 – 192</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>192 – 210</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>210 – 230</td>
</tr>
<tr>
<td>Sand</td>
<td>230 – 245</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 826850000000022, 18341 SR 27, PALOUSE S1/2 36-17-45, Lot 00, Block 00
4.48 AC OCL, owner is now WEAVER, BOB; one story residence built in 1920.

Above, well is just right of faucet in yard.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name. RAY McPHERSON
Address: 821 BOX 138, BUSE, WASH 99161

(2) LOCATION OF WELL: County. WILSON

(3) PROPOSED USE: Domestic [☑]  Industrial [☑]  Municipal [☐]  Irrigation [☐]  Test Well [☐]  Other [☐]

(4) TYPE OF WORK: Owner's number of well [☐]  New well [☑]  Method: Dug [☑]  Bored [☐]  Deepened [☐]  Cable [☐]  Driven [☐]  Reconditioned [☐]  Rotary [☐]  Jettied [☐]

(5) DIMENSIONS:
- Drilled: 245 ft. Diameter of well 6 inches.
- Depth of completed well: 245 ft.

(6) CONSTRUCTION DETAILS:
- Casing installed: 6 1/2" Diam. from 0 ft. to 19 ft.
- Threaded [☐]  Welded [☐]  "Diam. from 19 ft. to 245 ft.
- Perforations: Yes [☐]  No [☐]
  - Type of perforator used: TORCH
  - Size of perforations: 1 1/2" by 6 in.
  - Perforations from 0 ft. to 19 ft. [☐]
  - Perforations from 19 ft. to 245 ft. [☐]

- Screeds: Yes [☐]  No [☐]
  - Manufacturer's Name:
  - Model No.:
  - Diam. [ ] ft. Slot size [ ] ft.
  - Diam. [ ] ft. Slot size [ ] ft.

- Gravel packed: Yes [☐]  No [☐]
  - Size of gravel: 1/2"
  - Gravel placed from 0 ft. to 245 ft.

- Surface seal: Yes [☐]  No [☐]
  - Meant for depth: 19 ft.
  - Material used in seal: CEMENT
  - Did any strata contain unusable water? Yes [☐]  No [☐]
  - Type of water: [ ]
  - Depth of strata:
  - Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: [ ] H.P.

(8) WATER LEVELS:
- Land-surface elevation above mean sea level: 2600 ft.
- Static level: 52 ft. below top of well Date: 5-17-79
- Artesian pressure: lbs. per square inch Date: [ ]
- Artesian water is controlled by [ ] (Cap, valve, etc.)

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes [☐]  No [☐]
  - If yes, by whom? [ ]
  - Yield: gal./min. with ft. drawdown after hrs.
  - Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

- Water Level
  - Time Water Level
  - Time Water Level
  - Time Water Level

- Temperature of water:
- Was a chemical analysis made? Yes [☐]  No [☐]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY BROWN</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>BASALT BRENNZ</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>BASALT HARD</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>BASALT SAND CLAY</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>SAND FINE BRENNZ</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>BRENNZ SAND</td>
<td>30</td>
<td>45</td>
</tr>
</tbody>
</table>

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MAY 29 1979
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started: 4-27 1979 Completed: 5-17 1979

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: RAY McPHERSON (Well Driller)
Address: 821 BOX 138, BUSE, WASH 99161
License No. 0302 Date 5-24 1979

(Date)

(Signature)
TOM AND TAMi MCREYNOLDS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 24, 2018

Well Log ID: 159560  Elev (ft): 2620 ±10  Depth (ft): 225  Quad: Viola

Latitude: 46.825405°  Longitude: -117.050909°  decimal degrees (WGS84)

⅛, SW ⅛, SW ⅛, Sec. 32, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
1301 Trestle Road, Palouse, Wash.; on south side of road

Location Method:
Assumed location is north of house, on east side of short lane/drive; Whitman County Assessor; Google Earth imagery; topographic map; driller reported "5340 Hill Road, Palouse, Wash.," but Hill Road isn't listed on any maps ("Trestle" sounds a bit like "Hill" if the first syllable is not heard). Site visit March 16, 2018 — well not observed.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 — 98</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>¹Sand and clay</td>
<td>98 — 225</td>
</tr>
</tbody>
</table>

¹Driller interpreted as granite; used comparison to 2016 landslide exposure of sediments of Bovill to the east (just west of the state line) and to sediments of Bovill in other wells in section 12, T. 40 N., R. 5 W., in Idaho.
Comments:

Whitman County Tax Parcel 200004616323390, 1301 TRESTLE RD PALOUSE, LOT 2 MCREYNOLDS SH PLAT, owner now is SHIREY LIV TRUST, CONNIE; 11.55 acres; 09/01/07: grantors were MCREYNOLDS, TOM/TAMI; 4/26/2013: building permit issued for NEW 1600SF POLE BUILDING.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Tom & Tari McClellan
Address: PO Box 877 Moscow 10 83843

(2a) STREET ADDRESS OF WELL (or nearest address): 5340 Hill Road

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
[ ] Irrigation [ ] DeWater [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one): [ ] Abandoned [ ] New well [ ]
Method: Dug [ ] Bored [ ]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS:
Diameter of well: 8" Inches.
Depth of completed well: 22' feet.

(6) CONSTRUCTION DETAILS:
Perforations:
Type of perforator used: Shell Saw
Size of perforations: 7/16 in., 195 ft.

(7) PUMP:
Manufacturer's Name:
H.P.:

(8) WATER LEVELS:
Static level:
Artesian pressure:
Artesian water is controlled by:

(9) WELL TESTS:
Water level lowered below static level:
Was a pump test made? [ ] Yes [ ] No
If yes, by whom?
Yield:
gal./min.
ft. drawn after hrs.

(10) WELL LOG OR ABANDONMENT PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL
Clay
Gravel

FROM
TO
0
98
98
225

This well has been tested for nitrates
- negative

WELL CONSTRUCTORS CERTIFICATION:
I, ____________________________, do hereby certify that the above statements are true to the best of my knowledge and belief.

Name: [ ]
Printed Name: 
(Print the name of the well driller or contractor)
Address: 412 N. 5th St. Coeur d'Alene, ID 83814
License No.: 2348
Date: 6-3-96

(USE ADDITIONAL SHEETS IF NECESSARY)

ECO 050-1-20 (9/93) **f**

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6800. The TDD number is (206) 407-6006.
ROBERT MEALEY WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 617175 Elev (ft): 2620 ±10
Depth (ft): 505 7.5’ Quad: Albion

Latitude: 46.752290 Longitude: -117.141040 decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 28 , T. 15 N , R. 45 E

Well Address and (or) Other Location Information:
12 Carriage Hill Court, Pullman, Wash., on east side of road (off Eagle Lane); well is in small pullout on north side of driveway, opposite small barn.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 16, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>From 0 — To 96</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>From 96 — To 241</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>Clay, light brown</td>
</tr>
<tr>
<td>From 241 — To 269</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td>From 269 — To 281</td>
<td></td>
</tr>
<tr>
<td>void</td>
<td>From 281 — To 282</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 282 — To 364</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td>Basalt, weathered</td>
</tr>
<tr>
<td>From 364 — To 387</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 387 — To 472</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515284911, 12 CARRIAGE HILL CT, SE1/4 LOT RC-3 CARRIAGE HILL SHPLT DIST C#1, owners are MEALEY, ROBERT H/KATRINA; 5.5 acres. One story residence built in 2006.

References Cited:
# WATER WELL REPORT

**Construction/Decommission ("x" in circle) [ ] Original INSTALLATION [ ] Notice of Intent Number [ ]**

**PROPOSED USE:** [ ] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

**TYPE OF WORK:** [ ] New well [ ] Reconditioned Method: [ ] Dug [ ] Bored [ ] Driven [ ] Deepened [ ] Pipe [ ] Other: [ ]

**DIMENSIONS:** Diameter of well: [ ] in. Depth of completed well: [ ] ft.

**CONSTRUCTION DETAILS**

- **Casing:** [ ] Welded [ ] Diam. from [ ] ft. to [ ] ft.
- **Installed:** [ ] Liner installed [ ] Diam. from [ ] ft. to [ ] ft.

**Perforations:** [ ] Yes [ ] No

- **Type of perforator used:** SAW
- **Size of perforation:** [ ] ft. to [ ] ft.

- **Screen:** [ ] Yes [ ] No [ ] Location

- **Manufacturer's Name:**
  - **Type:**
  - **Diam. Slot Size:** from [ ] ft. to [ ] ft.
  - **Size of gravel/sand:**

**Gravel/Filter packets:** [ ] Yes [ ] No

**Surface Seal:** [ ] Yes [ ] No

**Materials placed from:** [ ] ft. to [ ] ft.

**Material used in seal:** BENTONITE

**Did any strata contain unconsolidated water?** [ ] Yes [ ] No

**If Yes, Depth of strata:**

**Method of sealing strata off:**

**PUMP:**

- **Manufacturer's Name:**
- **Type:**
- **H.P.:**

**WATER LEVELS:**

- **Land-surface elevation above mean sea level:** [ ] ft.
- **Static level:** [ ] ft. below top of well
- **Artesian pressure:** [ ] lbs. per square inch
- **Artesian water is controlled by:**

**WELL TESTS:**

- **Drawdown is amount water level is lowered below static level:**
- **Was a pump test made?** [ ] Yes [ ] No
- **Yield:** [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- **Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):**
- **Date of test:**
- **Bailer test:** [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- **Artesian flow:** [ ] gpm. per month
- **Date:**
- **Temperature of water:**

**WELL CONSTRUCTION CERTIFICATION:** I, [ ] Driller [ ] Engineer [ ] Trainee, Name (first) [ ] TED WRIGHT

- **Driller/Engineer/Trainee Signature:**
- **Driller or trainee License No.:**

**IF TRAINEE:**

- **Driller's License No.:**
- **Driller's Signature:**

**CURRENT**

- **Notice of Intent No.:** 219555
- **Unique Ecology Well ID Tag No.:** AHR721
- **Water Right Permit No.:**
- **Property Owner Name:** ROBERT MEALEY
- **Well Street Address:** 1 MILE SOUTH ON EAGLE LN. RD.
- **City:** PULLMAN [ ] County WHITMAN
- **Location:** NE1/4-1/4 SE1/4 Sec 28 Twn 15N R 45 WWM [ ]
- **Lat/Long:** Lat Deg [ ] Lat Min/Sec [ ]
- **Long Deg [ ] Long Min/Sec [ ]
- **Tax Parcel No. (Required):** 0000-45-15-28-4911

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

- **Formation:**
  - **Material:**
  - **From:** [ ] ft.
  - **To:** [ ] ft.

**Drilling Company:** MCPEHRSON & WRIGHT DRILLING

- **Address:** 2246 BURRELL
- **City:** [ ] State:** [ ] Zip:** [ ] ID:** [ ]

**Contractor's Registration No.:** MCHWD1351

- **Date:** 8/22/99

**Start Date:** 4/6/06

**Completed Date:** 4/14/06

**SEP 11, 2009**

**DEPARTMENT OF ECOLOGY**

**EASTERN REGIONAL OFFICE**

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ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
WARREN AND VICKI MEISNER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 25, 2016; November 9, 2017

Well Log ID: 616709 Elev (ft): 2430 ±10 Depth (ft): 255 Quad: Albion

Latitude: 46.814960 Longitude: -117.181629 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 6, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
3802 Palouse-Albion Road, Pullman, Wash., on south side of road; well is located in front of house and west of driveway, opposite large pole building with lean-to.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery, topographic map. Site visit (April 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>19 – 107</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>107 – 122</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>122 – 133</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>133 – 215</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>215 – 235</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>235 – 255</td>
</tr>
</tbody>
</table>
Comments:

Same as the James Kesler well (about 0.4 mi to the southeast in section 5).

Whitman County Tax Parcel 200004515064190, HOWELL SH PLT #2 637027 2.5 AC, 3802 PALOUSE ALBION RD, owners are now HENDRICKSON, JOHN/MICHELE; grantors were MEISNER, WARREN/VICKI on 04/15/13; 1½ story residence built in 2010.

Photo, above right: well is to right of electrical box, below house.

References Cited:
WATER WELL REPORT

PROPOSED USE:  DeWater  Irrigation  Test Well  Other

TYPE OF WORK:  New well  Reconditioned  Method:  Drilled  Bored  Driven

DIMENSIONS: Diameter of well 8 inches, drilled 255 ft. Depth of completed well 255 ft.

CONSTRUCTION DETAILS
Casing  Welded  8” Diam. from 15 ft. to 23 ft.
Installed: Liner installed  8” Diam. from 15 ft. to 255 ft.
Perforations: Yes  No
Type of perforator used: SAW
SIZE of perf/lin. by 12 in. and no. of perf: 90 from 155 ft. to 255 ft.
Screen: Yes  No  K-Pac  Location
Manufacturer’s Name

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 185 ft. below top of well  Date 6/29/09
Artesian pressure ______ lbs. per square inch Date
Artesian water is controlled by ______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes  No  If yes, by whom? ______
Yield: gal./min. with ______ ft. drawdown after ______ hrs.
Yield: gal./min. with ______ ft. drawdown after ______ hrs.
Yield: gal./min. with ______ ft. drawdown after ______ hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Start Date 6/23/09  Completed Date 6/29/09

357876

CURRENT
Notice of Intent No. W273007
Unique Ecology Well ID Tag No. AHR 762
Water Right Permit No.
Property Owner Name WARREN & VICKI MEISNER
Well Street Address 302 ALBION RD
City PULLMAN  County WHITMAN
Location SE1/4-1/4 SE1/4 Sec 6 Twn 15 R 45 EWM 8  or WWM 8
Lat/Long Lat Deg ____ Lat Min/Sec ____
Long Deg ____ Long Min/Sec ____
Tax Parcel No. (Required) 20000-45-15-06-4190

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL FROM TO
CLAY LIGHT BROWN STIFF 0 19
BASALT STRONG BLACK 19 107
SHALE BLACK SOFT 107 122
BASALT WEATHERED SOFT BLACK 122 133
BASALT STRONG BLACK 133 215
BASALT VASCULAR BLACK SOFT 215 235
BASALT STRONG BLACK 235 255

SEP 11 2009

Drilling Company MCPHERSON & WRIGHT DRILLING
Address 2246 BURRELL
City, State, Zip LEWISTON ID 83501
Contractor’s Registration No. MCPHWD135N1  Date 8/15/09

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
## DANA MESHISHNEK WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 15, 2018

Well Log ID: D0000063  Elev (ft): 2753  Depth (ft): 305  7.5’ Quad: Robinson Lake

Latitude: 46.795657°  Longitude: -116.979895° decimal degrees (WGS84)

\[ \text{¼}, \ \text{SW} \text{ ¼}, \ \text{NW} \text{ ¾}, \ \text{Sec.} \ 21, \ \text{T.} \ 40 \text{ N}, \ \text{R.} \ 5 \text{ W} \]

### Well Address and (or) Other Location Information:

3355 Foothill Road, Moscow, Idaho; on west side of road

---

**Location Method:**

Location is for well (latitude, longitude and elevation from Candel, 2014, p. 164, well sample 29); Latah County Assessor; Google Earth imagery; topographic map

---

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 To 7</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 7 To 34</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>From 34 To 305</td>
</tr>
</tbody>
</table>

1094
Comments:
Latah County Tax Parcel RP40N05W213441, owner now is CHERRY, TODD S; 3355 FOOTHILL RD; 6.06 AC TAX #4953 SWNW & NWSW, 21 40 S.

References Cited:
1. DRILLING PERMIT NO. 87-97-N-47
Other IDWR No. T6N R5W S47

2. OWNER:
Name: MESHULIN
Address: 1510 LOCUST LANE
City: DEARY
State: ID Zip: 83823

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. USE:
Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐
Thermal ☐ Injection ☐ Other ☐

5. TYPE OF WORK check all that apply (Replacement etc.)
☐ New Well ☐ Modify ☐ Abandonment ☐ Other ☐

6. DRILL METHOD
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ☐

7. SEALING PROCEDURES

8. CASING/LINER:

9. PERFORATIONS/SCREENS
☐ Perforations Method:
☐ Screens Screen Type:

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
52 ft. below ground Artesian pressure lb.
Depth flow encountered ft. Describe access port or control devices:

11. WELL TESTS:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

13. DRILLER'S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

McPHERSON & WRIGHT DRILLING
Lewiston, Idaho 83501

Firm Name: 2246 Burrell
Firm Official: (208) 743-7295 Date:
and
Supervisor or Operator: Date 11/15/97
(Sign once if Firm Owner & Operator)
JOE MEYER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November, 2016

Well Log ID: 154781  Elev (ft): 2190 ±10  Depth (ft): 68  Quad: Elberton

Latitude: 46.981312  Longitude: -117.223254  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Joe Meyer Road, Elberton, Wash., on north side of road; Lot 9, Block 19, Elberton

Location Method:
Approximate location for Lot 9, Block 19, from Anderson Map Co. (1910); Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 3 of Bush, Garwood, and Halver (2005 [2006]) which was incorrectly located a block northeast. Site visit (September 14, 2016), did not see a well from road.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>3</td>
</tr>
<tr>
<td>Basalt</td>
<td>16</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>63</td>
</tr>
</tbody>
</table>

1097
Comments:

Whitman County Tax Parcel 127650019090000, ELB ORIG; owner is now WHITMAN COUNTY.

[This fits Lot 9 of Block 19.]

Above left, from Plat maps of Thornton and Elberton (Anderson Map Company, 1910); Lot 9 of Block 19 faces "B" Street on this plat map.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: JOE MCKEA
Address: 1126 BAY ST. GRAFTON, WASH 98030

(2) LOCATION OF WELL: County: WHITMAN
Sec. 17, T. 7 N., R. 1 W.

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well
(if more than one)
New well ☐ Method of augur ☐ Bored ☐
Deepeened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS:
Drilled: 68 ft. Depth of completed well: 68 ft.
Diameter of well: 8 inches.

(6) CONSTRUCTION DETAILS:
Casing installed: 5 ft. Diameter from 1 ft. to 17 ft.
Threaded ☐ 5 ft. Diameter from ft. to ft.
Welded ☐ 5 ft. Diameter from ft. to ft.
Perforations: Yes ☐ No ☐ Size of gravel:
Type of perforator used:
SIZE OF perforations: In. by In.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☐
Manufacturer's Name:
Type: Model No:
Diam. Slot size ft. from ft. to ft.
Diam. Slot size ft. from ft. to ft.

Gravel packed: Yes ☐ No ☐
Size of gravel: ft. to ft.
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☐
To what depth? 17 ft.
Material used in seal:
Did any strata contain unusable water? Yes ☐ No ☐
Type of water:
Depth of strata:
Method of sealing strata:

(7) PUMP: Manufacturer's Name:
Type: H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 2206
Static level 5 ft. below top of well: Date: 4-3-76
Artesian pressure lbs. per square inch: Date:
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is
lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test: 4-20-76
Test: 10 gal./min. with TOTAL ft. drawdown after hrs.
Artesian flow g.p.m. Date: 3-20-76
Temperature of water: Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and
show thickness of aquifers and the kind and nature of the material in each
stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO
SOIL 0 3
BASALT BROKEN BLACK 3 16
BASALT BLACK HARD 16 55
BASALT GREY SOFT 63 68

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: RAY MCFARSON
(Person, firm, or corporation) (Type or print)
Address: BOX 138 CHAMPAIGN, WASH 9861

[Signed] Ray McFarson
(Well Driller)
License No. 0303 Date: 4-20-76

S.F. No. 7356-00—(Rev. 4-71).

(USE ADDITIONAL SHEETS IF NECESSARY)
RAYMOND MEYER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 12, 2016

Well Log ID: 171928     Elev (ft): 2515 ±10     Depth (ft): 80     7.5’
Quad: Moscow West

Latitude: 46.678001     Longitude: -117.099159     decimal degrees (WGS84)

¼, SE ¼, SE ¾, Sec. 23 , T. 14 N , R. 45 E

Well Address and (or) Other Location Information:
202 Weber Road, Pullman, Wash., on northeast side of road

Location Method:
Location is for only house on Weber Road in SE¼, sec. 23; Whitman County Assessor; Google Earth imagery; topographic map. Moscow West quadrangle Well 12 of Bush, Provant, and Gill (1998).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th></th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
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<tr>
<td>Top soil</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, red</td>
<td>6</td>
<td>41</td>
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<td>Clay, blue (gray?)</td>
<td>41</td>
<td>45</td>
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<tr>
<td>Clay</td>
<td>45</td>
<td>46</td>
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<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>46</td>
<td>70</td>
</tr>
<tr>
<td>Basalt</td>
<td>70</td>
<td>80</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004514234501, 202 WEBER RD, SE PT E 1/2; owners are now BURKETT, STEVEN/BONNIE; 4.0 acres; one story house built in 1966.

References Cited:
WELL LOG

Record by: Driller
Source: Driller's Record

Location: State of WASHINGTON
County: Whitman
Area:

Map:

Portion: SE 1/4 sec 23, T 14 N, R 45 E
Diagram of Section

Drilling Co.: A. E. Spray Well Drilling
Address: 806 S. Jefferson, Moscow, Idaho

Method of Drilling: Cable
Date: Aug. 23, 1965

Owner: Raymond W. Meyer
Address: Pullman, Washington

Land surface, datum: 50' above
SWL: 50' Date: Aug. 23, 1965 Dims: 8' x 80'

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic supply</td>
<td>Top soil</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Clay, red</td>
<td>6</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Clay, blue</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Rock, shell</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Basalt, grey</td>
<td>46</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Basalt, black, water strata</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Casing: 8&quot; from 0-46'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface sealed with drive shoe to 46'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bailer test yield:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 gpm with 3' DD after 4 hrs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test made 8-23-65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump: 1 h.p. submersible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meyers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Turn up Sheet of sheets
DUANE MICKELSEN WELL 1

[Drilled in 2003]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 369703  Elev (ft): 2610 ±10  Depth (ft): 200  7.5’ Quad: Albion

Latitude: 46.754881°  Longitude: -117.156853°  decimal degrees (WGS84)

 specializes ¼,  NW ¼,  SW ¼,  Sec. 28,  T. 15 N,  R. 45 E

Well Address and (or) Other Location Information:
181 Pleasant View Drive, Pullman, Wash.; one of a pair of wells east of well house on northwest side of driveway

Location Method:
Location is for well with green cap; Whitman County Assessor; Google Earth imagery; topographic map. Driller reported incorrect ¼-¼ section and misspelled last name as "Mickelson." Site visit March 27, 2018 (but did not verify well tag)

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)  From  To

Overburden
Clay

Wanapum Basalt
Priest Rapids Member
Basalt of Lolo
Basalt  112 – 160
Basalt with clay  160 – 200
Comments:

The tax parcel for 181 Pleasant View Drive is Whitman County Tax Parcel 200004515283294; SW1/4 MICKELSEN SHPLT #1 LOT A-4; owners now are BLUM, MICAELA/JEFFREY, 3.59 acres; 02/01/06: Grantors were MICKELSEN, W DUANE/GAYLE to BLUM, MICAELA/JEFFREY.

There are two wells and a well house located in an easement area northeast of home at top of the lane (in Parcel A4) and east of Parcel A1 (highlighted in yellow) shown on plat map, below right.

Well with green cap is closest to well house, above left.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER Name: Duane Mickelson
Address: NW 2105 Friel Pullman WA 99163

(2) LOCATION OF WELL County: Whitman

(2a) STREET ADDRESS OF WELL: (or nearest address)

(3) PROPOSED USE
- Domestic
- Irrigation
- Industrial
- Municipal
- DeWater
- Test Well
- Other

(4) TYPE OF WORK
- Abandoned
- New well
- Method Dug
- Bored
- Deepened
- Cable
- Driven
- Reconditioned
- Rotary
- Jetted

(5) DIMENSIONS
- Diameter of well: 8 inches
- Drilled: 200 feet
- Depth of completed well: 200 feet

(6) CONSTRUCTION DETAILS
- Casing installed:
  - Diameter: 4.5 inches
  - Diam from: 12 ft to 118 ft
- Liner installed:
  - Diameter: 4.5 inches
  - Diam from: -100 ft to -200 ft
- Perforations
  - Type of perforator used: Saw
  - Size of perforations: 7/16 in by 4 in
  - Perforations from: -160 ft to -200 ft
- Screens
  - Manufacturer's Name: [Blank]
  - Model No: [Blank]
  - Dia: [Blank]
  - Slot size: [Blank]
  - Dia from: [Blank] ft to [Blank] ft
  - Dia: [Blank]
  - Slot size: [Blank]
  - Dia from: [Blank] ft to [Blank] ft
- Gravel packed
  - Yes [ ] No [X]
  - Size of gravel: [Blank]
  - Gravel placed from: [Blank] ft to [Blank] ft
- Surface seal
  - Yes [ ] No [X]
  - To what depth? 112 ft
  - Material used in seal: Bentonite
  - Did any strata contain unusable water? [Blank]
  - Type of water: [Blank]
  - Depth of strata: [Blank]
  - Method of sealing strata off: [Blank]

(7) PUMP
- Manufacturer's Name: [Blank]
- Type: [Blank]
- HP: [Blank]

(8) WATER LEVELS
- Land surface elevation above mean sea level: 101 ft
- Stale level: 101 ft below top of well: [Blank] Date: [Blank]
- Artesian pressure: [Blank] lbs per square inch: [Blank]
- Artesian water is controlled by: [Blank]

(9) WELL TESTS
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes [ ] No [X]
- If yes by whom: [Blank]
- Yield gal/min with [Blank] ft drawdown after [Blank] hrs

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
- Material
  - FROM: [Blank]
  - TO: [Blank]

RECEIVED
OCT 14 2003
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

WELL CONSTRUCTOR CERTIFICATION

I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: Uhlenkott Drilling
ADDRESS: 2401 5TH ST. Grangerville, ID 83530
(WELL DRILLER) License No: 2634

Contractor's Registration No: [Blank] Date: [Blank]

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050 1 20 (9/93)
DUANE MICKELSEN WELL 2
[DRILLED IN 2005]
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 411192  Elev (ft): 2610 ±10  Depth (ft): 228  Quad: Albion

Latitude: 46.754887°  Longitude: -117.156845°  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
181 Pleasant View Drive, Pullman, Wash.; one of a pair of wells east of well house on northwest side of driveway

Location Method:
Location is for well with blue cap (to east of well with green cap); Whitman County Assessor; Google Earth imagery; topographic map. Driller reported incorrect ¼-¼ section and misspelled last name as "Mickelson." Site visit March 27, 2018 (but did not verify well tag)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 96</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>96 – 164</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>164 – 220</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>220 – 228</td>
</tr>
</tbody>
</table>
Comments:

The tax parcel for 181 Pleasant View Drive is Whitman County Tax Parcel 200004515283294; SW1/4 MICKELSEN SHPLT #1 LOT A-4; owners now are BLUM, MICAELA/JEFFREY, 3.59 acres; 02/01/06: Grantors were MICKELSEN, W DUANE/GAYLE to BLUM, MICAELA/JEFFREY.

There are two wells and a well house located in an easement area northeast of home at top of the lane (in Parcel A4) and east of Parcel A1 (highlighted in yellow) shown on plat map, below right.

Well with blue cap is near center of photo, furthest from well house, above left.

References Cited:
Water Well Report

Construction/Decommission

ORIGINAL INSTALLATION Notice of Intent Number: W177989

PROPOSED USE: Domestic  Irrigation  Municipal
Industrial  Other

TYPE OF WORK: Owner's number of well (if more than one)
New well  Reconditioned  Method:   Cable  Rotary  Settled
Deepened  Threaded

DIMENSIONS: Diameter of well  inches drilled ft. Depth of completed well ft.

CONSTRUCTION DETAILS

Casing: Yes  No  Diameter from ft. to ft.
Installed:  ft. to  ft.
Perforations: Yes  No  Method: Saw
Size of perfor. in. by in. and of perfor. ft.
Screens: Yes  No  K-Pac  Location
Manufacturer's Name
Type  Model No.
Dia.
Dia.
Dia.
Dia.
Gravel Filter packed: Yes  No  Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: Yes  No  To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes  No
Type of water? Depth of strata

Method of sealing strata

PUMP: Manufacturer's Name
Type

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level  ft. below top of well Date
Artificial pressure lbs. per square inch Date
Artificial water is controlled by
(cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes  No  If yes, by whom?
Yield: gal/min. with dr. drawdown after hrs.
Yield: gal/min. with dr. drawdown after hrs.
Yield: gal/min. with dr. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal/min. with dr. drawdown after hrs.
Airstest gal/min. with stem set at ft. for hrs.
Art. flow gpm Date
Temperature of water °F. Was a chemical analysis made? Yes  No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller/Engineer/Trainee Name (Print) UHLENKOPF DRILLING
Driller/Engineer/Trainee Signature

Driller or trainee License No.

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information indicate all water encountered. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD. H.D.</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>B.K. BSL+</td>
<td>164</td>
<td>164</td>
</tr>
<tr>
<td>Gray Shale</td>
<td>220</td>
<td>220</td>
</tr>
</tbody>
</table>

RECEIVED
JUN 2 2005

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

DEPARTMENT OF ECOLOGY
FISCAL BUDGET

RECEIVE JUL 1 2006

EASTERN REGIONAL OFFICE

Start Date 6-2-05 Completed Date 6-2-05

Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 2/03)
DUANE MICKELSEN WELL 3
[DRILLED IN 2007]
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 499455    Elev (ft): 2630 ±10    Depth (ft): 410    7.5’    Quad: Albion

Latitude: 46.754834°    Longitude: -117.155350°    decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
1101 Kitzmiller Road (formerly 182 Pleasant View Drive), Pullman, Wash.; on south side of Kitzmiller Road (with a driveway also off of Pleasant View Drive)

Location Method:
Location is for house, based on well address reported by driller; Whitman County Assessor; Google Earth imagery; topographic map. Driller reported address as 182 Pleasant View Drive, tax parcel as 20004515283291, and misspelled last name as "Mickelson," site visit March 27, 2018 — well not observed

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
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<td>Wanapum Basalt</td>
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<td>91</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>91</td>
<td>122</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>122</td>
<td>247</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>247</td>
<td>303</td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>303</td>
<td>369</td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td>369</td>
<td>410</td>
</tr>
</tbody>
</table>
Comments:

Driller recorded address which corresponds to Whitman County Tax Parcel 200004515283601, LT B-1 SWAPP SHRT PLT #1, owners are now PETLOVANY, MICHAEL JAMES/CARI RAE; 10.93 acres; Address change: **182 Pleasant View** is now **1101 Kitzmiller Road**; 2 story rustic log residence built in 2006 and swimming pool in 2014. [SWAPP short plot was named after SWAPP, SPENCER (see 200004515283604).

Note: The driller also recorded the tax parcel as Whitman County Tax Parcel 200004515283291, which corresponds to 981 KITZMILLER RD, MICKELSEN SHPLT#1 LOT A-1, owner is now ALLEN, JAMES; 258 NW SUNRISE DR, PULLMAN WA; 5.91 acres; 06/01/16: grantors were MICKELSEN, DUANE/GAYLE to ALLEN, JAMES; 10/20/2016: building permit issued for NEW HOME POLE BUILDING COMBINATION HOME 884SF POLE BUILDING 2888SF.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

X Construction

Decommission ORIGINAL INSTALLATION Notice of Intent Number __________

PROPOSED USE: 

X Domestic 

X Industrial 

X Municipal 

DeWater 

Irrigation 

Test Well 

Other

TYPE OF WORK: Owner's number of well (if more than one)

New well 

Reconditioned Method: 

X Dug 

X Bored 

X Driven

X Deepened 

X Cable 

X Rotary 

X Jetted

DIMENSIONS: Diameter of well _______ inches, drilled _______ ft.

Depth of completed well _______ ft.

CONSTRUCTION DETAILS

Casing X Welded 

X Diameter from _______ ft. to _______ ft. 

Installed: X Liner installed _______ ft. to _______ ft.

X Diameter from _______ ft. to _______ ft.

Perforations: 

X Yes 

X No

Type of perforator used _______ 

SIZE OF PERFS: _______ in. by _______ in. and no. of perfs _______ from _______ to _______ ft.

Screens: 

X Yes 

X No 

X K-Pac Location

Manufacturer's Name _______ 

Type 

Model No. _______ 

Diam 

Slot size from _______ ft. to _______ ft.

Diam 

Slot size from _______ ft. to _______ ft.

Gravel/Filter Packed: 

X Yes 

X No

X Size of gravel/sand _______ ft. to _______ ft.

Materials placed from _______ ft. to _______ ft.

Surface Seal: 

X Yes 

X No 

To what depth? _______ ft.

Material used in seal _______ 

Did any strata contain unusable water? 

X Yes 

X No

Type of water: Good Depth of strata _______ 

Method of sealing strata off _______

PUMP: 

Manufacturer's Name _______ 

Type: _______ 

H.P. _______ 

WATER LEVELS: Land-surface elevation above mean sea level _______ ft.

Static level _______ ft. below top of well Date _______ 

Artesian pressure _______ lbs. per square inch Date _______

Artesian water is controlled by (cap, valve, etc.) _______

WELL TESTS: Drawdown is amount water level is lowered below static level _______ ft.

Was a pump test made? 

X Yes 

X No 

If yes, by whom? 

Yield gal/min with _______ ft. drawdown after _______ hrs.

Yield gal/min with _______ ft. drawdown after _______ hrs.

Yield gal/min with stem set at _______ ft. for _______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test _______

Bailer test gal/min with _______ ft. drawdown after _______ hrs.

Airest 1/8 gal/min with stem set at _______ ft. for _______ hrs.

Artesian flow _______ g.p.m. Date _______

Temperature of water _______° Was a chemical analysis made? 

X Yes 

X No

CURRENT

Notice of Intent No. __________ 

Unique Ecology Well ID Tag No. AHF 605 

Water Right Permit No. 

Property Owner Name Duane Mickelson 

Well Street Address 182 Pleasant View Lane 

City Pullman County Asotin 

Location __________ 

Sec __________ Twp __________ R __________ W __________ 

Lat/Long (s, t, r) Lat Deg _______ Lat Min/Sec _______ 

Still REQUIRED 

Long Deg _______ Long Min/Sec _______ 

Tax Parcel No. __________ 

RECEIVED

OCT 3 2007 

DEPARTMENT OF ECOLOGY 
WELL DRILLING UNIT 

NOV 05 2007 

DEPARTMENT OF ECOLOGY 
EASTERN REGION 

START DATE 8/29/07 COMPLETED DATE 9/30/07

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller X Engineer X Trainee Name (Print) _______ 

Driller/Engineer/Trainee Signature _______ 

Driller or trainee License No. _______ 

H TRAINEE, 
Driller's Licensed No. 
Driller's Signature _______ 

ECY 050-1-20 (Rev 3/05) 

The Department of Ecology does NOT warrant the Data and/or Information on this Well Report.
ROBERT MIDDLETON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 17, 2016


Latitude: 46.839183  Longitude: -117.117962  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 27, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
151 Viola Road, Palouse, Wash., on southwest side of road

Location Method:
Location is for house at well address on driller’s report; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Dirt</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 17</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>17 – 160</td>
</tr>
</tbody>
</table>
Comments:

Note that there are two houses in this parcel.

Whitman County Tax Parcel 200004516274893, 101 VIOLA RD, PALOUSE, SE1/4 LT 3 MIDDLETON FALLON SHPLT #1(2 HOUSES), now owned by BEYER, ANDREW/PRUDENCE (151 VIOLA RD); grantor MIDDLETON, ROBERT/PATRICIA/JEDEIAH on 09/30/11; 8.05 acres.

Above left: 101 Viola Road       Above right: 151 Viola Road

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: [Name] Johnson Middleton
Address: 151 Vista Rd
Palouse, Wa 99161

(2) LOCATION OF WELL: County Whitman

(2a) STREET ADDRESS OF WELL: 151 Vista Rd

(3) PROPOSED USE: [ ] Domestic [ ] Irrigation [ ] Water Well [ ] DeWater [ ] Industrial [ ] Municipal [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
- Abandoned [ ]
- New well [ ]
- Deepened [ ]
- Reconditioned [ ]
- Drilled [ ]
- Method: Dug [ ]
- Cable [ ]
- Rotary [ ]
- Jetted [ ]

(5) DIMENSIONS:
- Diameter of well: 10 inches
- Drilled: 150 feet
- Depth of completed well: 160 ft.

(6) CONSTRUCTION DETAILS:
- Casing installed: [ ] 2 ft. to 19 ft.
- Liner installed: [ ] 7 in. to 10 ft.
- Perforations: [ ] 120 ft. to 160 ft.
- Gravel packed: [ ]
- Screens: [ ]
- Manufacturer's Name: [ ]
- Type: [ ]
- Model No.: [ ]
- Diam. Slot size from ft. to ft.
- Diam. Slot size from ft. to ft.
- Gravel placed: [ ]
- Surface seal: [ ]
- Material used in seal: [ ]
- Did any strata contain unusable water? [ ]
- Type of water: [ ]
- Method of casing tested:

(7) PUMP: Manufacturer's Name: [ ]
Type: [ ]

(8) WATER LEVELS:
- Land surface elevation above mean sea level: 0 ft.
- Static level: 0 ft.
- Artesian level: 0 ft.
- Date: Dec 7, 2006
- Water level controlled by [ ]

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? [ ] Yes [ ] No
- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- Temperature of water [ ]
- Was a chemical analysis made? [ ] Yes [ ] No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
- [ ] 2

RECEIVED
JUN 28 2006
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

DEPT OF BUDGET
JUL 3 2006
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: [ ]
Address: 306 Salk Rd

Contractor's Registration No. [ ]
Date [ ]

(USE ADDITIONAL SHEETS IF NECESSARY)
JOHN AND WANDA MILBERT WELL 3

[DRILLED IN 2009]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D0056670  Elev (ft): 2510 ±10  Depth (ft): 100  Quad: Potlatch

Latitude: 46.928244°  Longitude: -116.942064°  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 3, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1090 Meckel Lane, Potlatch, Idaho; on north side of road

Location Method:
Location is for well, west of driveway; latitude and longitude from driller’s report; Latah County Assessor; Google Earth imagery; topographic map; site visit March 23, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 4</td>
</tr>
<tr>
<td>Loess, clay</td>
<td>4 – 50</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>50 – 75</td>
</tr>
<tr>
<td>*Basalt, soft</td>
<td>75 – 100</td>
</tr>
</tbody>
</table>

*Onaway Basalt is exposed along east side of Highway 95; thus, the basal part of this well could be in Onaway.
Comments:

Latah County Tax Parcel RP41N05W030123, owner is MILBERT, JOHN L; 1090 MECKEL LN, 4.41 AC GOVT LOT 1 TAX #5000; 3 41 5.

Well is visible just above roof of red car.


References Cited:

1. WELL TAG NO. D 004-00-7D  
2. OWNER:  
Name: John Wanda Milbaut  
Address: 1374 Hwy 10  
City: St. Maries  
State: ID  
Zip: 83861  
3. LOCATION OF WELL by legal description:  
You must provide address or Lot, Blk, Sub, or Directions to well.  
Twp: 41  
Rge: 5  
Sec: 3  
Govt Lot: 1/4  
La: 46°55' N  
Long: 116°56'  
Address of Well Site: Elk Lake Rd  
City: St. Maries  
State: ID  
Zip: 83861  
4. USE:  
☐ Domestic  ☐ Municipal  ☐ Monitor  ☐ Irrigation  
☐ Thermal  ☐ Injection  ☐ Other  
5. TYPE OF WORK: (Replacement etc.)  
☐ New Well  ☐ Modify  ☐ Abandonment  ☐ Other  
6. DRILL METHOD:  
☐ Air Rotary  ☐ Cable  ☐ Mud Rotary  ☐ Other  
7. SEALING PROCEDURES:  
<table>
<thead>
<tr>
<th>Seal Material</th>
<th>From</th>
<th>To</th>
<th>Weight / Volume</th>
<th>Seal Placement Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Was drive shoe used? ☐  
Was drive shoe seal tested? ☐  
8. CASING/LINER:  
<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 1/4</td>
<td>-58</td>
<td>300</td>
<td>PVC</td>
<td></td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Length of Headpipe ☐  
Length of Tailpipe ☐  
9. PERFORATIONS/SCREENS PACKER TYPE:  
Perforation Method: Skill Saw  
Screen Type & Method of Installation:  
<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Depth</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>-100</td>
<td>-100</td>
<td>14 HX16</td>
<td>110</td>
<td>4 1/4</td>
<td>PVC</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
10. FILTER PACK:  
<table>
<thead>
<tr>
<th>Filter Material</th>
<th>From</th>
<th>To</th>
<th>Weight / Volume</th>
<th>Placement Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:  
41 ft. below ground  
Artesian pressure ___ lb.  
Depth flow encountered __ ft. Describe access port or control devices:  
12. WELL TESTS:  
<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td></td>
<td>Pumping Level</td>
<td>1 hr</td>
</tr>
</tbody>
</table>
Water Temp. 42°F  
Bottom hole temp.  
Water Quality test or comments:  
13. LITHOLOGIC LOG: (Describe repairs or abandonment)  
<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>4</td>
<td>50</td>
<td>dirt</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>10</td>
<td>50</td>
<td>58</td>
<td>grey-black silt</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>10</td>
<td>58</td>
<td>75</td>
<td>grey-black silt</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>10</td>
<td>75</td>
<td>100</td>
<td>silt</td>
<td>Y</td>
<td>N</td>
</tr>
</tbody>
</table>
14. DRILLER’S CERTIFICATION:  
We certify that all minimum well construction standards were complied with at the time the rig was removed.  
Company Name: Brett Lonenko Dilling  
Principal Driller: John Wanda  
Driller or Operator II: John Wanda  
Date: 8/31/09  
Operator I: John Wanda  
Principal Driller and Rig Operator Required.  
Operator I must have signature of Driller/Operator II.
LARRY MILLER WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 19, 2016; November 9, 2017

Well Log ID: 169795    Elev (ft): 2428    Depth (ft): 225    7.5’    Quad: Albion

Latitude: 46.75661    Longitude: -117.21303 decimal degrees (WGS84)

NE ¼, NE ¼, SW ¼, Sec. 25 , T. 15 N , R. 44 E

Well Address and (or) Other Location Information:
1451 Brayton Road, Pullman, Wash., on south side of road (and west, inside corner)

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-09), well plots east of house; Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 — 10</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured, soft</td>
<td>10 — 18</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>18 — 32</td>
</tr>
<tr>
<td>Basalt, fractured, soft</td>
<td>32 — 43</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>43 — 117</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>117 — 118</td>
</tr>
<tr>
<td>Basalt</td>
<td>118 — 122</td>
</tr>
<tr>
<td>Basalt, fractured, soft</td>
<td>122 — 126</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>126 — 129</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating fractured (soft) and hard units</td>
<td>129 — 225</td>
</tr>
</tbody>
</table>
Comments:

The top of the Grande Ronde Basalt compares directly to an outcrop about 2,500 ft to the southeast (Moxley, 2012) where chemistry shows it to be a Spokane Falls flow. The very bottom of the well is close to the contact with the R2 Meyer Ridge Member.

Whitman County Tax Parcel 200004415253190, 1451 BRAYTON RD, PULLMAN, SW1/4 NE1/4 COR GARAGE & HOMESITE; owners are MILLER, LARRY T/LANI M; 2.0 acres.

References Cited:

WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Larry Miller
Address: Pullman

(2) LOCATION OF WELL: County Whitman
(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: Domestic □ Irrigation □ Industrial □ Municipal □ DeWater □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well
Abandoned □ New well □ Method: Dug □ Bore □ Driven □ Deepened □ Reconditioned □ Cable □ Rotary □ Jetted □

(5) DIMENSIONS: Diameter of well 8 inches. Drilled 225 feet. Depth of completed well 225 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 8" Diam. from 1 ft. to 23 ft.
Welded □ Liner installed □ Threaded □
Perforations: Yes □ No □ Type of perforator used

SIZE of perforations: in. by in.
perforations from ft. to ft.

Screens: Yes □ No □ Size of gravel
Gravel packed: Yes □ No □ Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes □ No □ To what depth? 43 ft.
Material used in seal: bentonite
Did any strata contain unusable water? Yes □ No □
Type of water: Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name

(8) WATER LEVELS:
Static level 145 ft. below top of well Date 9/13/90
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time takes as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal./min. with ft. drawdown after hrs.
Air test 75 gal./min. with stem set at 226 ft. for 30 min. hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes □ No □

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>overburden</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>soft frac., basalt</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>basalt, firm</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>soft frac., basalt</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td>basalt, firm</td>
<td>43</td>
<td>112</td>
</tr>
<tr>
<td>soft frac., basalt</td>
<td>112</td>
<td>118</td>
</tr>
<tr>
<td>basalt, firm</td>
<td>118</td>
<td>123</td>
</tr>
<tr>
<td>soft frac., basalt</td>
<td>123</td>
<td>126</td>
</tr>
<tr>
<td>clay</td>
<td>126</td>
<td>129</td>
</tr>
<tr>
<td>soft frac., basalt</td>
<td>129</td>
<td>142</td>
</tr>
<tr>
<td>firm, basalt</td>
<td>142</td>
<td>146</td>
</tr>
<tr>
<td>frac., basalt</td>
<td>146</td>
<td>148</td>
</tr>
<tr>
<td>basalt, firm</td>
<td>148</td>
<td>160</td>
</tr>
<tr>
<td>frac., basalt</td>
<td>160</td>
<td>180</td>
</tr>
<tr>
<td>frac., basalt</td>
<td>180</td>
<td>215</td>
</tr>
<tr>
<td>frac., basalt</td>
<td>215</td>
<td>225</td>
</tr>
</tbody>
</table>

JAN 24 1991

DEPARTMENT OF ECO
SOUTHEAST REGION

Well constructor certification:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Whitwell Drilling
Address 1019 Powers Lewis Street
Contractor's Registration No. 1999
(Signed) Roger Witt License No. 0623
(WELL DRILLER) 1/30/91

(USE ADDITIONAL SHEETS IF NECESSARY)
MARK MILLER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016

Well Log ID: 1022001  Elev (ft): 2360 ±10  Depth (ft): 460  Quad: Colfax North

Latitude: 46.931872  Longitude: -117.314443  decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 31, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
328 Red Tail Ridge Road, Colfax, Wash., north side of road; well is north of Tom Hockett’s well and has a blue cap.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From 0 To 6</td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member (basalt of Lolo) and Roza Member, undivided</td>
<td>Basalt 6 – 320</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td>Basalt, soft, brown 320 – 400</td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member (?)</td>
<td>Basalt, red 400 – 460</td>
</tr>
</tbody>
</table>

1121
Comments:

Whitman County Tax Parcel 101420000130000; RED TAIL RIDGE SUBD, Lot 13, Block 00, owners are MILLER, MARK/JULIE; 5.3 acres. [No building construction as of site visit.]

Above, right, parcel is north of parcel in yellow (Hockett).

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Decommission

Notice of Intent Number

PROPOSED USE:
- Domestic
- Water Well
- Irrigation
- Other

TYPE OF WORK:
- New Well
- Reconditioned
- Method: Dug
- Bored
- Driven
- Others

DIMENSIONS:
- Diameter of well: 10 inches, drilled 18 ft.
- Depth of completed well: 400 ft.

CONSTRUCTION DETAILS
- Casing: Galvanized
- Type of perforator used: Skill Saw
- Size of perforation: 1/4 in. and no. of perforations: 2 from 10 ft. to 40 ft.

WATER LEVELS:
- Land-surface elevation above mean sea level: 400 ft.
- Static level: 400 ft. below top of well
- Artesian pressure: 0 lbs. per square inch
- Artesian water is controlled by:

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made?: Yes
- Yield before pump test: 0.0 gpm
- Drawdown after pump test: 0.0 ft.

WELL CONSTRUCTION CERTIFICATION:
- Driller: Brett Uhlenkott
- Engineer:
- Trainee: Name (Print)
- Drilling Company: Brett Uhlenkott Drilling
- Address: PO Box 2, 33, 40, 50
- City, State, Zip: Spokane, WA 83333
- Contractor: Brett Uhlenkott Drilling
- Registration No.:
- Date: 5-15-15


1123
STANLEY M. MILLER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: D0003727  Elev (ft): 2630 ±10  Depth (ft): 180  Quad: Moscow East

Depth (ft):

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor description</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Sand</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Clay</td>
<td>23</td>
<td>57</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>57</td>
<td>120</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>120</td>
<td>180</td>
</tr>
</tbody>
</table>

Latitude: 46.749060°  Longitude: -116.962432°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
2950 Darby Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well, in front lawn on right (east) side of driveway; Latah County Assessor; Google Earth imagery; topographic map; driller reported well address as 2077 Darby Road, Moscow, but County Assessor shows parcel for Stanley M. Miller at 2950 Darby Road; site visit March 17, 2018
Comments:

Latah County Tax Parcel RP39N05W047363, MILLER, STANLEY M; 2950 DARBY RD, E 1/2 OF WEST 706.21 OF NESE, 4 39 5.

Well is in front lawn to right of driveway.

References Cited:
**WELL DRILLER'S REPORT**

**1. DRILLING PERMIT NO.**

Other IDWR No. 

**2. OWNER:**

Name: Stanley M. Miller  
Address: 3217 Atherson Road  
City: Moscow  
State: ID  
Zip: 83843

**3. LOCATION OF WELL by legal description:**

Sketch map location must agree with written location.

**4. USE:**

- Domestic  
- Municipal  
- Monitor  
- Irrigation  
- Thermal  
- Injection  
- Other

**5. TYPE OF WORK**

- New Well  
- Modify  
- Abandonment  
- Other

**6. DRILL METHOD:**

- Air Rotary  
- Cable  
- Mud Rotary  
- Other

**7. SEALING PROCEDURES:**

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiatorite</td>
<td>0</td>
<td>48</td>
</tr>
</tbody>
</table>

Was drive shoe used? Y  
Shoe Depth(s)  
Was drive shoe seal tested? Y

**8. CASING/LINER:**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>12'</td>
<td>120'</td>
<td>10'</td>
<td>Steel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6&quot;</td>
<td>120'</td>
<td>180'</td>
<td>160'</td>
<td>PVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe  
Length of Tailpipe

**9. PERFORATIONS/SCREENS:**

- Perforations  
- Method

- Screens  
- Screen Type

**10. STATIC WATER LEVEL OR ARTESSIAN PRESSURE:**

(15) ft. below ground  
Artesian pressure ___________ lb.

Depth flow encountered ___________ ft.  
Describe access port or control devices: ___________

**11. WELL TESTS:**

<table>
<thead>
<tr>
<th>Yield gal/min</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 plus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Temp:  
Water Quality test or comments:  
Depth first Water Encountered  

**12. LITHOLOGIC LOG:**

(Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>0</td>
<td>25</td>
<td>dirt</td>
</tr>
<tr>
<td>25</td>
<td>12</td>
<td>145</td>
<td>clay</td>
</tr>
<tr>
<td>145</td>
<td>180</td>
<td>233</td>
<td>silt</td>
</tr>
<tr>
<td>233</td>
<td>120</td>
<td>57</td>
<td>sand &amp; clay</td>
</tr>
<tr>
<td>120</td>
<td>140</td>
<td>57</td>
<td>loam</td>
</tr>
<tr>
<td>140</td>
<td>180</td>
<td>140</td>
<td>sand &amp; clay</td>
</tr>
<tr>
<td>180</td>
<td>200</td>
<td>140</td>
<td>gravel</td>
</tr>
</tbody>
</table>

**RECEIVED**

APR 24 1998

NORTHERN REGION
IDWR

**13. DRILLER'S CERTIFICATION**

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: <signature>  
Firm Official: <name>  
Date: 4/23/98

Firm No: 125  
Supervisor or Operator: <signature>  
Date: 4/23/98

(Sign once if Firm Official & Operator)
BRAD MINDEN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018

Well Log ID:     D0056712  Elev (ft):     2500 ±10  Depth (ft):     170  7.5’  Quad:     Palouse

Latitude:  46.90028  Longitude:  -117.02917  decimal degrees (WGS84)

SE ¼, NW ¼, NE ¼, Sec. 13, T. 41N, R. 6W

Well Address and (or) Other Location Information:
1217 West Cove Road, Viola, Idaho; on west side of road

Location Method:
Location is for well (latitude and longitude from driller’s report); Latah County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>¹Cambrian—Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Clay and rock</td>
<td>20</td>
</tr>
<tr>
<td>Clay and shale, red, white, brown</td>
<td>30</td>
</tr>
<tr>
<td>Rock, gray and blue</td>
<td>150</td>
</tr>
<tr>
<td>Shale, red and tan</td>
<td>160</td>
</tr>
</tbody>
</table>

¹Colors and location suggest weathered basement quartzites, argillites.
Comments:

Latah County Tax Parcel RP41N06W131053 (outlined below), owner is MINDEN, BRAD; 1217 WEST COVE RD, 9.77 AC TAX #4159 NE 1/4, 13 41 6; OR perhaps RP41N06W130153 (to the north), owner is MINDEN, DUANE ALLEN LIFE EST; 1255 WEST COVE RD, 15.48 AC TAX #3706 N 1/2 NE, 13 41 6.

References Cited:
**IDAHINO DEPARTMENT OF WATER RESOURCES**

**WELL DRILLER’S REPORT**

1. **WELL TAG NO. D** 0056712
   
   **Drilling Permit No.** 858888
   
   **Water right or injection well #**

2. **OWNER:** KEND MILLER
   
   **Name:** KEND MILLER
   
   **Address:** 1134 West Cove Rd
   
   **City:** Viole
   
   **State:** ID
   
   **Zip:** 83872

3. **WELL LOCATION:**
   
   **Twp.:** 41 North or South
   
   **Rng.:** 06 East or West
   
   **Sec.:** 13
   
   **Acreage:** 1/4
   
   **Govt. Lot:**
   
   **County:** LAKE
   
   **Lat.:** 46° 54.0817’
   
   **Long.:** 117° 01.750’
   
   **Address of Well Site:** 3 miles down West Cove Rd
   
   **City:** Viole

4. **USE:**
   
   **Domestic** ☐
   
   **Municipal** ☐
   
   **Monitor** ☐
   
   **Irrigation** ☐
   
   **Thermal** ☐
   
   **Injection** ☐
   
   **Other** ☐

5. **TYPE OF WORK:**
   
   **New well** ☐
   
   **Replacement well** ☐
   
   **Modify existing well** ☐
   
   **Abandonment** ☐
   
   **Other** ☐

6. **DRILL METHOD:**
   
   **Air Rotary** ☐
   
   **Mud Rotary** ☐
   
   **Cable** ☐
   
   **Other** ☐

7. **SEALING PROCEDURES:**
   
   **Seal material**
   
   **From (ft) To (ft) Quantity (lbs or ft) Placement method/procedure**
   
   **Bentonite**
   
   **0’ 40’**
   
   **800lbs Poor In**
   
   **Chips**

8. **CASING/LINER:**
   
   **Diameter (nominal)**
   
   **From (ft) To (ft) Gauge or Schedule Material Casing Liner Threaded Welded**
   
   **6”**
   
   **0’ 38’ 42’ Steel**
   
   **4”**
   
   **7’ 17’ 5DR- PVC**

   **Was drive shoe used?** ☐ Y ☐ N

9. **PERFORATIONS/SCREENS:**
   
   **Perforations** ☐ Y ☐ N
   
   **Method**
   
   **Saw Cut**

10. **FILTER PACK:**
    
    **Filter Material**
    
    **From (ft) To (ft) Quantity (lbs or ft) Placement method**
    
    **4”**
    
    **PVC**

11. **FLOWING ARTESIAN:**
    
    **Flowing Artesian?** ☐ Y ☐ N
    
    **Artesian Pressure (PSIG)**
    
    **Describe control device**

12. **STATIC WATER LEVEL AND WELL TESTS:**
    
    **Depth first water encountered (ft):** 130’
    
    **Static water level (ft):** 22’
    
    **Water temp. (°F):** Cold
    
    **Bottom hole temp. (°F):**
    
    **Describe access port**

    **Well test:**
    
    **Drawdown (feet):**
    
    **Discharge or yield (gpm):** 1401
    
    **Test duration (minutes):** 6.06
    
    **Flowing artesian:**

    **Test method:**
    
    **Pump** ☐
    
    **Bailer** ☐
    
    **Air** ☐
    
    **Flowing artesian**

13. **LITHOLOGIC LOG AND/OR REPAIRS OR ABANDONMENT:**
    
    **Bore Dia. (in) From (ft) To (ft) Remarks, lithology or description of repairs or abandonment, water temp.**
    
    **Y** ☐
    
    **N** ☐

14. **DRILLER’S CERTIFICATION:**
    
    **If we certify that all minimum well construction standards were complied with at the time the rig was removed.**

    **Company Name:**
    
    **Principal Driller:**
    
    **Date:** 5-17-2010
    
    **Driller:**
    
    **Date:** 5-17-2010
    
    **Operator:**
    
    **Date:**
    
    **Operator I:**
    
    **Date:**
    
    **Signature of Principal Driller and rig operator are required.**
Well Log ID: NA  Elev (ft): 2920 ±10  Depth (ft): 454  7.5’ Quad: Robinson Lake

Latitude: 46.803167  Longitude: -116.958883 decimal degrees (WGS84)

SW ¼, SW ¼, SW ¼, Sec. 15, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1155 Idlers Rest Road, Moscow, Idaho; at end of a lane and driveway that extend about 0.5 mi north from Idlers Rest Road.

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>*Granite</td>
<td>From 0 – 454</td>
</tr>
</tbody>
</table>

1130
Comments:

*Granite is difficult to tell from coarse Sediments of Bovill, but driller reported firm rock and did not install a liner so unit is probably entirely granite.

Latah County Tax Parcel RP40N05W156405, owner is MITAL, JAMES M; 1.01 acres.

References Cited:
11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>approx. 34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Temp. ___________________________  Bottom hole temp. ___________________________
Water Quality test or comments: ___________________________________________________________________

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore No.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>22</td>
<td>granite firm</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>34</td>
<td>granite firm</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: WW DRILLING  Firm No.: 58
Firm Official: Carl Witt  Date: 7/23/95
and
Supervisor or Operator: Carl Witt  Date: 7/23/95
LANCE MITCHELL WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 18, 2018

Well Log ID: 431949  Elev (ft): 2640 ±10  Depth (ft): 478  7.5’  Quad: Pullman

Latitude: 46.710809°  Longitude: -117.216805°  decimal degrees (WGS84)

влек ¼,  NE ¼,  SW ¼,  Sec. 12,  T. 14 N,  R. 44 E

Well Address and (or) Other Location Information:
20992 U.S. 195, Pullman, Wash., on west side of highway

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼ Section

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 116</td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>116 – 150</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>150 – 162</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>162 – 315</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>315 – 338</td>
</tr>
<tr>
<td>Sand</td>
<td>338 – 344</td>
</tr>
</tbody>
</table>

Grande Ronde Basalt
N2 magnetostratigraphic unit
Sentinel Bluffs Member

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>344</td>
<td>469</td>
<td>470</td>
</tr>
<tr>
<td>Clay(?)</td>
<td>469</td>
<td>470</td>
<td>478</td>
</tr>
</tbody>
</table>

*The lack of rock chip chemistry in this area means that the interpreted sequence may not be correct.

**Comments:**

Whitman County Tax Parcel 200004414123661, 20992 SR 195, LOT 1 OF SURVEY 685557 12AC; owners are MITCHELL, LANCE W/DEBRA; 12.0 acres; one story residence built in 2005; shop built in 2006.

**References Cited:**
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name
Lance Mitchell
Address: 805 NW State St., Pullman
Indonesia

(2) LOCATION OF WELL: County
Whitman

(3) PROPOSED USE:
- Domestic
- Irrigation
- Test Well
- Other

(4) TYPE OF WORK: Owner's number of well
- Abandoned
- New well
- Reconditioned
- Drilled

Method: Dug

Deerfield

Diameter of well

(5) DIMENSIONS:
- Drilled 4.75
- Depth of completed well 4.75

(6) CONSTRUCTION DETAILS:
- Casing Installed: 8
- Liner installed: 2
- Perforations: Yes
- Type of perforator used: saw cut

- Size of perforations 1/4 x 3 in.

- Gravel packed: Yes
- Size of gravel

- Gravel placed from ft. to ft.

- Surface seal: Yes

- Material used in seal

- Did any strata contain unusable water? Yes

- Depth of strata

- Method of sealing strata off

(7) PUMP: Manufacturer's Name
H.P.

(8) WATER LEVELS:
- Static level 21 ft. below top of well
- Artesian pressure lbs. per square inch
- Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No
- Yield:
- ft. drawdown
- recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time
- Water Level
- Time
- Water Level
- Time
- Water Level

- Date of test

- Bailer test
- Artesian flow g.p.m.
- Temperature of water

- Was a chemical analysis made? Yes No

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:
- Material
- FROM
- TO
- Foot
- Foot

- Note

- Foot

- Foot

- Foot

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

RECEIVED
APR 25 2005

DEPARTMENT OF ECOLOGY
CONSTRUCTION UNIT

WORK STARTED: Mar 14 2005
COMPLETED: Mar 28 2005

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: William F. Jacobi
PERSON, FIRM, OR CORPORATION: (PEO)
ADDRESS: 20 A Fairview, IL 83591
LICENSE NO. 1750

CONTRACTOR'S REGISTRATION NO.

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.

ECY 050-1-20 (9/93)
JEFF MIX WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016

Well Log ID: D0046188  Elev (ft): 2650 ±10  Depth (ft): 375  Quad: Moscow West

Depth 7.5’

Latitude: 46.745259  Longitude: -117.007679  decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 6, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1041 North Almon Street, Moscow, Idaho, on west side of road;

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>0 – 168</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>168 – 360</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>360 – 370</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>370 – 375</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N05W068860, 1041 N ALMON, owner is MIX, JEFFREY P; 3.0 acres.

References Cited:
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D
DRILLING PERMIT NO.
Water Right or Injection Well No.

2. OWNER:
Name: Jeff Nix
Address: 1521 Ridge View Dr.
City: Moscow
State: ID
Zip: 83843

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk. Sub. or Directions to well.
Twp: 39 North or South
Rge: 5 East or West
Sec: 6
GoVt Lot: South 1/4 or North 1/4
County: Latah
Lat: 46° 30' 1/4 North
Long: 116° 30' 1/4 West
Depth First Water Encounter: 360

4. USE:
□ Domestic
□ Municipal
□ Irrigation
□ Monitor
□ Other

5. TYPE OF WORK: check all that apply
□ New Well
□ Modify
□ Abandonment
□ Other
□ Replacement etc.

6. DRILL METHOD:
□ Air Rotary
□ Cable
□ Mud Rotary
□ Other

7. SEALING PROCEDURES

8. CASING/LINER:

9. PERFORATIONS/SCREENS PACKER TYPE

10. FILTER PACK:

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

12. WELL TESTS:

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

14. DRILLER'S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: UHLNKOTTI DRILLING
Firm No.: 128

Principal Driller: 
Driller or Operator II: 
Operator I:

Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II.
BENNO MOHR WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 709682  Elev (ft): 2630 ±10  Depth (ft): 354  7.5’ Quad: Pullman

Latitude: 46.706293  Longitude: -117.222382  decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 12, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
865 Country Club Road, Pullman, Wash., north side of road, first house on west side of long lane.

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 12, 2016).

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>80</td>
<td>103</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>103</td>
<td>149</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>149</td>
<td>302</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>302</td>
<td>321</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>321</td>
<td>350</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>350</td>
<td>354</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004414123791, 865 COUNTRY CLUB RD, ROGERS/HAWES COUNTY CLUB RD SHPLT, Lot 1; owners are MOHR, BENNO/JULIE ANN; 6.467 acres; 2 story residence built in 2011; grantor was ROGERS, JUSTIN J on 10/26/09.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

[ ] Decommission ORIGINAL INSTALLATION
[ ] Construction

Notice of Intent Number: 0052

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)
[ ] New well [ ] Reconditioned Method: [ ] Dug [ ] Bored [ ] Driven
[ ] Deepened

DIMENSIONS: Diameter of well 8 inches, drilled 354 ft.
Depth of completed well 354 ft.

CONSTRUCTION DETAILS

Casing: [ ] Yielded [ ] Liner installed
Installed:
[ ] Casing[ ] Irrigation, Diam. from 4 ft. to 8 ft.
[ ] Diam. from 14 ft. to 20 ft.

Perforations:
[ ] Yes [ ] No

Type of perforator used: [ ] Skill saw

SIZE of perfor: [ ] in. by [ ] in. and no. of perfor: [ ] from 3 in. to 3 in.

Screens: [ ] Yes [ ] No [ ] K-Pac Location

Manufacturer's Name:

Type [ ] Model No.

Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel/Filter pack: [ ] Yes [ ] No Size of gravel/Filter

Materials placed from ft. to ft.

Surface Seal: [ ] Yes [ ] No To what depth? 80 ft.

Material used in seal bentonite [ ] granulated

Did any strata contain unsuitable water? [ ] Yes [ ] No

Type of water? Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type [ ] HP.

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level: 320 ft. below top of well Date 11-11-10
Artesian pressure lbs. per square inch Date

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount w.-t. level is lowered below static level

Was a pump test made? [ ] Yes [ ] No

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken to zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level

Date of test

Bailer test gal./min. with ft. drawdown after hrs.

Airstest 10 gal./min. with stem set at 354 ft. for 1 hrs.

Artesian flow g.p.m. Date

Temperature of water [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainer Name (if any) Brett Ulenkott

Driller/Engineer/Trainer Signature 04/14/2010

Drilling Company Brett Ulenkott Drilling, LLC

PO Box 233

Cottonwood, ID 83522

City, State, Zip

Contractor's Registration No.

Driller's License No.

Start Date 11-11-2010 Completed Date 11-17-10

Department of Ecology

Eastern Regional Office

RECEIVED

JAN 17 2011

If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
NATHAN MOORE WELL 1

[DRILLED JUNE 28, 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 26, 2016

Well Log ID: 616701 Elev (ft): 2490 Depth (ft): 155 7.5'

Quad: Garfield

Latitude: 47.004894 Longitude: -117.166762 decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 5, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
1302 Anderson Road, Garfield, Wash., on south side of road; well is in front lawn, between road and newer tan house that is close to road

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision and tax parcel number are incorrect on driller’s report. Site visit (April 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>0 – 15</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>15 – 66</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>66 – 71</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>71 – 125</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>125 – 142</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>142 – 155</td>
</tr>
</tbody>
</table>
Comments:

There are two wells on this property: Nathan Moore well 1, and Nathan and Jessica Moore well 2 (drilled July 25, 2007).

Whitman County Tax Parcel 128900000000005, GFD N1/2 5-17-45 18.795 AC SHORTPLAT 6-18-2007, 1302 ANDERSON RD, owner is MOORE, NATHAN C.

Left, well is in front yard (left of center, in shadow).

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)  
Decommission ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE:  
- Domestic □  Industrial □  Municipal □  
- DeWater □  Irrigation □  Test Well □  Other □

TYPE OF WORK:  
- Owner’s number of well (if more than one) □  
- New well □  Reconditioned □  Method: □  Drilled □  Bored □  Driven □  
- Diameter: □  Depth: □

DIMENSIONS:  
- Diameter of well: □  inches, drilled: □  ft.  
- Depth of completed well: □  ft.

CONSTRUCTION DETAILS

Casing: □  Welded □  Diam. from □  ft. to □  ft.  
- Installed: □  Riser installed □  Diam. from □  ft. to □  ft.  
- Threaded □  Diam. from □  ft. to □  ft.

Perforations: □  Yes □  No  
- Type of perforator used SAW  
- Size of perforations (in., mm.) □  No □

Screens: □  Yes □  No □  K-Pac □  Location □  
- Manufacturer’s Name □  
- Type □  Model No. □  
- Diameter □  Slot size □  from □  ft. to □  ft.

Gravel/Filter packed: □  Yes □  No □  Size of gravel/sand □  
- Materials placed from □  ft. to □  ft.

Surface Seals: □  Yes □  No  
- To the depth: □  ft.  
- Material used: □  BENTONITE □

Did any strata contain usable water? □  Yes □  No  
- Type of water: □  Depth of strata □

Method of sealing strata off: □

PUMP:  
- Manufacturer’s Name □  
- Type □  H.P. □

WATER LEVELS:  
- Land-surface elevation: □  ft.  
- Above mean sea level: □  ft.  
- Static level: □  ft. below top of well □
- Date: □/□/□□  
- Artesian pressure: □  lbs. per square inch □  Date □
- Artesian water controlled by □

WELL TESTS:  
- Drawdown is amount water level is lowered below static level □
- Was a pump test made? □  Yes □  No □  If yes, by whom? □
- Yield: □  gal./min. □  ft. □  drawdown after __________ hrs.  
- Yield: □  gal./min. □  drawdown after __________ hrs.  
- Yield: □  gal./min. □  drawdown after __________ hrs.
- Recovery time: __________ hrs.  
- Water level measured from well top to water level □
- Water level: □  Time □

Date of test: □  Bailer test: □  gal./min. □  drawdown after __________ hrs.  
- Airstest: □  15 gal./min. □  with stem set at __________ ft. for __________ hrs.  
- Artesian flow: g.p.m. □  Date □
- Temperature of water: □  Was a chemical analysis made? □  Yes □  No

WELL CONSTRUCTION CERTIFICATION:  
- I certify that this well was constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. □  Materials used and the information reported above are true to my best knowledge and belief.

Driller □  Engineer □  Trainer □
Driller/Engineer/Trainer Signature □

Driller or trainer License No. □

Driller's License No. □
Driller’s Signature □

ECY 050-1-20 (Rev 08/08)  If you need this document in an alternate format, please call the Water Resources Program at 360-786-6000.  Persons with hearing loss can call 711 for Washington Relay Service.  Persons with a speech disability can call 877-833-6341.

CURRENT

Notice of Intent No. W218061
Unique Ecology Well ID Tag No. AHR7228
Water Right Permit No. □

Property Owner Name NATHAN MOORE
Well Street Address   1302 ANDERSON RD
City GARDENFIELD County WHITMAN
Location NW1/4/1/4  SW1/4 Sec 5 Twn 17N R 45  EWM □  
whosoeverStill REQUIRED □

Lat/Long  Lat Deg   Lat Min/Sec □  Long Deg   Long Min/Sec □

Tax Parcel No. (Required) 2-0000-44-17-18-8690

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation:  
- Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY YELLOW BROWN STIFF</td>
<td>0</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>15</td>
</tr>
<tr>
<td>BASALT WEATHERED WIKE</td>
<td>56</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>71</td>
</tr>
<tr>
<td>BASALT WEATHERED WEAK</td>
<td>125</td>
</tr>
<tr>
<td>SAND COURSE</td>
<td>142</td>
</tr>
<tr>
<td>SAND COURSE</td>
<td>155</td>
</tr>
</tbody>
</table>

Start Date 6/25/07  Completed Date 6/28/07

Drilling Company: MCPHERSON & WRIGHT DRILLING
Address: 2246 BURRELL
City, State, Zip LEWISTON, ID, 83501
Contractor’s Registration No. MCPHWD135N1  Date 8/22/09
NATHAN AND JESSICA MOORE WELL 2

[DRILLED JULY 5, 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 29, 2016

Well Log ID: 616707  Elev (ft): 2450 ±10  Depth (ft): 230  Quad: Garfield

Latitude: 47.004339  Longitude: -117.168458  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1302 Anderson Road, Garfield, Wash.; on south side of road, likely near old farmhouse

Location Method:
Location is for farm house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision and tax parcel number are incorrect on driller’s report. Site visit (April 18, 2016) but did not locate well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td></td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
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<td>72</td>
</tr>
<tr>
<td>Basalt, weathered</td>
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<td>92</td>
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<td>Latah Formation</td>
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<td></td>
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<tr>
<td>Vantage Member</td>
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<td>92</td>
<td>122</td>
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<tr>
<td>Sand, coarse-grained</td>
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<td>92</td>
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<tr>
<td>Clay, green</td>
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<td>151</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td>151</td>
<td>189</td>
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<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
<td>151</td>
<td>189</td>
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<tr>
<td>Sentinel Bluffs Member(?)</td>
<td></td>
<td>189</td>
<td>210</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>189</td>
<td>189</td>
<td>210</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>210</td>
<td>210</td>
<td>230</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>230</td>
<td>230</td>
<td>230</td>
</tr>
</tbody>
</table>

1145
Comments:

There are two wells on this property: Nathan Moore well 1 (drilled June 28, 2007), and Nathan and Jessica Moore well 2. Assumed that well 2 was collared at a lower elevation than the 155-ft-deep well 1, which would place it near the farm house and other older buildings on the property.

Whitman County Tax Parcel 128900000000005, GFD N1/2 S-17-45 18.795 AC SHORTPLAT 6-18-2007, 1302 ANDERSON RD, owner is MOORE, NATHAN C.
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)
- Decommission ORIGINIAL INSTALLATION

Notice of Intent Number

- Proposed Use:
  - Domestic
  - Industrial
  - Irrigation
  - Municipal
  - DeWater
  - Irrigation
  - Test Well
  - Other

- Type of Work:
  - Owner's number of well (if more than one):
  - New well
  - Reconditioned
  - Method:
  - Drilled
  - Bored
  - Driven

- Dimensions:
  - Diameter of well: 8 inches, drilled 230 ft.
  - Depth of completed well: 230 ft.

CONSTRUCTION DETAILS

- Casing: Welded 8' Diam. from +1 ft. to 20 ft.
- Installed: Drilled 11/2" Diam. from 10 ft. to 230 ft.
- Threaded 11/2" Diam. from __ ft. to __ ft.

- Perforations:
  - Yes

- Type of perforator:
  - SAW

- Size of perfor. 10/16" by 12 in. and no. of perf. 90/100 from 170 ft. to 230 ft.

- Screen:
  - Yes

- Manufacturer's Name

- Type:
  - Model No.

- Diam. Slot size from __ ft. to __ ft.

- Diam. Slot size from __ ft. to __ ft.

- Gravel/Filter pack:
  - Yes
  - No

- Size of gravel:

- Materials placed from __ ft. to __ ft.

- Surface Seal:
  - Yes

- No

- To what depth? 20 ft.

- Material used in seal

- BENTONITE

- Did any strata contain unusable water?
  - Yes
  - No

- Type of water:

- Method of sealing strata off

PUMP:

- Manufacturer's Name

- Type:

- H.P.

WATER LEVEL:

- Land surface elevation above mean sea level

- Static level 101 ft. below top of well

- Date 7/5/07

- Artisan pressure

- Flow per square inch

- Date

- Artisan water is controlled by:

WELL TEST:

- Drawdown is amount water level is lowered below static level

- Was a pump test made?
  - Yes
  - No

- If yes, by whom:

- Yield:
  - gal/min. with __ ft. drawdown after __ hrs.

- Yield:
  - gal/min. with __ ft. drawdown after __ hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
</table>

- Date of test

- Bailer test
  - gal/min. with __ ft. drawdown after __ hrs.

- Air test
  - 30 gal/min. with stem set at __ ft. for __ hrs.

- Artisan flow

- G.P.M.

- Date

- Temperature of water

- Was a chemical analysis made?
  - Yes
  - No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller
- Engineer
- Trainee

- Name (first) TED WRIGHT

- Driller/Engineer/Trainee Signature

Driller or trainee License No.

IF TRAINEE: Driller's License No.

Driller's Signature:

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

CURRENT

- Notice of Intent No. W219566

- Unique Ecology Well ID Tag No. AHR729

- Water Right Permit No.

- Property Owner Name NATHAN & JESSICA MOORE

- Well Street Address 1302 ANDERSON RD

- City GARFIELD

- County WHITMAN

- Location NW/4 SW/4 Sec 5 Twn 16N R 45E

- (S, T, R Still REQUIRED)

- Tax Parcel No. (Required) 1-2890-00-00-0005

CONSTRUCTION OR DECOMMISSION PROCEDURE

- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY YELLOW BROWN STIFF</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>11</td>
<td>72</td>
</tr>
<tr>
<td>BASALT WEATHERED WEAK</td>
<td>72</td>
<td>92</td>
</tr>
<tr>
<td>SAND COURSE</td>
<td>92</td>
<td>122</td>
</tr>
<tr>
<td>CLAY GREEN STIFF</td>
<td>122</td>
<td>151</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>151</td>
<td>189</td>
</tr>
<tr>
<td>BASALT VASCULAR BLACK WEAK</td>
<td>189</td>
<td>210</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>210</td>
<td>230</td>
</tr>
</tbody>
</table>

SEP 11 2009

DEPARTMENT OF ECOLOGY

EASTERN REGIONAL OFFICE

Drilling Company MCPHERSON & WRIGHT DRILLING

Address 2246 BURRELL

City, State, Zip LEWISTON , ID, 83501

Contractor's Registration No. MCPHW135N1 Date 8/22/09

Start Date 7/2/07  Completed Date 7/5/07
MOSCOW CEMETERY WELL 2

[DRILLED IN 1997]

Location information and Water Well Driller’s Log
By John H. Bush, March 5, 2016

Well Log ID: NA Elev (ft): 2610 Depth (ft): 514 Quad: Moscow East

7.5’

Latitude: 46.721503 Longitude: -116.980427 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 17, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1423 South Mountain View Road, Moscow, Idaho, on west side of road; small city building/well house

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile). Used elevation from Smith (1958) since this new cemetery well is adjacent to the old cemetery well (Keil, 2012); Latah County Assessor; Google Earth imagery; topographic map.

GEOLOGIC UNITS — DESCRIPTION

Interpretation not provided.

See the description for the Sunset Memorial Gardens well (drilled in 1955) which was interpreted and used for subsequent correlations, because the it is 38 ft deeper and encountered the Grande Ronde Basalt.
Comments:

There are two wells here: Sunset Memorial Gardens well (drilled in 1955), and Moscow Cemetery 2 well.

Latah County Tax Parcel RPM05250000050, owner is CITY OF MOSCOW, LES SCHWAB ADDITION, LOT 5.

References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>93</td>
<td>2.12</td>
<td>1 HR</td>
</tr>
<tr>
<td>125</td>
<td>214</td>
<td>3.43</td>
<td>3 HR</td>
</tr>
</tbody>
</table>

Water Temp. 57° Bottom hole temp. 57°
Water Quality test or comments: VERY POOR PRODUCER

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 0</td>
<td>3</td>
<td></td>
<td>Top Soil</td>
</tr>
<tr>
<td>26 32</td>
<td>60</td>
<td></td>
<td>Clay, Sand FIne</td>
</tr>
<tr>
<td>26 60</td>
<td>94</td>
<td></td>
<td>Clay, Sand</td>
</tr>
<tr>
<td>26 94</td>
<td>100</td>
<td></td>
<td>Basalt, Clay</td>
</tr>
<tr>
<td>19 100</td>
<td>260</td>
<td></td>
<td>Basalt, Clay</td>
</tr>
<tr>
<td>19 260</td>
<td>273</td>
<td></td>
<td>Basalt, Fractured</td>
</tr>
<tr>
<td>19 347</td>
<td>410</td>
<td></td>
<td>Clay, Sandy</td>
</tr>
<tr>
<td>19 410</td>
<td>420</td>
<td></td>
<td>Clay, Blu</td>
</tr>
<tr>
<td>19 420</td>
<td>444</td>
<td></td>
<td>Clay, Blu</td>
</tr>
<tr>
<td>19 444</td>
<td>508</td>
<td></td>
<td>Granite Sand FIne</td>
</tr>
</tbody>
</table>

'32 FT' DEPTH FIRST WATER ENCOUNTERED
HOLE WAS BACKFILLED FROM 508 TO 514

MOUNTAIN VIEW RD. CITY OF MOSCOW ID.

13. DRILLER'S CERTIFICATION

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: HOLMAN DRILLING CORP
Firm No: 108

Firm Official: April 9-97
Supervisor or Operator: April 9-97

NESE 17 39N E1W

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen
MOSCOW CITY WELL 2

[DRILLED IN 1925]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 14, 2016

Well Log ID: NA Elev (ft): 2568 Depth (ft): 570 7.5' Quad: Moscow West

Latitude: 46.734966 Longitude: -117.002454 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 7, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
North Jackson Street, Moscow, Idaho, northeast corner of Jackson and A streets; near city maintenance building

Location Method:
Latitude and longitude from Badon (2007, p. 129); elevation from Smith (1958); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil (?)</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>36</td>
</tr>
<tr>
<td>1Gravel</td>
<td>72</td>
</tr>
<tr>
<td>Basalt, vesicular at top, very dense at base</td>
<td>77</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue-gray</td>
<td>224</td>
</tr>
<tr>
<td>Sand, gray</td>
<td>254</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>273</td>
</tr>
<tr>
<td>Sand, with pebbles at 280 ft in depth</td>
<td>279</td>
</tr>
<tr>
<td>Clay, blue-green, brown, micaeous, pebbles at base</td>
<td>312</td>
</tr>
<tr>
<td>Clay, blue-gray, micaceous and sandy</td>
<td>353</td>
</tr>
<tr>
<td>Sand, cemented with pyrite and silica</td>
<td>444</td>
</tr>
</tbody>
</table>

1152
Clay, light brown
Clay and sand, blue-gray
Clay, chocolate brown

Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member(?)

<table>
<thead>
<tr>
<th>Material</th>
<th>Depth</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, glassy</td>
<td>553–570</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

The geologic interpretation was summarized from a graphic log by Smith (1958).

1The gravel bed can be interpreted in different ways. First, the Lolo flow has been documented to include internal sediments that it has picked up. However, parts of Moscow are underlain by a Saddle Mountain flow (Bush and others, 1998). Therefore, without chemistry on the upper 36 ft, either interpretation is acceptable.

2Core from the bottom of the well was examined by John Bush in 1972. It was determined to be glassy basalt and not quartzite as logged. Conrey and Crow (2014) inferred that the basalt belongs to the Meyer Ridge Member.

Latah County Tax Parcel RPM054000B025A, N JACKSON; LIEUALLEN'S 2ND ADD, BLK B LOTS 25-33; owner is CITY OF MOSCOW.
References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
City of Moscow
well No. 2 - Domestic

Total depth - 560 feet
Fitted and concrete plug at 240 feet
20" casing seal in basalt at 40 feet
Remainder open

Original static - 20 feet
Present static - 100 feet
Drawdown - 20 feet
Capacity - 1200 GPM
Water Temp - 54° F

City of Moscow
well No. 3
Drilled 1926 - A. F. Durand, Walla Walla, Washington

Depth - 261.5 feet
Concrete plug at - 235 feet
Original Static - 20 feet
Present Static - 100 feet
Drawdown - 20 feet
Capacity - 1400 GPM
Water Temp - 54° F

10" casing in basalt at 40 feet
Remainder open

N E N W 5 & 39 N S W
MOSCOW CITY WELL 3
[DRILLED IN 1935]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 10, 2016

Well Log ID: NA Elev (ft): 2568 Depth (ft): 569 7.5’ Quad: Moscow West

Latitude: 46.735115 Longitude: -117.002260 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 7, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
North Jackson Street, Moscow, Idaho, northeast corner of Jackson and A streets; near city maintenance building

Location Method:
Latitude and longitude from Badon (2007, p. 129); elevation from Smith (1958); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Topsoil and clay</td>
<td>0 – 32</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>32 – 183</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>183 – 194</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>194 – 198</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>198 – 208</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>208 – 238</td>
</tr>
<tr>
<td>Sand</td>
<td>238 – 262</td>
</tr>
<tr>
<td>No data</td>
<td>262 – 521</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>521 – 569</td>
</tr>
</tbody>
</table>
Comments:

The geologic interpretation was summarized from a graphic log by Smith (1958) and from Bennett (2009, p. 7, Table 1, and p. 158, fig. G1). Year drilled from University of Idaho and City of Moscow (1968); however, Crosthwaite (1975, p. 11) gives year drilled as 1936.

Latah County Tax Parcel RPM054000B025A, N JACKSON; LIEUALLEN'S 2ND ADD, BLK B LOTS 25-33; owner is CITY OF MOSCOW.

References Cited:


**Figure G14.** Moscow #3 well information.

**Figure G15.** Mountain View Park well information.
MOSCOW CITY WELL 4
[DRILLED IN 1939]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 16, 2016; November 9, 2017

Well Log ID: NA Elev (ft): 2596 Depth (ft): 790 7.5’ Quad: Moscow East

Latitude: 46.730358 Longitude: -116.980446 decimal degrees (WGS84)

SE ¼, SE ¼, SE ¼, Sec. 8 , T. 39 N , R. 5 W

Well Address and (or) Other Location Information:
South Mountain View Road, Moscow, Idaho, northwest corner of South Mountain View Road and East 6th Street; now covered by a church parking lot

Location Method:
Location is approximate based upon Smith (1958); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 4</td>
</tr>
<tr>
<td>Quaternary(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>4 – 10</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>10 – 21</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>21 – 55</td>
</tr>
<tr>
<td>Clay, brown and black</td>
<td>55 – 75</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>75 – 237</td>
</tr>
<tr>
<td>Basalt, porous, some clay</td>
<td>237 – 258</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, various colors, some wood</td>
<td>258 – 366</td>
</tr>
</tbody>
</table>
### Comments:

The log was summarized from a graphic log by Smith (1958); no driller’s report was found.

*Smith (1958) did not show basalt on his graphic log.

This well was abandoned due to inadequate yield (Jones and Ross, 1972).

Crosthwaite (1975, p. 41–42) provides a written log and states “Well covered,” a reference that the well had already been abandoned.
Latah County Tax Parcel RPM000000089750, 505 S MTN VIEW; owner now is PICKARD, MICHAEL BARRY; 1.85 acres; SESE 8 39 S.

References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
(Extracted from Smith, 1958)

CITY OF MOSCOW
WELL #4
1939

TOP SOIL
2592
CLAY
2588
CLAY & GRAVEL
2574
GRAVEL
2560
YELLOW CLAY
2546
BROWN CLAY
2532
BLACK CLAY
2518
BLACK BASALT
2494

GREY BASALT
2359
BLACK POROUS BASALT
2345
SOLID, BLACK BASALT
2331
BLACK-BROWN CLAYWOOD
2317
YELLOW CLAY
2303
BLUE CLAY
2289
GREEN CLAY
2275
BROWN CLAY
2261
BLUE CLAY
2247
CLAY, MIXED COLORS
2233
BLACK ROCK
2219
BLUE CLAY
2205
CLAY & SAND
2191
GREY BASALT
2177
BLUE CLAY
2163
BROWN CLAY
2149
BLUE CLAY
2135
ClAY & SAND
2121
GREY SHEL
2107
BROWN CLAY
2093
GREEN CLAY
2079
BROWN CLAY
2065
GREY CLAY
2051
BROWN CLAY
2037
GREY CLAY
2023
MIXED CLAYS
2009

2001 GREY BASALT & PYRITE OF IRON
1987 BLACK CLAY
1973 SANGRAIL
1959 BLACK BASALT
1945 BROWN CLAY
1931 GREY CLAY
1917 BROWN CLAY
1893 GREEN CLAY
1869 GREY CLAY
1845 CLAY & SANGRAIL
1821 BLACK CLAY
1797 BROWN CLAY
1773 GREY CLAY
1749 BROWN CLAY
1725 GREY CLAY
1699 MIXED CLAYS
1675 BROWN CLAY
1651 GREY CLAY
1627 BROWN CLAY
1593 GREY CLAY
1561 BROWN CLAY
1537 GREY CLAY
1503 BROWN CLAY
1469 GREY CLAY
1435 BROWN CLAY
1391 GREY CLAY
1357 BROWN CLAY
1323 GREY CLAY
1289 BROWN CLAY
1255 GREY CLAY
1221 BROWN CLAY
1187 GREY CLAY
1153 BROWN CLAY
1119 GREY CLAY
1085 BROWN CLAY
1051 GREY CLAY
1017 BROWN CLAY
983 GREY CLAY
949 BROWN CLAY
915 GREY CLAY
881 BROWN CLAY
847 GREY CLAY
813 BROWN CLAY
779 GREY CLAY
745 BROWN CLAY
711 GREY CLAY
677 BROWN CLAY
643 GREY CLAY
609 BROWN CLAY
575 GREY CLAY
541 BROWN CLAY
507 GREY CLAY
473 BROWN CLAY
439 GREY CLAY
405 BROWN CLAY
371 GREY CLAY
337 BROWN CLAY
303 GREY CLAY
269 BROWN CLAY
235 GREY CLAY
201 BROWN CLAY
167 GREY CLAY
133 BROWN CLAY
99 GREY CLAY
65 BROWN CLAY
31 GREY CLAY
07 BROWN CLAY
03 GREY CLAY
01 BROWN CLAY
01

1166 1305
### 39N-5W-8cccl. City of Moscow (former Arden Dairy)

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt and sand</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Basalt</td>
<td>100</td>
<td>140</td>
</tr>
<tr>
<td>Well either covered or destroyed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 39N-5W-8dadl. R. W. Jones

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay and soil</td>
<td>5.35</td>
<td>5.35</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>3.55</td>
<td>8.9</td>
</tr>
<tr>
<td>Clay, blue, and sand</td>
<td>1.6</td>
<td>10.5</td>
</tr>
<tr>
<td>Silt, brown, with mica at 11.5</td>
<td>1</td>
<td>11.5</td>
</tr>
</tbody>
</table>

### 39N-5W-8dddl. City of Moscow #4

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Clay</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Gravel</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>34</td>
<td>55</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>Clay, black</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>33</td>
<td>108</td>
</tr>
<tr>
<td>Basalt, gray</td>
<td>129</td>
<td>237</td>
</tr>
<tr>
<td>Basalt, black, porous</td>
<td>9</td>
<td>246</td>
</tr>
<tr>
<td>Basalt, black, solid</td>
<td>4</td>
<td>250</td>
</tr>
<tr>
<td>Basalt, porous, and clay</td>
<td>8</td>
<td>258</td>
</tr>
<tr>
<td>Clay, black, brown, and wood</td>
<td>2</td>
<td>260</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>5</td>
<td>265</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>22</td>
<td>287</td>
</tr>
<tr>
<td>Clay, blue-gray</td>
<td>9</td>
<td>296</td>
</tr>
<tr>
<td>Shale, blue</td>
<td>4</td>
<td>300</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>30</td>
<td>330</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2</td>
<td>332</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>8</td>
<td>340</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>20</td>
<td>360</td>
</tr>
<tr>
<td>Clay, mixed colors</td>
<td>6</td>
<td>366</td>
</tr>
<tr>
<td>Rock, black</td>
<td>4</td>
<td>370</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>10</td>
<td>380</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>40</td>
<td>420</td>
</tr>
</tbody>
</table>

(Extracted from Crosthwaite, 1975)
39N-5W-8dddl--Continued

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, blue</td>
<td>5</td>
<td>425</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>10</td>
<td>435</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>15</td>
<td>450</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>18</td>
<td>468</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>127</td>
<td>595</td>
</tr>
<tr>
<td>Basalt, gray, with pyrite</td>
<td>5</td>
<td>600</td>
</tr>
<tr>
<td>Basalt, gray</td>
<td>95</td>
<td>695</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>25</td>
<td>720</td>
</tr>
<tr>
<td>Clay mixed with granite sand</td>
<td>15</td>
<td>735</td>
</tr>
<tr>
<td>Clay, gray, mixed with green shale</td>
<td>20</td>
<td>755</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>10</td>
<td>765</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>3</td>
<td>768</td>
</tr>
<tr>
<td>Clay, mixed</td>
<td>22</td>
<td>790</td>
</tr>
</tbody>
</table>

Well covered

39N-5W-9babl. A. A. Flack

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt, black</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>25</td>
<td>28</td>
</tr>
<tr>
<td>Sand</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>Clay, white</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td>Granite, decomposed</td>
<td>32</td>
<td>77</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>2</td>
<td>79</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>8</td>
<td>87</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>1</td>
<td>88</td>
</tr>
<tr>
<td>Sand and clay, black</td>
<td>10</td>
<td>98</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>40</td>
<td>138</td>
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<tr>
<td>Dirt, black</td>
<td>9</td>
<td>147</td>
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<tr>
<td>Basalt, soft</td>
<td>37</td>
<td>184</td>
</tr>
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</table>

39N-5W-9bbal. W. L. Purnell

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Granite, decomposed</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Sand, white, water</td>
<td>10</td>
<td>65</td>
</tr>
<tr>
<td>Clay, white</td>
<td>5</td>
<td>70</td>
</tr>
</tbody>
</table>

(Extracted from Crosthwaite, 1975)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: NA Elev (ft): 2665 Depth (ft): 372 7.5’ Quad: Moscow East

Latitude: 46.740955 Longitude: -116.986127 decimal degrees (WGS84)

NE ¼, SW ¼, NE ¼, Sec. 8, T. 39 N, R. 5W

Well Address and (or) Other Location Information:
1100 F Street, Moscow, Idaho; in Jim Lyle Rotary Park

Location Method:
Location was approximated from Smith (1958). Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>1 – 80</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>80 – 85</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>85 – 95</td>
</tr>
<tr>
<td>Clay, light</td>
<td>95 – 130</td>
</tr>
<tr>
<td>Clay, gray, and root</td>
<td>130 – 140</td>
</tr>
<tr>
<td>Clay, black, and root</td>
<td>140 – 146</td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>146 – 167</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>167 – 172</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>172 – 205</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>205 – 211</td>
</tr>
</tbody>
</table>
Wanapum Basalt
Priest Rapids Member
Basalt of Lolo

<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>211 – 246</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>246 – 250</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>250 – 279</td>
</tr>
<tr>
<td>Basalt</td>
<td>279 – 311</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>311 – 336</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>336 – 341</td>
</tr>
<tr>
<td>Basalt</td>
<td>341 – 358</td>
</tr>
<tr>
<td>Clay</td>
<td>358 – 359</td>
</tr>
<tr>
<td>Basalt</td>
<td>359 – 372</td>
</tr>
</tbody>
</table>

Latah Formation
Vantage Member

<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>372</td>
</tr>
</tbody>
</table>

Comments:

*The upper basalt could also be interpreted as an invasive part of the Lolo flow.

Latah County Tax Parcel RPM000000081200, E F, Jim Lyle Rotary Park, owner is CITY OF MOSCOW, 2.12 acres; NE 1/4, 8 39 5.

References Cited:

Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 2016

Well Log ID: NA Elev (ft): 2585.62 Depth (ft): 1308 7.5’ Quad: Moscow East

Latitude: 46.741017 Longitude: -116.995430 decimal degrees (WGS84)

NW ¼, SE ¼, NW ¼, Sec. 8, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
East Public Avenue, Moscow, Idaho, on north side, east of N Van Buren Street; in a city maintenance yard

Location Method:
Latitude and longitude from Badon (2007); elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Keil (2012) provided location on street map; Latah County Assessor; Google Earth imagery; topographic map. [Note: Smith (1958) gave elevation as 2588 ft.] Crosthwaite (1975, p. 11) lists a drilling date of 1959, when well was deepened.

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>Top soil and clay</td>
<td>From 0 To 17</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gravel</td>
<td>From 17 To 21</td>
</tr>
<tr>
<td></td>
<td>Clay, brown, wood</td>
<td>From 21 To 104</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
<td>From 104 To 241</td>
</tr>
<tr>
<td></td>
<td>Basalt, broken</td>
<td>From 241 To 245</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay, blue-gray, sandy</td>
<td>From 245 To 280</td>
</tr>
</tbody>
</table>
### Grande Ronde Basalt

**R2 magnetostratigraphic unit**

<table>
<thead>
<tr>
<th>Member</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meyer Ridge Member(?)</td>
<td>568 – 596</td>
</tr>
<tr>
<td>Sand</td>
<td>596 – 601</td>
</tr>
<tr>
<td>Basalt</td>
<td>601 – 615</td>
</tr>
</tbody>
</table>

**Latah Formation**

<table>
<thead>
<tr>
<th>Sediments of Moscow</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, brown</td>
<td>615 – 700</td>
</tr>
<tr>
<td>Clay, brown, and sand</td>
<td>700 – 735</td>
</tr>
<tr>
<td>Clay, brown, blue-green</td>
<td>735 – 787</td>
</tr>
<tr>
<td>Clay and sand, alternating</td>
<td>787 – 816</td>
</tr>
<tr>
<td>Clay, brown and blue</td>
<td>816 – 906</td>
</tr>
</tbody>
</table>

**Grande Ronde Basalt**

**N1 magnetostratigraphic unit**

<table>
<thead>
<tr>
<th>Cold Spring Ridge Member</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>906 – 1128</td>
</tr>
</tbody>
</table>

**Latah Formation**

<table>
<thead>
<tr>
<th>Sediments of Moscow</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand, white</td>
<td>1128 – 1151</td>
</tr>
<tr>
<td>Clay, red</td>
<td>1151 – 1155</td>
</tr>
<tr>
<td>Sand, white</td>
<td>1155 – 1173</td>
</tr>
<tr>
<td>Clay, blue, with sand</td>
<td>1173 – 1263</td>
</tr>
<tr>
<td>Sand</td>
<td>1263 – 1308</td>
</tr>
</tbody>
</table>

### Comments:

The correlation of the two Grande Ronde Basalt units is based on elevation comparisons to other City of Moscow and University of Idaho wells. Conrey and Crow (2014) also inferred these correlations. Cavin (1964) provides considerable detail on the coarse sediments encountered in this well.
Latah County Tax Parcel RPM000000082700, owner is CITY OF MOSCOW, NW 1/4, 8 39 5.

References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
WELL LOG AND REPORT

STATE RECLAMATION ENGINEER OF IDAHO

State of Idaho Ground Water Application No. 033842
State of Idaho Ground Water Permit No. 0-25958

DO NOT FILL IN

Owner: City of Moscow, Idaho  Address: 9/c Harvey Smith, City Engineer, Moscow, Id.
Driller: As A. DUROD & SON  Address: P.O. Box 457, Wirtz, Whit. No. 47
Location of Well: 1/4 N W 1/4 Sec. 2 T. 27 N R. 14 W Salt Lake County, and foot N/S, and foot E/W from
Drilled depth: 282'
Size of Drilled Hole: 24" x 20"
Size of pump and motor used to make the test: Wall driller's test pump; 2000 gpm with 225 hp. engine.

If flowing well, give flow in c.f.s., non-flowing or g.p.m. and shut in pressure.

If flowing well, describe control works.

Water will be used for____________________ Weight of casing per linear foot.
24" x 5/16" wall
Thickness of casing: 20" x 5/8" wall
Casing material: Standard black steel pipe
E.G., PIPE, CONCRETE, WOOD.

Diameter, length and location of casing. See casing record below.

Number and size of perforations: none located feet to feet from surface of ground.

Other perforations: 12/20/65 finished drilling
Date of commencement of well: 10/26/65
Date of completion of well: 1/4/66 finished final well test
Type of well rig: 36L Bueyrus Errie oil field spudder churn drill well drilling method

Casing Record

<table>
<thead>
<tr>
<th>DIAM. CASING</th>
<th>FROM FEET</th>
<th>TO FEET</th>
<th>LENGTH</th>
<th>&quot;REMARKS&quot; — SEALS, GROUTING, ETC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24&quot; Od. Ds.</td>
<td>0</td>
<td>14</td>
<td>14</td>
<td>Conductor casing installed in beginning and pulled at job completion.</td>
</tr>
<tr>
<td>24&quot; Od. Ds.</td>
<td>0</td>
<td>69'/7&quot;</td>
<td>69'/7&quot;</td>
<td>Casing sealed on top of basalt, see note below.</td>
</tr>
<tr>
<td>20&quot; Od. Ds.</td>
<td>0</td>
<td>126'</td>
<td>156'</td>
<td>Casing seated 56' into the basalt, see note below.</td>
</tr>
<tr>
<td>30&quot; Od. Ds.</td>
<td>126'</td>
<td>-</td>
<td>156'</td>
<td>Open hole drilling.</td>
</tr>
</tbody>
</table>

GENERAL INFORMATION—Pumping Test, Quality of Water, Etc.

Note: Annular space between 24" and 20" between ground surface and 126' continuously grout sealed for sanitary and permanent protection. Chemical analysis of water from final well test made by state laboratories and city of Lewiston, Idaho lab. See attached field pump test record for well test data and chemical analysis from Lewiston Lab. Drill cuttings sampled each 5' and retained in triplicate copies and distributed as follows:

1. U. S. Geological Survey at Boise, Idaho
2. Idaho Bureau of Mines and Geology, University of Idaho
3. A. A. Durand & Son, morgue file

SENWS. 873975, 5W

Log No. ___________________________ Rec. ___________ 19
Well No. 87-56-N-1 Permit No. 87-2023
29 April 1956
<table>
<thead>
<tr>
<th>From Foot</th>
<th>To Foot</th>
<th>Type of Material</th>
<th>Drilling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>70</td>
<td>OVERBURDEN MATERIALS OVERLYING TOP OF BASALT's</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>17</td>
<td>Topsoil and clay</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>21</td>
<td>Loose unconsolidated gravel; first water in well shut off by pipe and grout sealed for sanitary purposes.</td>
<td>yes</td>
</tr>
<tr>
<td>21</td>
<td>55</td>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>70</td>
<td>Brown clay with wood in clay between 55 and 60'</td>
<td>70 - 245 BASALT</td>
</tr>
<tr>
<td>70</td>
<td>104</td>
<td>Dark brown basalt</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>111</td>
<td>Black medium basalt</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>118</td>
<td>Broken dark basalt</td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>184</td>
<td>Dark very hard basalt</td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>186</td>
<td>Basalt crevice</td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>190</td>
<td>Dark very hard basalt</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>200</td>
<td>Very hard basalt; first water in the basalt</td>
<td>yes</td>
</tr>
<tr>
<td>200</td>
<td>205</td>
<td>Dark gray basalt crevice</td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>236</td>
<td>Dark hard basalt</td>
<td></td>
</tr>
<tr>
<td>236</td>
<td>241</td>
<td>Dark medium hard basalt</td>
<td></td>
</tr>
<tr>
<td>241</td>
<td>245</td>
<td>Dark broken basalt; believe more water occurs in this zone</td>
<td>?</td>
</tr>
</tbody>
</table>

If more space is required use Sheet No. 2

WELL DRILLERS STATEMENT

This well was drilled under my jurisdiction and the above information is true and correct to the best of my knowledge and belief.

Signed: A. A. Durand & Son

Dated: March 19, 1955

License No.: 47
The hole was drilled "dry" until first water occurs within the basalt shown above. After that, while well was being drilling & the basalt, well was full of water to 110' foot water level at all times until between 241' and 245' drilled depth, at which time SWL changed to 114' and then returned to 110'.

245-282' Drilling first interbasalt sediments with 80' open hole

280 Blue-grey sandy clay

282 This "salt and pepper" sand believed to be aquifer material. Sand bed unconsolidated prevented drilling hole any deeper without casing. Thickness of this sand, therefore not determined. SWL, however, remained at 110' (same as when finished drilling through the basalt).

Note: A gravel and concrete plug from 282' upwards to 260' was put in. This "salt and pepper" sand has the same appearance and analysis as the developed aquifer sand of the Sunset Memorial Gardens screened well at Moscow, but this sand occurs at an entirely different elevation than the SME wells.

This well log and report sent to:

- State of Idaho Reclamation Engineer at Boise
- Harvey Smith, City Engineer at Moscow
- USGS, GW Branch at Boise
- Durand Job file
- Durand Moscow Survey file

SENW 5°P 37N SW
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Unit</th>
<th>Value 2</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Solids</td>
<td>280</td>
<td>ppm</td>
<td></td>
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</tr>
<tr>
<td>P.H.</td>
<td>6.9</td>
<td></td>
<td>6.9</td>
<td></td>
</tr>
<tr>
<td>Hardness (as CaCO₃)</td>
<td>90</td>
<td></td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Alkalinity (as CaCO₃)</td>
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<tr>
<td>Chloride</td>
<td>.05</td>
<td></td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>CO₂</td>
<td>48</td>
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<td>48</td>
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</tr>
<tr>
<td>SO₄</td>
<td>11</td>
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<td></td>
</tr>
<tr>
<td>Fe</td>
<td>.8</td>
<td></td>
<td>.8</td>
<td></td>
</tr>
<tr>
<td>Fixed Residue</td>
<td>50</td>
<td></td>
<td>76</td>
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</tr>
<tr>
<td>Fluoride</td>
<td>.3</td>
<td></td>
<td>.3</td>
<td></td>
</tr>
<tr>
<td>Dissolved Solids</td>
<td>260</td>
<td></td>
<td>289</td>
<td></td>
</tr>
<tr>
<td>Suspended</td>
<td>20</td>
<td></td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Loss on Ignition:

Suspended & Dissolved Solids, Filtration Method: 60

Water Intek

Water Plant Supt.

Lewiston, Idaho.

Note: Sample #1 and #2 taken during City Moscow, IDR Water Well No. 6
Pump test No. 1: Sample #1 taken after 27 hours continuous pumping. Sample #2 taken after 24 1/2 hours continuous pumping.

Well Data: Depth 245' to Bottom of Drift - Size 24" x 40" - SWL 11'6" Below 20" casing head on 1/3/56.

S E W 5 8 3 9 W 5 8
City of Moscow, Idaho
Well No. 6 - Domestic
Drilled originally in 1955 - Driller - A.A. Durand and Son
Walla Walla, Washington

Depth - 200 feet  Static - 110 feet  Capacity - 1200 GPM
Drawdown - 20 feet  Temp - 54°F

Well went dry in December, 1957

Started present well February, 1958
Complete May, 1960 - Driller - Oliver Jinkgraf

Depth - 1305 feet  Static - 275 feet  Drawdown - 25 feet
Capacity - 1150 GPM  Water Temp - 72°F

14 inch casing from surface, sealed in basalt at 905 feet
10 inch perforated liner - 1095 - 1305
### 39N-5W-7add2. City of Moscow #2

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Basalt</td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td>Gravel</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>Basalt</td>
<td>82, 159</td>
<td></td>
</tr>
<tr>
<td>Shale, sandy</td>
<td>6</td>
<td>279</td>
</tr>
<tr>
<td>Sand and pebbles</td>
<td>26, 305</td>
<td></td>
</tr>
<tr>
<td>Sand, cemented</td>
<td>7</td>
<td>312</td>
</tr>
<tr>
<td>Slate</td>
<td>2</td>
<td>314</td>
</tr>
<tr>
<td>Soil, brown</td>
<td>11</td>
<td>325</td>
</tr>
<tr>
<td>Soil and pebbles</td>
<td>30</td>
<td>355</td>
</tr>
<tr>
<td>Shale, micaceous</td>
<td>40</td>
<td>395</td>
</tr>
<tr>
<td>Shale, sandy</td>
<td>49</td>
<td>444</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>18</td>
<td>462</td>
</tr>
<tr>
<td>Shale, brown</td>
<td>38</td>
<td>500</td>
</tr>
<tr>
<td>Shale, micaceous and pebbles</td>
<td>25</td>
<td>528</td>
</tr>
<tr>
<td>Shale, brown</td>
<td>28</td>
<td>553</td>
</tr>
<tr>
<td>Quartzite</td>
<td>7</td>
<td>560</td>
</tr>
</tbody>
</table>

Well backfilled to 240 feet.

Note: Last 7 ft of log may be basalt and not quartzite.

### 39N-5W-7dad3. City of Moscow #3

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil and clay</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>151, 183</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>11</td>
<td>194</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>4</td>
<td>198</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>10</td>
<td>208</td>
</tr>
<tr>
<td>Shale, blue, dense</td>
<td>30</td>
<td>238</td>
</tr>
<tr>
<td>Sand, cemented</td>
<td>23.5, 261.5</td>
<td></td>
</tr>
<tr>
<td>Concrete plug at 235</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 39N-5W-7addl. Olsen's Bestway Carpet & Lindsay Water Serv.

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clay</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Sand</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>Basalt</td>
<td>175</td>
<td>223</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>5</td>
<td>228</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>10</td>
<td>238</td>
</tr>
</tbody>
</table>

(Extracted from Crosswhite, 1975)

### 39N-5W-8add2. City of Moscow #5

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, yellow</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>10</td>
<td>95</td>
</tr>
<tr>
<td>Clay, light gray, sticky</td>
<td>35</td>
<td>130</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>10</td>
<td>140</td>
</tr>
<tr>
<td>Rock, black, broken, and clay</td>
<td>6</td>
<td>146</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>21</td>
<td>167</td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>5</td>
<td>172</td>
</tr>
<tr>
<td>Basalt, black, broken (material sticking)</td>
<td>33</td>
<td>205</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>6</td>
<td>211</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>35</td>
<td>246</td>
</tr>
<tr>
<td>Basalt, and large boulders</td>
<td>2</td>
<td>248</td>
</tr>
<tr>
<td>Boulders, large</td>
<td>13</td>
<td>290</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>29</td>
<td>279</td>
</tr>
<tr>
<td>Basalt, gray</td>
<td>32</td>
<td>311</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>25</td>
<td>353</td>
</tr>
<tr>
<td>Basalt, dense, fractured</td>
<td>8</td>
<td>341</td>
</tr>
<tr>
<td>Basalt</td>
<td>13</td>
<td>354</td>
</tr>
<tr>
<td>Basalt, showing water</td>
<td>4</td>
<td>358</td>
</tr>
<tr>
<td>Clay</td>
<td>1</td>
<td>359</td>
</tr>
<tr>
<td>Basalt, some water</td>
<td>13</td>
<td>372</td>
</tr>
<tr>
<td>Granite</td>
<td>a</td>
<td>-</td>
</tr>
</tbody>
</table>

Well abandoned

a - probably about 1 foot

### 39N-5W-8addbl. City of Moscow #6

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil and clay</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Gravel, loose unconsolidated</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>Clay</td>
<td>34</td>
<td>55</td>
</tr>
<tr>
<td>Clay, brown, some wood in clay</td>
<td>15</td>
<td>70</td>
</tr>
<tr>
<td>Basalt, dark brown</td>
<td>34</td>
<td>104</td>
</tr>
<tr>
<td>Basalt, medium black</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Basalt, dark, broken</td>
<td>7</td>
<td>118</td>
</tr>
<tr>
<td>Basalt, dark, very hard</td>
<td>66</td>
<td>184</td>
</tr>
<tr>
<td>Basalt crevice</td>
<td>2</td>
<td>186</td>
</tr>
<tr>
<td>Basalt, dark, very hard</td>
<td>1</td>
<td>190</td>
</tr>
<tr>
<td>Basalt, very hard, first water in basalt</td>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>Basalt, dark gray, crevice</td>
<td>5</td>
<td>205</td>
</tr>
<tr>
<td>Basalt, dark, hard</td>
<td>31</td>
<td>236</td>
</tr>
<tr>
<td>Basalt, dark, medium hard</td>
<td>5</td>
<td>241</td>
</tr>
<tr>
<td>Basalt, dark, broken; may be some water here</td>
<td>4</td>
<td>245</td>
</tr>
<tr>
<td>Clay, blue gray, sandy</td>
<td>35</td>
<td>280</td>
</tr>
<tr>
<td>Sand, white (&quot;salt-and-pepper&quot; sand)</td>
<td>20</td>
<td>300</td>
</tr>
</tbody>
</table>

-38- 1185
### 39N-5W-8dbdl. City of Moscow (former Arden Dairy)

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt and sand</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Basalt</td>
<td>100</td>
<td>140</td>
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</tbody>
</table>

The well either covered or destroyed.

### 39N-5W-8dccl. City of Moscow #4

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay and soil</td>
<td>5.35</td>
<td>5.35</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>3.55</td>
<td>8.9</td>
</tr>
<tr>
<td>Clay, blue, and sand</td>
<td>1.6</td>
<td>10.5</td>
</tr>
<tr>
<td>Silt, brown, with mica at 11.5</td>
<td>1</td>
<td>11.5</td>
</tr>
</tbody>
</table>

### 39N-5W-8dddl. R. W. Jones

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Clay</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Gravel</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>34</td>
<td>55</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>Clay, black</td>
<td>15</td>
<td>75</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>33</td>
<td>108</td>
</tr>
<tr>
<td>Basalt, gray</td>
<td>129</td>
<td>237</td>
</tr>
<tr>
<td>Basalt, black, porous</td>
<td>9</td>
<td>246</td>
</tr>
<tr>
<td>Basalt, black, solid</td>
<td>4</td>
<td>250</td>
</tr>
<tr>
<td>Basalt, porous, and clay</td>
<td>8</td>
<td>258</td>
</tr>
<tr>
<td>Clay, black, brown, and wood</td>
<td>2</td>
<td>260</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>5</td>
<td>265</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>22</td>
<td>287</td>
</tr>
<tr>
<td>Clay, blue-gray</td>
<td>9</td>
<td>296</td>
</tr>
<tr>
<td>Shale, blue</td>
<td>4</td>
<td>300</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>30</td>
<td>330</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2</td>
<td>332</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>8</td>
<td>340</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>20</td>
<td>360</td>
</tr>
<tr>
<td>Clay, mixed colors</td>
<td>6</td>
<td>366</td>
</tr>
<tr>
<td>Rock, black</td>
<td>4</td>
<td>370</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>10</td>
<td>380</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>40</td>
<td>420</td>
</tr>
</tbody>
</table>

(Extracted from Crosthwaite, 1975)
MOSCOW CITY WELL 7

[DRILLED IN 1961]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, August 8, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2614.76</th>
<th>Depth (ft):</th>
<th>667</th>
<th>7.5’</th>
<th>Quad: Moscow West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.740347</td>
<td>Longitude:</td>
<td>-117.013457</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-------------</td>
<td>--------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE ¼, SE ¼, NW ¼, Sec. 7, T. 39 N, R. 5 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
Sunset Drive, Moscow, Idaho, on south side of road, at end; just west of Moscow city well 8

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>0 – 34</td>
</tr>
<tr>
<td>Clay, yellow and brown, and sand</td>
<td>34 – 105</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>105 – 125</td>
</tr>
<tr>
<td>Clay, brown, yellow, gray</td>
<td>125 – 163</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>163 – 168</td>
</tr>
<tr>
<td>*Clay, brown</td>
<td>168 – 205</td>
</tr>
<tr>
<td>Basalt</td>
<td>205 – 283</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>283 – 305</td>
</tr>
<tr>
<td>Basalt</td>
<td>305 – 366</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>366 – 475</td>
</tr>
<tr>
<td>Clay, brown, green, gray</td>
<td>475 – 493</td>
</tr>
</tbody>
</table>
Clay, black 493 – 611

Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member

Basalt 611 – 667

Comments:
*Interpreted as clay picked up by Lolo flow.

The IDWR-provided "driller’s report" is just a lithologic log: it is not dated, and there is no identification of driller or date drilled. Well abandoned (University of Idaho and City of Moscow, 1968).

Latah County Tax Parcel RPM00000074212; owner is CITY OF MOSCOW.

References Cited:
<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness</th>
<th>Depth to bottom of Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow Clay</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Brown Clay and Sand</td>
<td>9</td>
<td>43</td>
</tr>
<tr>
<td>Yellow Clay and Quartz Sand</td>
<td>27</td>
<td>70</td>
</tr>
<tr>
<td>Yellow Clay with Sand</td>
<td>35</td>
<td>105</td>
</tr>
<tr>
<td>Sandy Clay</td>
<td>20</td>
<td>125</td>
</tr>
<tr>
<td>Brown Clay</td>
<td>5</td>
<td>130</td>
</tr>
<tr>
<td>Medium Brown Clay</td>
<td>15</td>
<td>145</td>
</tr>
<tr>
<td>Yellow Clay</td>
<td>10</td>
<td>155</td>
</tr>
<tr>
<td>Grey Clay—some yellow</td>
<td>4</td>
<td>159</td>
</tr>
<tr>
<td>Grey Clay</td>
<td>4</td>
<td>163</td>
</tr>
<tr>
<td>Basalt</td>
<td>5</td>
<td>168</td>
</tr>
<tr>
<td>Brown Clay</td>
<td>7</td>
<td>175</td>
</tr>
<tr>
<td>Basalt Water Bearing</td>
<td>91</td>
<td>266</td>
</tr>
<tr>
<td>Basalt</td>
<td>17</td>
<td>263</td>
</tr>
<tr>
<td>Soft Basalt</td>
<td>22</td>
<td>305</td>
</tr>
<tr>
<td>Medium Basalt</td>
<td>55</td>
<td>360</td>
</tr>
<tr>
<td>Basalt</td>
<td>6</td>
<td>366</td>
</tr>
<tr>
<td>Sand</td>
<td>20</td>
<td>386</td>
</tr>
<tr>
<td>Sand Clay Rock</td>
<td>40</td>
<td>426</td>
</tr>
<tr>
<td>Sand</td>
<td>38</td>
<td>464</td>
</tr>
<tr>
<td>Sand (Grey and Muddy)</td>
<td>11</td>
<td>475</td>
</tr>
<tr>
<td>Brown Sticky Clay</td>
<td>4</td>
<td>479</td>
</tr>
<tr>
<td>Green Clay</td>
<td>3</td>
<td>482</td>
</tr>
<tr>
<td>Grey Sticky Clay</td>
<td>11</td>
<td>493</td>
</tr>
<tr>
<td>Hard Dark Shale</td>
<td>116</td>
<td>611</td>
</tr>
<tr>
<td>Hard Basalt</td>
<td>27</td>
<td>638</td>
</tr>
<tr>
<td>Basalt</td>
<td>29</td>
<td>667</td>
</tr>
</tbody>
</table>
MOSCOW CITY WELL 8

[DRILLED IN 1964]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, December 2016

Well Log ID: NA       Elev (ft): 2618.58       Depth (ft): 1458       7.5’ Quad: Moscow West

Latitude: 46.740387   Longitude: -117.013215   decimal degrees (WGS84)

NE ¼, SE ¼, NW ¼, Sec. 7, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
Sunrise Drive, Moscow, Idaho, on south side of road, near the end

Location Method:
Latitude and longitude from Badon (2007, p. 129); elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Keil’s (2012, fig. 2-3) map of city wells also shows location; Latah County Assessor; Google Earth imagery; topographic map. Street name incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>22</td>
</tr>
<tr>
<td>Gravel</td>
<td>47</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>54</td>
</tr>
<tr>
<td>Clay, white</td>
<td>85</td>
</tr>
<tr>
<td>¹Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>108</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown and yellow</td>
<td>110</td>
</tr>
</tbody>
</table>
**Wanapum Basalt**

- Priest Rapids Member
  - Basalt of Lolo
    - Basalt 167 – 180
    - Clay, black 180 – 184
    - Basalt 184 – 384

**Latah Formation**

- Vantage Member
  - Sand 384 – 396
  - Sandstone 396 – 413
  - Clay, gray, sandy in places 413 – 612

**Grande Ronde Basalt**

- R2 magnetostratigraphic unit
  - Meyer Ridge Member(?)
    - Basalt, black and gray 612 – 691

**Latah Formation**

- Sediments of Moscow
  - Clay 691 – 730

**Grande Ronde Basalt**

- R2 magnetostratigraphic unit
  - Mount Horrible member(?)
    - Basalt, broken 730 – 779

**Latah Formation**

- Sediments of Moscow
  - Clay 779 – 821
  - Sand 821 – 851
  - Clay, gray 851 – 950

**Grande Ronde Basalt**

- N1 magnetostratigraphic unit
  - Cold Spring Ridge Member
    - Basalt 950 – 1258

**Latah Formation**

- Sediments of Moscow
  - Clay 1258 – 1391

**Pre-Columbia River Basalt Group rocks**

- Granitic rock 1391 – 1458
Comments:

1The uppermost basalt interbedded with sediments is interpreted to belong to the Saddle Mountains Basalt by comparison to IDWR Well 1 where a thin unit (10 ft) of basalt was determined by chemistry to belong to the basalt of Lewiston Orchards (Bush, 2006).

2There is no rock chemistry for this unit; Conrey and Crow (2014) inferred it to be "Mount Horrible?"

Log interpreted from "driller’s report" and Crosthwaite (1975). Conrey and Crow (2014) inferred Grande Ronde Basalt units. The IDWR-provided "driller's report" is just a lithologic log; it is not dated, and there is no identification of driller or date drilled.

Latah County Tax Parcel RPM00000074212; owner is CITY OF MOSCOW; 0.74 AC, SENW; LESS 0.40 AC NESENW, 7 39 5.

References Cited:


CITY OF MOSCOW

WELL NO. 8
SUNRISE DRIVE

ELEVATION    MATERIAL

2618    Brown Clay
2558    Clay and Gravel
2520    Gravel
2563    Clay and Gravel
2509    White Clay
1977    Broken Basalt
2507    Brown Clay
2457    Yellow Clay
2450    Basalt
2437    Black Clay
2435    Basalt
2223    Sand
2321    Sandstone
2204    Sticky Clay
2200    Sandy Clay
2182    Sticky, Gray Clay
2126    Shale
2133    Sticky, Brown Clay
2005    Black Basalt
1957    Gray Basalt
1925    Sticky, Brown Clay
1867    Broken Basalt
1638    Clay
1796    Cement Sand
1798    Sticky Clay
1699    Gray Clay
1687    Basalt
1656    Broken Basalt with Clay
1652    Black, Brown Basalt
1493    Gray, Hard Basalt
1359    Sticky Clay
1314    Sandy Clay
1364    Sticky Clay
1249    Sandy Clay
1226    Gravel, Gray Clay
1160    Gravel, Rock

MICROFILMED
JUN 24 1998

Location Corrected by IDWR To:
T39N R05W Sec. 7 NESENW
By: mcisecell 2012-03-12
IDAHO DEPARTMENT OF WATER RESOURCES
STATEWIDE GROUND-WATER QUALITY MONITORING PRC
Pre-Sampling Inspection Sheet

USGS Site ID 4644251700440
Station Name (T.R.SEC, 1/4,1/4,1/4, #) 39N 5W 7BDAE NE QP E NW
IDWR SSN (to be assigned later)

Owner's Name City of Moscow Phone 832-7000
Address P.O. Box 9203 Moscow 83843

Does the owner grant permission to sample the well? Y
Is it okay to sample the well if no one is home? Comments Call 1st
well # 8 Gary Smith or Mike Dimmick 882-3122

Is there information on the driller's log in agreement with the well and location? Y

Does the well appear to have a good seal? Y

Can the water-level be measured? NO How? (access port, removal of well cap, etc.)

Is there a septic tank or drain field nearby? NO How far?

Is there a nearby potential contamination source? (feedlot, industry, etc.)

What is the most likely sampling point? hose bib on mainline
How far is it from the well? 5' What does the water flow through between the well and sampling point? type of piping - (galvanized steel/PVC)
pressure tank (size in gallons) ______, water treatment equipment, etc.

Considering the goals of this program, does the well appear to be a viable site? Y

Field Inspector's Name Dec Date 5/3/94

Sketch the probable sampling point and distribution system. Sketch the site location if the sketch on the site schedule is incomplete or incorrect.

Notes: Do in July if possible - they will be doing some work on well sometime this summer

Phone ok.
### Material Thickness Depth (feet) (feet)

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, brown</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>25</td>
<td>47</td>
</tr>
<tr>
<td>Gravel</td>
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<td>54</td>
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<tr>
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<td>108</td>
</tr>
<tr>
<td>Basalt, broken</td>
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<td>Clay, brown</td>
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<td>Basalt</td>
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<tr>
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<tr>
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<td>Sandstone</td>
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<td>918</td>
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<tr>
<td>Basalt with clay, dark</td>
<td>189</td>
<td>1258</td>
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<tr>
<td>Basalt, black, dense</td>
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<td>1258</td>
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<td>Basalt, gray, hard</td>
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<td>1303</td>
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<td>Clay, sandy</td>
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<tr>
<td>Clay, sticky</td>
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<td>1368</td>
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</tr>
<tr>
<td>Granitic rock</td>
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<td>1458</td>
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</table>

### Material Thickness Depth (feet) (feet)

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness</th>
<th>Depth</th>
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</thead>
<tbody>
<tr>
<td>Clay, yellow</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Clay, blue, and gravel</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>36</td>
<td>65</td>
</tr>
<tr>
<td>Basalt, vesicular, and basalt glass</td>
<td>45</td>
<td>110</td>
</tr>
<tr>
<td>Basalt, vesicular, and basalt glass</td>
<td>8</td>
<td>118</td>
</tr>
<tr>
<td>Basalt</td>
<td>7</td>
<td>125</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>17</td>
<td>142</td>
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<tr>
<td>Basalt</td>
<td>29</td>
<td>145</td>
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<tr>
<td>Basalt, vesicular</td>
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<td>174</td>
</tr>
<tr>
<td>Basalt</td>
<td>9</td>
<td>183</td>
</tr>
<tr>
<td>Clay, gray, and silt</td>
<td>12</td>
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</tr>
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<td>Clay, gray, and silt, some small quartzite pebbles</td>
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<td>Sand, quartz, coarse</td>
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<td>Quartz sand, gravel, some argillite pebbles</td>
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<td>222</td>
</tr>
<tr>
<td>Sand</td>
<td>8</td>
<td>230</td>
</tr>
<tr>
<td>Sand, gray, granitic, with silt</td>
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<tr>
<td>Silt, gray, some sand</td>
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<td>258</td>
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<tr>
<td>Sand, gray, granitic, and silt</td>
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</tr>
<tr>
<td>Clay, chocolate to dark blue, carbonaceous</td>
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<tr>
<td>Clay, greenish gray</td>
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<tr>
<td>Claystone, gray, partially cemented</td>
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<td>340</td>
</tr>
<tr>
<td>Clay, brown and greenish gray</td>
<td>8</td>
<td>348</td>
</tr>
<tr>
<td>Granitic sand and silt, some clay and pebbles of basalt, and argillite</td>
<td>3</td>
<td>351</td>
</tr>
<tr>
<td>Granitic sand and silt, some green clay and basalt pebbles</td>
<td>2</td>
<td>353</td>
</tr>
<tr>
<td>Granitic sand, silt, and clay</td>
<td>1</td>
<td>354</td>
</tr>
</tbody>
</table>
MOSCOW CITY WELL 9

[DRILLED IN 1982]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 2016; November 9, 2017

Well Log ID: NA Elev (ft): 2555.15 Depth (ft): 1253 7.5’ Quad: Moscow West

Latitude: 46.734603 Longitude: -117.032345 decimal degrees (WGS84)

¼, NW ¼, SE ¼, Sec. 12, T. 39 N, R. 6 W

Well Address and (or) Other Location Information:
1850 West Pullman Road (ID 8), Moscow, Idaho, on north side; at northwest corner of Palouse Empire Mall parking lot

Location Method:
Latitude, longitude, and elevation from Steve Robishon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Latah County Assessor; Google Earth imagery; topographic map

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From (ft)</th>
<th>To (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, soft, brown</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Basalt, porous in places</td>
<td>20</td>
<td>36</td>
</tr>
<tr>
<td>Basalt, gray to black, fractured in places</td>
<td>36</td>
<td>212</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand, some wood, basalt pieces</td>
<td>212</td>
<td>245</td>
</tr>
<tr>
<td>Clay, blue gray and brown</td>
<td>245</td>
<td>294</td>
</tr>
<tr>
<td>Sand, coarse-grained, soft</td>
<td>294</td>
<td>312</td>
</tr>
<tr>
<td>Sand, cemented, brown and white</td>
<td>312</td>
<td>380</td>
</tr>
<tr>
<td>Clay, brown, light gray, white</td>
<td>380</td>
<td>413</td>
</tr>
</tbody>
</table>

Grande Ronde Basalt
R2 magnetostratigraphic unit
### Meyer Ridge Member

| *Basalt, soft and hard layers* | 413 – 459 |

### Latah Formation

#### Sediments of Moscow

| Clay, brown | 459 – 500 |

### Grande Ronde Basalt

#### R2 magnetostratigraphic unit

**Meyer Ridge Member**

| Basalt, fractured, very hard | 500 – 504 |
| Basalt, fractured in places | 504 – 584 |
| Basalt, large fractures | 584 – 595 |

#### Latah Formation

**Sediments of Moscow**

| Clay, brown | 595 – 643 |

### Grande Ronde Basalt

#### R2 magnetostratigraphic unit

**Wapshilla Ridge Member**

| Basalt | 643 – 658 |

**Mount Horrible member(?)**

| Basalt, soft, porous | 658 – 721 |
| Basalt, hard | 721 – 727 |
| Basalt, porous | 727 – 737 |
| Basalt, hard, fractured in places | 737 – 762 |
| Basalt and sand mixed, wood | 762 – 773 |

#### N1 magnetostratigraphic unit

**Cold Spring Ridge Member(?)**

| Basalt, soft | 773 – 777 |
| Basalt, hard, fractured, porous in places | 777 – 798 |
| Basalt and sand mixed | 798 – 809 |

### Latah Formation

#### Sediments of Moscow

| Sand, dark, some cemented | 809 – 817 |
| Clay, brown and gray, wood chips, tree | 817 – 867 |
| Sand, gray, cemented | 867 – 877 |
| Clay, brown | 877 – 928 |

### Grande Ronde Basalt

#### N1 magnetostratigraphic unit

**Cold Spring Ridge Member**

| Basalt, hard, black, some fractures | 928 – 1242 |

### Latah Formation

#### Sediments of Moscow

| Clay and basalt mixed | 1242 – 1250 |
| Clay, light brown | 1250 – 1253 |
Comments:

*This basalt was identified by chemistry as belonging to the Meyer Ridge Member (Conrey and Crow, 2014). The top of this unit is nearly 100 ft above the Grande Ronde Basalt in the Hawkins wells and University of Idaho wells 3 and 4. The Vantage is correspondingly thinner. I interpreted the basalt to have invaded the Vantage sediments from the main flows of the Meyer Ridge. This type of invasive feature is not uncommon in Columbia River Basalt Group flows where they come in contact with sediments.

Geochemical data for all samples run for this hole were provided by Stephen P. Reidel (written commun., November 14, 2016).

Latah County Tax Parcel RPM00000127510, 1850 W PULLMAN RD; owner is P.E.M. MANAGEMENT LLC; PALOUSE EMPIRE MALL, 37.7 AC SE 1/4 12  39  6.

References Cited:

1. WELL OWNER

Name: City of Moscow
Address: 122 E, 4th St., Moscow, ID 83843
Owner's Permit No.: 87-7069

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandonment)

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other

4. METHOD DRILLED

☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other

Thickness Diameter From To
375 inches 26 inches + 15 feet 50 feet
375 inches 180D
250 inches 16 inches + 25 feet 94 feet

6. LOCATION OF WELL

Sketch map location must agree with written location.

N

W

S

E

Lot No.  Block No.

7. WATER LEVEL

See attached Exhibit "A"

Static water level: 280 feet below land surface.
Flowing: ☐ Yes  ☐ No  ☐ G.P.M. flow
Artesian closing in pressure: p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature: °F, Quality

8. WELL TEST DATA

Discharge G.P.M.: 2800
Pumping Level: 552
Hours Pumped: 36

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth From</th>
<th>Depth To</th>
<th>Material</th>
<th>Water Yes/No</th>
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<tbody>
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<td>0</td>
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<td>hard yellow clay</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>soft brown rock</td>
<td>No</td>
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<tr>
<td>20</td>
<td>28</td>
<td>black basalt</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>36</td>
<td>medium black basalt, fracture</td>
<td>No</td>
<td></td>
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<tr>
<td>36</td>
<td>60</td>
<td>medium black basalt, fracture</td>
<td>No</td>
<td></td>
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<tr>
<td>115</td>
<td>145</td>
<td>very hard basalt black</td>
<td>No</td>
<td></td>
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<td>hard black basalt</td>
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<td>220</td>
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<td>325</td>
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<td>465</td>
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<td>fractured or broken gray basalt</td>
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<td>smooths out at 548</td>
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<td>572</td>
<td>hard grayish black basalt</td>
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<td></td>
</tr>
</tbody>
</table>

10. DRILLERS CERTIFICATION

I/w we certify that all minimum well construction standards were complied with at the time the rig was removed.

Leach Well Drilling, Inc.

Firm Name: Leach Well Drilling, Inc.
Firm No.: 99
Address: Moses Lake, WA 98837

Signed by (Firm Official) and (Operator)
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL OWNER
Name: City of Moscow
Address:
Owner's Permit No.: 87-82-N-10

2. NATURE OF WORK
☐ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other: (specify type)

4. METHOD DRILLED
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel ☐ Concrete ☐ Other
Thickness: inches Diameter: inches + feet + feet + feet + inches

Was casing drive shoe used? ☐ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☐ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation: inches by inches

Well screen installed? ☐ Yes ☐ No
Manufacturer's name:
Type: Model No.:

Diameter: Slotted size: Set from to feet to feet
Diameter: Slotted size: Set from to feet to feet

Gravel packed? ☐ Yes ☐ No ☐ Size of gravel

Placed from feet to feet

Surface seal depth: Material used in seal:
Sealing procedure used:
Method of joining casing:
Describe access port:

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level ______ feet below land surface.
Flowing? ☐ Yes ☐ No G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature ℉. Quality

8. WELL TEST DATA
☐ Pump ☐ Baller ☐ Air ☐ Other
Discharge G.P.M.
Pumping Level
Hours Pumped

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Material</th>
<th>Water Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>hard grey basalt</td>
<td></td>
</tr>
<tr>
<td>355</td>
<td>large vertical crevices like column rock</td>
<td></td>
</tr>
<tr>
<td>356</td>
<td>clay &amp; broken rock mix</td>
<td></td>
</tr>
<tr>
<td>357</td>
<td>clay, soft brown</td>
<td></td>
</tr>
<tr>
<td>362</td>
<td>gray hard clay</td>
<td></td>
</tr>
<tr>
<td>363</td>
<td>broken basalt &amp; clay</td>
<td></td>
</tr>
<tr>
<td>365</td>
<td>frac. sand to soft brown basalt</td>
<td></td>
</tr>
<tr>
<td>366</td>
<td>soft black basalt within layers of green slate, porous x</td>
<td></td>
</tr>
<tr>
<td>367</td>
<td>med black basalt fractured</td>
<td></td>
</tr>
<tr>
<td>368</td>
<td>med black basalt</td>
<td></td>
</tr>
<tr>
<td>369</td>
<td>heavy frac. soft black basalt</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>med hard black basalt</td>
<td></td>
</tr>
<tr>
<td>371</td>
<td>hard black basalt</td>
<td></td>
</tr>
<tr>
<td>372</td>
<td>hard black basalt</td>
<td></td>
</tr>
<tr>
<td>373</td>
<td>broken porous black &amp; brown</td>
<td></td>
</tr>
<tr>
<td>374</td>
<td>hard basalt, green slate top of agger</td>
<td></td>
</tr>
<tr>
<td>375</td>
<td>hard basalt, w. ash</td>
<td></td>
</tr>
<tr>
<td>376</td>
<td>frac black basalt</td>
<td></td>
</tr>
<tr>
<td>377</td>
<td>soft black basalt</td>
<td></td>
</tr>
<tr>
<td>378</td>
<td>soft black basalt</td>
<td></td>
</tr>
<tr>
<td>379</td>
<td>soft black basalt</td>
<td></td>
</tr>
<tr>
<td>380</td>
<td>cemented sand mix, tree sand</td>
<td></td>
</tr>
<tr>
<td>381</td>
<td>black basalt &amp; green cemented</td>
<td></td>
</tr>
<tr>
<td>382</td>
<td>soft black basalt</td>
<td></td>
</tr>
<tr>
<td>383</td>
<td>cemented sand, hard almost clay</td>
<td></td>
</tr>
<tr>
<td>384</td>
<td>hard brown clay appearance</td>
<td></td>
</tr>
<tr>
<td>385</td>
<td>brown &amp; gray clay mix, basalt</td>
<td></td>
</tr>
<tr>
<td>386</td>
<td>gray clay, wood chips, tree</td>
<td></td>
</tr>
<tr>
<td>387</td>
<td>cemented sand, green clay sand</td>
<td></td>
</tr>
<tr>
<td>388</td>
<td>cemented grey sand, gray clay</td>
<td></td>
</tr>
</tbody>
</table>

10. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Leach Well Drilling Firm No. 99
Address:
Signed by (Firm Official) 
(Operator) 1205

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
1. WELL OWNER

Name ____________________________

City of Moscow

Address ____________________________

Owner's Permit No. 87-82-N-10

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning) ____________________________

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other (specify type) ____________________________

4. METHOD DRILLED

☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other ____________________________

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other ____________________________

Thicknes Diameter From To

inches inches feet feet

inches inches feet feet

Was casing drive shoe used? ☐ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☐ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation ____________________________

Number From To perforations feet feet perforations feet feet perforations feet feet

Well screen installed? ☐ Yes ☐ No

Manufacturer's name ____________________________

Type Model No. ____________________________

Diameter Slot size Set from feet to feet

Diameter Slot size Set from feet to feet

Gravel packed? ☐ Yes ☐ No ☐ Size of gravel ____________________________

Placed from feet to feet

Surface seal depth ____________________________

Material used in seal: ☐ Cement grout

Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing

Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld

Describe access port ____________________________

☐ Cemented between strata ____________________________

6. LOCATION OF WELL

Sketch map location. Must agree with written location.

☐ N  ☐ E  ☐ S  ☐ W

Subdivision Name ____________________________

Lot No. Block No. ____________________________

County ____________________________

7. WATER LEVEL

Static water level _________ feet below land surface.

Flowing? ☐ Yes ☐ No G.P.M. flow ____________________________

Artesian closed-in pressure p.s.i. ____________________________

Controlled by: ☐ Valve ☐ Cap ☐ Plug

Temperature _______°F. Quality ____________________________

8. WELL TEST DATA

☐ Pump ☐ Bailer ☐ Air ☐ Other ____________________________

Discharge G.P.M. Pumping Level Hours Pumped ____________________________

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth From</th>
<th>To</th>
<th>Material</th>
<th>Water Yes No</th>
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</thead>
<tbody>
<tr>
<td>867</td>
<td>977</td>
<td>977</td>
<td>cemented gray sand</td>
<td>Yes</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>dark brown hard clay</td>
<td>Yes</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>dark brown clay like slate</td>
<td>No</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>light brown clay hard</td>
<td>No</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>black hard clay soft basalt mix</td>
<td>No</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>hard black basalt</td>
<td>No</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>heavy grey hard basalt</td>
<td>No</td>
</tr>
<tr>
<td>977</td>
<td>977</td>
<td>977</td>
<td>fine rough drilling, black</td>
<td>No</td>
</tr>
<tr>
<td>103</td>
<td>113</td>
<td>113</td>
<td>hard black basalt</td>
<td>No</td>
</tr>
<tr>
<td>113</td>
<td>113</td>
<td>113</td>
<td>little softer black basalt</td>
<td>No</td>
</tr>
<tr>
<td>113</td>
<td>113</td>
<td>113</td>
<td>small fractures</td>
<td>No</td>
</tr>
<tr>
<td>115</td>
<td>117</td>
<td>117</td>
<td>hard black basalt</td>
<td>No</td>
</tr>
<tr>
<td>117</td>
<td>212</td>
<td>212</td>
<td>mod hard black basalt 1988</td>
<td>No</td>
</tr>
<tr>
<td>120</td>
<td>222</td>
<td>222</td>
<td>hard black basalt</td>
<td>No</td>
</tr>
<tr>
<td>122</td>
<td>224</td>
<td>224</td>
<td>mod hard black basalt</td>
<td>No</td>
</tr>
<tr>
<td>124</td>
<td>225</td>
<td>225</td>
<td>soft black basalt some hard grayblue clay mix, almost slate appear.</td>
<td>No</td>
</tr>
<tr>
<td>125</td>
<td>225</td>
<td>225</td>
<td>soft light brown clay</td>
<td>No</td>
</tr>
</tbody>
</table>

10. Work started ____________ finished ____________

11. DRILLERS CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name ____________________________ Firm No. 99

Address ____________________________ Date ____________

Signed by (Firm Official) ____________________________

and ____________________________

(Operator) ____________________________
down-drop of all geologic horizons ~60' within Moscow Fault zone; suggestion that all horizons drop ~15' east of fault

(Extracted from Conrey and Crow, 2014)
### Stratigraphy of the Columbia River Basalt

<table>
<thead>
<tr>
<th>Saddle Mountains basalt</th>
<th>Weissenfels Ridge member</th>
<th>Magnetic polarity unit**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Priest Rapids member</td>
<td>PRL</td>
</tr>
<tr>
<td></td>
<td>Roza member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frenchman Springs member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eckler Mountain member</td>
<td></td>
</tr>
<tr>
<td><strong>Wanapum basalt</strong></td>
<td><strong>Sentinel Bluffs unit</strong></td>
<td>SF</td>
</tr>
<tr>
<td></td>
<td><strong>Slack Canyon unit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Field Springs unit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Winter Water unit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Umtanum unit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Ortley unit</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Grande Ronde basalt</strong></td>
<td><strong>Armstrong Canyon unit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Meyer Ridge unit</strong></td>
<td>MR</td>
</tr>
<tr>
<td></td>
<td><strong>Grouse Creek Unit</strong></td>
<td>GC</td>
</tr>
<tr>
<td></td>
<td><strong>Wapshilla Ridge unit</strong></td>
<td>WR, WRH, WRL</td>
</tr>
<tr>
<td></td>
<td><strong>Mt. Horrible unit</strong></td>
<td>MH</td>
</tr>
<tr>
<td></td>
<td><strong>China Creek unit</strong></td>
<td>CH</td>
</tr>
<tr>
<td></td>
<td><strong>Downey Gulch unit</strong></td>
<td>DG</td>
</tr>
<tr>
<td></td>
<td><strong>unnamed High-Si unit</strong></td>
<td>HS</td>
</tr>
<tr>
<td></td>
<td><strong>Center Creek unit</strong></td>
<td>CC</td>
</tr>
<tr>
<td></td>
<td><strong>Rogersburg unit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Teepee Butte unit</strong></td>
<td>TB</td>
</tr>
<tr>
<td></td>
<td><strong>Buckhorn Springs unit</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Imnaha basalt</strong></td>
<td></td>
<td>I</td>
</tr>
</tbody>
</table>

**Palouse Basin CRB units**

- **N1 Grande Ronde**: China Creek is the deepest unit known beneath Moscow.

1208 (Extracted from Conrey and Crow, 2014)
## MOSCOW CITY WELL 10

[DRILLED IN 2016]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 2016

<table>
<thead>
<tr>
<th>Well Log ID: D0069914</th>
<th>Elev (ft): 2608</th>
<th>Depth (ft): 991</th>
<th>Quad: Moscow West</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Latitude: 46.735090</th>
<th>Longitude: -117.039590</th>
<th>decimal degrees (WGS84)</th>
</tr>
</thead>
</table>

| 四, NW 四, SW 四, Sec. 12, T. 39 N, R. 6 W |

### Well Address and (or) Other Location Information:
2780 West A Street, Moscow, Idaho, on north side of road, near the end; about 80 ft east of the Washington-Idaho state line

### Location Method:
Latitude, longitude, and elevation from driller’s report; Latah County Assessor; Google Earth imagery; topographic map.

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Palouse Formation and Latah Formation (sediments of Bovill)</th>
<th>Clay, gravelly and sandy</th>
<th>0 – 55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, vesicular and weathered</td>
<td>55 – 72</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>Basalt, hard</td>
<td>72 – 113</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>Basalt, vesicular</td>
<td>113 – 115</td>
</tr>
<tr>
<td>Basalt</td>
<td>Basalt</td>
<td>115 – 190</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>Basalt, fractured</td>
<td>190 – 230</td>
</tr>
<tr>
<td>Basalt, vesicular in places</td>
<td>Basalt, vesicular in places</td>
<td>230 – 276</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Gravel, with fine to coarse sand</td>
<td>Gravel, with fine to coarse sand</td>
<td>276 – 290</td>
</tr>
<tr>
<td>Sand, fine to medium</td>
<td>Sand, fine to medium</td>
<td>290 – 306</td>
</tr>
<tr>
<td>Clay and sand, fine</td>
<td>Clay and sand, fine</td>
<td>306 – 330</td>
</tr>
<tr>
<td>Sand, fine to medium</td>
<td>Sand, fine to medium</td>
<td>330 – 350</td>
</tr>
<tr>
<td>Sand, clayey</td>
<td>Sand, clayey</td>
<td>350 – 390</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>390 – 398</td>
<td>Sand, fine to medium</td>
<td></td>
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<tr>
<td>398 – 406</td>
<td>Clay, organic layer, wood debris</td>
<td></td>
</tr>
<tr>
<td>406 – 420</td>
<td>Sand, fine to medium</td>
<td></td>
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<tr>
<td>420 – 425</td>
<td>Clay, black wood debris</td>
<td></td>
</tr>
<tr>
<td>425 – 436</td>
<td>Sand, fine to medium</td>
<td></td>
</tr>
<tr>
<td>436 – 452</td>
<td>Clay, brown, sand at basal 1 ft</td>
<td></td>
</tr>
<tr>
<td>452 – 488</td>
<td>Clay, brown</td>
<td></td>
</tr>
</tbody>
</table>

*Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member(?)
- Basalt, broken
  - 488 – 498
- Clay, black, wood debris
  - 498 – 500
- Basalt, vesicular
  - 500 – 515

Latah Formation
Sediments of Moscow
- Clay, brown, minor gravel and sand
  - 515 – 554

Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member
- Basalt, hard
  - 554 – 556
- Clay, brown
  - 556 – 563
- Basalt, hard
  - 563 – 587

Latah Formation
Sediments of Moscow
- Clay, brown, minor gravel and sand
  - 587 – 590
- Gravel, clayey, wood debris
  - 590 – 610
- Sand and clay, minor gravel, wood debris
  - 610 – 630
- Gravel, clayey, wood debris
  - 630 – 670
- Clay, laminated, dark brown
  - 670 – 694

Grande Ronde Basalt
R2 magnetostratigraphic unit
Wapshilla Ridge Member and Mount Horrible member, undifferentiated
- Basalt, sand, clay, mixed
  - 694 – 711
- Basalt, vesicular, fractured
  - 711 – 716
- Basalt, hard
  - 716 – 810

N1 magnetostratigraphic unit
Mount Horrible Member(?)
- Basalt, vesicular
  - 810 – 833
- Sand
  - 833 – 836
- Basalt, vesicular
  - 836 – 851

Latah Formation
Sediments of Moscow
- Sand, fine to medium
  - 851 – 870
- Sand, silt, and clay, mixed
  - 870 – 880
- Clay, light gray
  - 880 – 923
<table>
<thead>
<tr>
<th>Description</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand, fine grained</td>
<td>923</td>
<td>935</td>
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<tr>
<td>Silt</td>
<td>935</td>
<td>945</td>
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<td>Sand and clay, mixed</td>
<td>945</td>
<td>955</td>
</tr>
<tr>
<td>Silt, dark gray</td>
<td>955</td>
<td>987</td>
</tr>
<tr>
<td>Clay, black</td>
<td>987</td>
<td>991</td>
</tr>
</tbody>
</table>

Comments:

*The interpretation of Meyer Ridge is based on comparison to samples from Moscow city well 9 at a similar elevation: the geochemistry from these chips indicates they were mixed with other rocks which contaminated the sample and thus provided unreliable results.

Otherwise, the interpretation utilized lithology log by Golder Associates (Derek Holom, written commun., June 17, 2016) and rock chemistry by Hamilton Analytical Laboratory (Steve Robischon, written commun., August 19, 2016).

Latah County Tax Parcel RPM0385003001B, BLK 3 LOT 1, HATLEY ADD REPLAT, City of Moscow.

References Cited:
### IDAHO DEPARTMENT OF WATER RESOURCES

**WELL DRILLER'S REPORT**

**ID# W/NORTH**

1. **WELL TAG NO**: 00069914
   - Drilling Permit No.: 078075
   - Water right or injection well #: 87-7069

2. **OWNER**:
   - Name: City of Moscow
   - Address: 205 East 3rd St.
   - City: Moscow
   - State: ID
   - Zip: 83843

3. **WELL LOCATION**:
   - Twp: 39 North or South
   - Rge: 06
   - Sec: 12
   - NW 1/4
   - SW 1/4
   - Gov't Lot: 117
   - County: Latah
   - Lat.: 46° 35' 50"
   - Long.: 117° 03' 59"
   - Address of Well Site: North side of West A st. West of Warbonnet City Moscow

4. **USE**:
   - Domestic
   - Municipal
   - Monitor
   - Irrigation
   - Thermal
   - Injection
   - Other

5. **TYPE OF WORK**:
   - New well
   - Replacement well
   - Modify existing well
   - Abandonment
   - Other

6. **DRILL METHOD**:
   - Air Rotary
   - Mud Rotary
   - Cable
   - Other

7. **SEALING PROCEDURES**:
   - neat cement
   - neat cement

8. **CASING/LINER**:
   - Diameter (nominal): 3" & 24"
   - From (ft): 0 & 714
   - Material: 1/2" steel
   - Casing Liner: 1/2" steel
   - Threaded: Welded

9. **PERFORATIONS/SCREENS**:
   - Perforations: Y
   - N Method: screen
   - Staggered: Mono.

10. **FILTER PACK**:
   - Filter Material: From (ft)
   - To (ft)
   - Quantity (ft or ft³)
   - Placement method

11. **FLOWS ARTERIAN**:
    - Flowing Artesian? Y
    - N Artesian Pressure (PSIG)

12. **STATIC WATER LEVEL and WELL TESTS**:
    - Depth first water encountered (ft): 372
    - Static water level (ft): 372
    - Water temp. (°F): 55
    - Bottom hole temp. (°F): 2
    - Describe access port: 2" threaded

13. **LITHOLOGIC LOG and/or repairs or abandonment**:

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>From To</th>
<th>Remarks, Lithology or description of repairs or abandonment, water temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>38&quot;</td>
<td>0 55&quot;</td>
<td>brown Palouse loess&amp;Latah formation</td>
</tr>
<tr>
<td>38&quot;</td>
<td>55 89&quot;</td>
<td>black basalt-Wanapum</td>
</tr>
<tr>
<td>28&quot;</td>
<td>89 276&quot;</td>
<td>black basalt-Wanapum</td>
</tr>
<tr>
<td>28&quot;</td>
<td>276 280&quot;</td>
<td>fine sands-Latah-Vantage Member</td>
</tr>
<tr>
<td>28&quot;</td>
<td>280 290&quot;</td>
<td>course sands-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>290 306&quot;</td>
<td>very fine sands-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>306 340&quot;</td>
<td>fine sands with some clay-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>340 395&quot;</td>
<td>fine sands-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>395 451&quot;</td>
<td>fine sands darker with some wood</td>
</tr>
<tr>
<td>28&quot;</td>
<td>451 488&quot;</td>
<td>Dk brown clays-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>488 496&quot;</td>
<td>broken basalt-Grand Ronde</td>
</tr>
<tr>
<td>28&quot;</td>
<td>496 500&quot;</td>
<td>basalt/wood-Grande Ronde</td>
</tr>
<tr>
<td>28&quot;</td>
<td>500 510&quot;</td>
<td>basalt with clays-Grande Ronde</td>
</tr>
<tr>
<td>28&quot;</td>
<td>510 515&quot;</td>
<td>basalt-Grande Ronde</td>
</tr>
<tr>
<td>28&quot;</td>
<td>515 534&quot;</td>
<td>brown clay with some basalt-Latah</td>
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<tr>
<td>28&quot;</td>
<td>534 536&quot;</td>
<td>basalt-Grande Ronde</td>
</tr>
<tr>
<td>28&quot;</td>
<td>536 563&quot;</td>
<td>brown clay-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>563 587&quot;</td>
<td>basalt-Grande Ronde</td>
</tr>
<tr>
<td>28&quot;</td>
<td>587 670&quot;</td>
<td>sands/clay/wood-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>670 695&quot;</td>
<td>dk. brown sticky clay-Latah</td>
</tr>
<tr>
<td>28&quot;</td>
<td>695 729&quot;</td>
<td>fractured basalt-Grande Ronde</td>
</tr>
<tr>
<td>28.5</td>
<td>729 729&quot;</td>
<td>basalt-Grande Ronde</td>
</tr>
<tr>
<td>28.5</td>
<td>729 851&quot;</td>
<td>basalt-Grande Ronde</td>
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<tr>
<td>28.5</td>
<td>851 911&quot;</td>
<td>sandstone/siltstone-Latah</td>
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**Date Started**: 4-25-16
**Date Completed**: 6-19-2016

**Company Name**: Board of Co.
**Co. No.**: 7-6-2016

**Principal Driller**: Date 6-21-16
**Operator I**: Date 6-21-16
**Operator II**: Date 6-21-16

*Signature of Principal Driller and rig operator are required.*
## Soil Profile

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 - 55.0</td>
<td>OVERBURDEN - gravelly to sandy CLAY</td>
</tr>
<tr>
<td>55.0 - 72.0</td>
<td>BASALT - Moderately weathered, fractured, vesicular</td>
</tr>
<tr>
<td>72.0 - 113.0</td>
<td>BASALT - slight weathered to fresh, hard, no vesicules, fracture frequency decreasing with depth</td>
</tr>
<tr>
<td>113.0 - 115.0</td>
<td>BASALT - fresh, vesicular, hard</td>
</tr>
<tr>
<td>115.0 - 190.0</td>
<td>BASALT - dark gray to black, fine grained, hard to very hard</td>
</tr>
<tr>
<td>190.0 - 230.0</td>
<td>BASALT - jointed, slightly weathered, white to greenish white staining on fracture surfaces, no vesicules, dark brownish gray</td>
</tr>
<tr>
<td>230.0 - 276.0</td>
<td>BASALT - medium gray, slightly vesicular</td>
</tr>
</tbody>
</table>

### Notes
- Water Levels
  - Elevation: 2608
  - Inclination: -90

### Drilling Method
- Mud Rotary

### Project Details
- Project: City of Moscow/Well # 10/ID
- Project Number: 1523515
- Location: Moscow, Idaho

### Coordinate System
- Datum: Geodetic
- Azimuth: N/A
- Coordinates: N: 5,175,762.70   E: 496,978.71

### Drilling Contractor
- Boart-Longyear

### Log Information
- Logged: BSB
- Checked: BSB
- Date: 5/26/16
| DEPTH (ft) | DESCRIPTION | PENETRATION RESISTANCE | NOTES \\n|-----------|-------------|------------------------|-------|
| 230.0 - 276.0 | BASALT - medium gray, slightly vesicular | | |
| 276.0 - 290.0 | GRAVEL, fine, some sand fine to coarse grading to SAND, fine, some gravel fine | | |
| 290.0 - 306.0 | SAND, fine to medium, gray | | |
| 306.0 - 330.0 | CLAY and fine SAND, greenish gray | | |
| 330.0 - 350.0 | SAND, fine to medium, gray | | |
| 350.0 - 390.0 | Clayey SAND, fine to medium, gray, loose | | |
| 390.0 - 398.0 | SAND, fine to medium, gray, loose | | |
| 398.0 - 406.0 | Organic Layer, black wood debris | | |
| 406.0 - 420.0 | SAND, fine to medium, gray, loose | | |
| 420.0 - 425.0 | Organic Layer, black wood debris | | |
| 425.0 - 430.0 | SAND, fine to medium, gray, loose | | |
| 430.0 - 435.0 | CLAY, medium to high plasticity, laminated, dark brown, firm to stiff | | |
| 430.0 - 435.0 | SANDSTONE, completely weathered, blue-green and light gray | | |
| 435.0 - 440.0 | CLAY, medium to high plasticity, laminated, dark brown, firm to stiff | | |
| 440.0 - 447.0 | fine sandy CLAY, high plasticity, hard, dark brown | | |
| 447.0 - 450.0 | BASALT, broken, dark gray | | |
| 450.0 - 500.0 | | | |
498.0 - 500.0
Organic Layer, black wood debris

500.0 - 515.0
BASALT, vesicular, dark gray

515.0 - 554.0
CLAY, high plasticity, dark brown, scattered fine gravel and coarse sand

554.0 - 563.0
BASALT, hard, dark gray

563.0 - 590.0
CLAY, high plasticity, dark brown, scattered fine gravel and coarse sand

590.0 - 610.0
Clayey GRAVEL, fine to coarse, some fine sand, woody debris (30-40%), dark grayish brown

610.0 - 630.0
Gravelly SAND and CLAY, some woody debris, dark grayish brown

630.0 - 670.0
Clayey GRAVEL, fine to coarse, some fine sand, woody debris, dark grayish brown

670.0 - 695.0
SILTY CLAY, slightly plastic, stratified, dark grayish brown

695.0 - 716.0
BASALT, vesicular, dark gray, some chert, sandstone and siltstone in cuttings

716.0 - 810.0
BASALT, hard, dark gray, some chert, sandstone and siltstone in cuttings

Mud Rotary
### Soil Profile

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>716.0 - 810.0</td>
<td>BASALT, hard, dark gray, some chert, sandstone and siltstone in cuttings (Continued)</td>
</tr>
<tr>
<td>810.0</td>
<td>VESICULAR BASALT</td>
</tr>
<tr>
<td>833.0</td>
<td>SAND</td>
</tr>
<tr>
<td>833.0 - 836.0</td>
<td>VESICULAR BASALT - blue staining in vesicules</td>
</tr>
<tr>
<td>851.0</td>
<td>SANDSTONE - fine to medium grained, medium hard to hard, dark gray</td>
</tr>
<tr>
<td>880.0</td>
<td>SANDSTONE/SILTSTONE/MUDSTONE - interbedded, medium hard</td>
</tr>
<tr>
<td>904.0</td>
<td>CLAY/CLAYSTONE - firm to hard, medium light gray</td>
</tr>
<tr>
<td>923.0</td>
<td>CLAYSTONE - medium hard, medium light gray</td>
</tr>
<tr>
<td>935.0</td>
<td>SANDSTONE - fine grained, medium hard, light greenish gray</td>
</tr>
<tr>
<td>935.0 - 945.0</td>
<td>SILTSTONE - medium hard, medium brown to olive gray</td>
</tr>
<tr>
<td>945.0</td>
<td>SANDSTONE/CLAYSTONE interbeds - medium hard, dark grayish brown to olive brown</td>
</tr>
<tr>
<td>955.0</td>
<td>SILTSTONE - medium hard, dark gray</td>
</tr>
<tr>
<td>961.0</td>
<td>MUDSTONE - medium hard, black, some bluish staining on fracture surfaces Boring completed at 991.0 ft.</td>
</tr>
</tbody>
</table>

### Penetration Resistance

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Blows per 6 in</th>
</tr>
</thead>
<tbody>
<tr>
<td>716.0 - 810.0</td>
<td>140 lb hammer 30 inch drop</td>
</tr>
<tr>
<td>810.0</td>
<td>1798.0</td>
</tr>
<tr>
<td>836.0</td>
<td>1775.0</td>
</tr>
<tr>
<td>851.0</td>
<td>1728.0</td>
</tr>
<tr>
<td>880.0</td>
<td>1704.0</td>
</tr>
<tr>
<td>904.0</td>
<td>991.0</td>
</tr>
</tbody>
</table>

### Notes

- Boring completed at 991.0 ft.
- Project: City of Moscow Well #10/ID
- Project Number: 1523515
- Location: Moscow, Idaho
- Logs: BSB
- Checked: BSB
- Date: 5/26/16
- Drilling Method: Mud Rotary
- Drilling Date: N/A
- Drilling Contractor: Boart-Longyear
- Datum: Geodetic
- Azimuth: N/A
- Coordinates: N: 5,175,762.70   E: 496,978.71
## Normalized Major Elements (Weight %)

<table>
<thead>
<tr>
<th></th>
<th>SA-1</th>
<th>SA-2</th>
<th>SA-4</th>
<th>SA-5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>55.32</td>
<td>55.15</td>
<td>54.54</td>
<td>54.09</td>
<td>55.44</td>
<td>54.40</td>
<td>54.38</td>
<td>54.88</td>
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<tr>
<td>TiO₂</td>
<td>2.135</td>
<td>2.086</td>
<td>1.735</td>
<td>1.720</td>
<td>2.219</td>
<td>2.119</td>
<td>2.163</td>
<td>2.158</td>
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<td>0.182</td>
<td>0.204</td>
<td>0.189</td>
<td>0.243</td>
<td>0.238</td>
<td>0.203</td>
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<td>MgO</td>
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<td>3.80</td>
<td>4.71</td>
<td>4.73</td>
<td>3.59</td>
<td>3.97</td>
<td>3.59</td>
<td>3.70</td>
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<tr>
<td>CaO</td>
<td>8.35</td>
<td>8.63</td>
<td>9.23</td>
<td>9.22</td>
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<td>7.93</td>
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<td>8.01</td>
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<td>Na₂O</td>
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<td>2.89</td>
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<td>3.14</td>
<td>2.95</td>
<td>3.02</td>
<td>3.05</td>
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<tr>
<td>K₂O</td>
<td>1.50</td>
<td>1.51</td>
<td>1.40</td>
<td>1.42</td>
<td>1.44</td>
<td>1.57</td>
<td>1.39</td>
<td>1.51</td>
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<tr>
<td>P₂O₅</td>
<td>0.391</td>
<td>0.389</td>
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<td>0.296</td>
<td>0.443</td>
<td>0.373</td>
<td>0.475</td>
<td>0.393</td>
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</tbody>
</table>

SO₃ ≥

|       | 0.32  | 0.07  | 0.05  | 0.08  | 0.06  | 0.07  | 0.08  | 0.04  | 0.07  |


**Sum+trox** 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00 100.00

## Normalized Trace Elements (ppm)

|  | Ni | Cr | V  | Co | Sc | Cu | Zn | Ga | Ba | Rb | Cs | Sr | Y  | Zr | Nb | La | Ce | Nd | Th | U  | Pb |
|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|   | 27 | 70 | 364| 37 | 36 | 59 | 136| 21 | 815| 44 | 1 | 351| 40 | 179| 14 | 24 | 48 | 28 | 5 | 1 |
|   | 28 | 65 | 370| 31 | 36 | 50 | 128| 20 | 738| 42 | 0 | 334| 37 | 171| 13 | 19 | 46 | 21 | 2 | 2 |
|   | 36 | 106| 330| 27 | 34 | 57 | 110| 20 | 563| 34 | 0 | 316| 33 | 150| 11 | 11 | 39 | 21 | 5 | 0 |
|   | 37 | 103| 326| 34 | 36 | 58 | 110| 21 | 513| 35 | 0 | 314| 32 | 148| 11 | 11 | 38 | 22 | 6 | 0 |
|   | 21 | 193| 386| 41 | 32 | 22 | 136| 23 | 781| 38 | 0 | 356| 38 | 172| 12 | 11 | 44 | 28 | 7 | 0 |
|   | 21 | 190| 372| 27 | 35 | 19 | 126| 22 | 572| 36 | 0 | 331| 37 | 167| 11 | 11 | 44 | 26 | 6 | 0 |
|   | 20 | 193| 381| 22 | 32 | 22 | 131| 22 | 581| 36 | 0 | 338| 40 | 169| 10 | 11 | 41 | 24 | 7 | 0 |
|   | 19 | 189| 379| 19 | 31 | 22 | 129| 22 | 519| 34 | 0 | 333| 37 | 168| 10 | 11 | 43 | 22 | 6 | 0 |
|   | 18 | 187| 378| 19 | 27 | 22 | 130| 22 | 581| 32 | 0 | 332| 39 | 171| 10 | 11 | 44 | 22 | 6 | 0 |
|   | 18 | 185| 373| 19 | 25 | 22 | 129| 22 | 572| 30 | 0 | 330| 39 | 168| 10 | 11 | 43 | 22 | 6 | 0 |

**Sum** includes unnormalized majors plus LOI and volatiles, if any.

**Sum+trox** includes trace elements expressed as oxides.

FeO*: Total iron is expressed as FeO.

R: Repeat sample prepared from powder.
<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>SA-4</th>
<th>SA-4R</th>
<th>BHVO-1</th>
<th>BHVO-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>790'</td>
<td>54.86</td>
<td>54.47</td>
<td>54.65</td>
<td>54.78</td>
<td>54.54</td>
<td>54.50</td>
<td>50.05</td>
<td>50.04</td>
</tr>
<tr>
<td>810'</td>
<td>2.144</td>
<td>2.086</td>
<td>1.929</td>
<td>1.932</td>
<td>1.735</td>
<td>1.733</td>
<td>2.773</td>
<td>2.763</td>
</tr>
<tr>
<td>850'</td>
<td>12.02</td>
<td>12.00</td>
<td>11.77</td>
<td>11.73</td>
<td>9.96</td>
<td>10.01</td>
<td>11.31</td>
<td>11.21</td>
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<tr>
<td>Ni</td>
<td>0.196</td>
<td>0.198</td>
<td>0.199</td>
<td>0.196</td>
<td>0.182</td>
<td>0.181</td>
<td>0.174</td>
<td>0.171</td>
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<tr>
<td>MnO</td>
<td>3.66</td>
<td>3.85</td>
<td>3.92</td>
<td>4.02</td>
<td>4.71</td>
<td>4.72</td>
<td>7.14</td>
<td>7.25</td>
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<tr>
<td>MgO</td>
<td>8.00</td>
<td>8.15</td>
<td>8.24</td>
<td>8.13</td>
<td>9.23</td>
<td>9.23</td>
<td>11.53</td>
<td>11.45</td>
</tr>
<tr>
<td>CaO</td>
<td>3.04</td>
<td>2.98</td>
<td>3.02</td>
<td>3.03</td>
<td>2.89</td>
<td>2.89</td>
<td>2.19</td>
<td>2.31</td>
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<tr>
<td>Na2O</td>
<td>1.45</td>
<td>1.27</td>
<td>1.38</td>
<td>1.44</td>
<td>1.40</td>
<td>1.40</td>
<td>0.52</td>
<td>0.53</td>
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<tr>
<td>K2O</td>
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<td>0.380</td>
<td>0.429</td>
<td>0.384</td>
<td>0.295</td>
<td>0.294</td>
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<td>0.275</td>
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<td>P2O5</td>
<td>0.08</td>
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<td>0.04</td>
<td>0.05</td>
<td>0.05</td>
<td>0.01</td>
<td>0.03</td>
</tr>
</tbody>
</table>

SO3 ≥

|        | 99.76 | 99.76 | 99.77 | 99.77 | 99.76 | 99.76 | 99.75  | 99.81  |

Sum

|        | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 99.99  | 100.00  |

Sum+trox

### Normalized Trace Elements (ppm)

|        | Ni   | Cr   | V    | Co   | Sc   | Cu   | Zn   | Ga   | Ba   | Rb   | Cs   | Sr   | Y    | Zr   | Nb   | La   | Ce   | Nd   | Th   | U    | Pb   |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 10     | 17   | 20   | 377  | 26   | 33   | 22   | 129  | 21   | 599  | 39   | 1   | 340  | 39   | 169  | 11   | 17   | 43   | 26   | 4   | 0    |
| 11     | 19   | 20   | 377  | 24   | 35   | 30   | 129  | 22   | 588  | 34   | 0   | 338  | 39   | 170  | 11   | 24   | 43   | 27   | 0   | 2    |
| 12     | 17   | 18   | 358  | 23   | 36   | 36   | 123  | 21   | 547  | 36   | 2   | 332  | 37   | 164  | 11   | 25   | 42   | 28   | 5   | 6    |
| 13     | 17   | 19   | 355  | 23   | 36   | 34   | 127  | 23   | 554  | 36   | 0   | 331  | 37   | 164  | 12   | 23   | 43   | 26   | 1   | 0    |
| SA-4   | 36   | 106  | 330  | 27   | 36   | 57   | 110  | 20   | 563  | 34   | 3   | 316  | 33   | 150  | 11   | 22   | 39   | 21   | 4   | 0    |
| SA-4R  | 37   | 106  | 326  | 34   | 37   | 60   | 108  | 20   | 558  | 34   | 0   | 315  | 33   | 150  | 11   | 22   | 44   | 25   | 3   | 0    |
| BHVO-1 | 117  | 283  | 317  | 48   | 32   | 140  | 105  | 21   | 125  | 10   | 0   | 398  | 27   | 170  | 18   | 15   | 37   | 25   | 3   | 0    |
| BHVO-1 | 119  | 288  | 320  | 45   | 31   | 138  | 107  | 21   | 134  | 9    | 0   | 398  | 26   | 175  | 19   | 16   | 38   | 25   | 1   | 0    |

Sum includes unnormalized majors plus LOI and volatiles, if any.

Sum+trox includes trace elements expressed as oxides.

FeO*: Total iron is expressed as FeO.

R: Repeat sample prepared from powder.
**BILL MOTLEY WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 616815
Elev (ft): 2600 ±10
Depth (ft): 440
Quad: Moscow West

Latitude: 46.718907
Longitude: -117.101383
decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 11, T. 14 N, R. 45 E
and
SE ¼, SE ¼, Sec. 2, T. 14 N, R. 45 E

**Well Address and (or) Other Location Information:**
1301 Sunshine Road, Pullman, Wash.; north side of road; house straddles section line between sections 2 and 11 (tax parcel is listed in section 11).

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery, topographic map. PLSS subdivisions incorrect on driller’s report. Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 → 36</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>36 → 181</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>181 → 202</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>202 → 294</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft, red and black</td>
<td>294 → 304</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>304 → 399</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>399 → 407</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>407 → 440</td>
</tr>
</tbody>
</table>
Comments:

County Tax Parcel 200004514111694, 1301 SUNSHINE RD, NE1/4 LOT 4D THORSTEN SHPLT #1; owner is now HEATH, RICHARD A (and likely ANN MARIE COX); 5.02 acres; grantors were THORSTEN, JAMES/TERESA to MOTLEY & MOTLEY INC on 08/01/07, and TWO-GM LLC to HEATH, RICHARD A on 07/17/09.

References Cited:
WATER WELL REPORT

Construction/Decommission (X" in circle)
X Construction
Decommission
ORIGINAL INSTALLATION

Notice of Intent Number: W218070

Proposed Use: x Domestic i Irrigation 0 0 Municipal

Type of Well: x New well 0 0 Reinjected 0 0 Undrilled

Dimensions: Diameter of well 8 in. Depth to gravel 440 ft.

Construction Details:
Casing: x Well cased 0 0 No. of joints 9 0 Dia. from 4 in. to 6 in.
0 0 Dia. from 6 in. to 8 in.
0 0 Dia. from 8 in. to 10 in.

Dimensions: Diameter of well 8 in. Depth to gravel 440 ft.

Perforations: x Yes 0 0 No

Type of perforation: x Perforated 0 0 pov. from 4 in. to 6 in.
0 0 pov. from 6 in. to 8 in.
0 0 pov. from 8 in. to 10 in.

Screens: x Yes 0 0 No

Materials used from 4 in. to 6 in.: from 6 in. to 8 in.: from 8 in. to 10 in.: 0 0 0

Groundwater packers: x Yes 0 0 No

Filter Media used from 4 in. to 6 in.: from 6 in. to 8 in.: from 8 in. to 10 in.: 0 0 0

Surface Seal: x Yes 0 0 No

Material used in surface seal: Bentonite

Did any extra caution cause leaks? x Yes 0 0 0 0

Type of water: x Depth of intake

Method of sealing screen: 0

Pump: Manufacturer's Name

Water Levels:

State lev. 0 0

Artesian pressure: 0 per square inch

Artesian water is controlled by: 0

Well Tests:

Water level is elevated above mean sea level: 0

Water level is controlled by: 0

Was a pump test made? x Yes 0 0 0 0

Water level: 0

Yield: 0

Duration of test: 0

Boiler Test: 0

Rate of flow: 0

Temperature of water: 0

Chemical analysis performed: x Yes 0 0

WELL CONSTRUCTION CERTIFICATION: I, [Signature], hereby certifies that this well was constructed in accordance with all Washington State well construction regulations and the information reported above is true to the best of my knowledge and belief.

Driller/Engineer/Trainer Name: [Signature]

Driller/Engineer/Trainer License No.: [Signature]

JF Trainer: [Signature]

Driller/Engineer/Trainer License No.: [Signature]

Driller's Signature: [Signature]

Driller's License No.: [Signature]

Driller's Signatures: [Signature]

CURRENT

Notice of Intent No.: W218070

Unique Ecology Well ID Tag No.: AH756

Water Right Permit No.

Property Owner Name: Bill Mimsley

Well Street Address: 1301 Sunshine Rd

City: Pullman

County: Whitman

Location NW 1/4/14 SW 1/4 Sec 11

Township N. R. 45 E. Range 45 (East of the meridian)

Tax Parcel No. (Required): 2-0-000-45-14-11-2694

CONSTRUCTION OR RECONSTRUCTION PROCEDURE:

Formation drains by order, character, size of material and structure, and the kind and nature of the material in each section prepared, with at least one entry for each change of information (120 ADDITIONAL SHEETS IF NEEDED).

MATERIAL: FROM

CLAY HARD BROWN 0 36

DASALT STRONG 0 101

DASALT WEATHERED WEAK 0 181

DASALT STRONG 0 232

DASALT RED & BLACK SOIL 0 294

DASALT STRONG 0 304

DASALT WEATHERED WEAK 399 407

DASALT STRONG 407 440

RECEIVED

JUL 1 4 2008

DEPARTMENT OF ECOLOGY

EASTERN REGIONAL OFFICE

Start Date: 9/16/08

Completed Date: 9/16/08

Unfiled Notes Page 1

The Department of Ecology does NOT warranty the Data and/or the Information on this Well Report.
FRANK MOTLEY WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: 1235290  Elev (ft): 2620 ±10  Depth (ft): 139  7.5’  Quad: Pullman

Latitude: 46.711467°  Longitude: -117.222183°  decimal degrees (WGS84)

1/4, NW 1/4, SW 1/4, Sec. 12, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
21012 U.S. 195, Pullman, Wash., on west side of highway

Location Method:
Location is for well (from latitude and longitude recorded by driller); Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect well address and ¼-¼ Section

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td>Clay</td>
</tr>
<tr>
<td></td>
<td>Sand</td>
</tr>
<tr>
<td></td>
<td>Clay</td>
</tr>
</tbody>
</table>

* Based on nearby Benno Mohr well where Saddle Mountains Basalt was interpreted but no chemical data to verify
Comments:

Whitman County Tax Parcel 200004414123662, 21012 SR 195, SW1/4 OF LANCE MITCHELL 195 SHPLT, owners are MOTLEY, FRANK/CHRISTIE; 4.0 acres; 07/16/15: grantors were MITCHELL, LANCE W/DEBRA to MOTLEY, FRANK/CHRISTIE; 9/18/2015: building permit for NEW HOME: 3631SF MAIN FL 948SF ATTACHED 721SF BANUS ROOM ABOVE GARAGE.

References Cited:
**WATER WELL REPORT**

**Notice of Intent Number:** W360659

**Property Owner Last Name:** Motley

**First Name:** Frank

**Organization Name:**

**Well Tag ID Number (e.g., AAA-001):** APN 269

**Variance Granted? (Circle One):** Yes

**Water Right Permit Required? (Circle One):** No

**Method (Circle One):**

- Cable
- Dug
- Hydrofracturing – Driven
- Jetted
- Other

**Drilling Start Date:** 9/2/15

**Drilling Completion Date:** 7/11/15

**Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok):**

**Well Street Address:** 21012 SR270

**Well City:** Pullman

**Well County:** Whitman

**Well Zip Code:** 99163

**Tax Parcel Number:** 200004414133662

**If claiming tax parcel exemption (Circle One):**

- Tribal
- Federal Property
- Right of Way
- Railroad Land

**Constitution Information – Securely Attach ( Staple) Additional Sheets of Information (No Drawings) as Needed.**

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Circle One</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>44</td>
<td>East or West</td>
<td>12</td>
</tr>
</tbody>
</table>

**Latitude:** N46 49.688

**Decimal Degrees; Longitude:** W117 13.331

**CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.**

**Diameter of Well:** 8 in, Drilled

**Depth of Completed Well:** 139 ft 0 in

**Casing (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered):**

<table>
<thead>
<tr>
<th>Type (Circle One)</th>
<th>Concrete Plastic Other</th>
<th>Diameter 8 inches Stickup 12 inches Depth 65 ft in TO ft in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type (Circle One)</td>
<td>Concrete Plastic Other</td>
<td>Diameter 8 inches Stickup 12 inches Depth 65 ft in TO ft in</td>
</tr>
</tbody>
</table>

**Liners? Circle One Yes No**

<table>
<thead>
<tr>
<th>If yes, then complete the below fields that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 (Circle One) PVC Steel Other Diameter in, From ft in TO ft in</td>
</tr>
<tr>
<td>Type 2 (Circle One) PVC Steel Other Diameter in, From ft in TO ft in</td>
</tr>
</tbody>
</table>

**Perforations? Circle One Yes No**

<table>
<thead>
<tr>
<th>If yes, then complete the below fields that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Perforator (Circle One) Drill Mills Knife Saw cut Star Torch Cut Other Perforation size in by in Total Perforations</td>
</tr>
<tr>
<td>Perforation 1 from ft in TO ft inches</td>
</tr>
<tr>
<td>Perforation 2 from ft in TO ft inches</td>
</tr>
</tbody>
</table>

**Screens? (Circle One) Yes No**

<table>
<thead>
<tr>
<th>If yes, then complete the below fields that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mfr 1 Type Diam Slot Size From ft in TO ft in</td>
</tr>
<tr>
<td>Mfr 2 Type Diam Slot Size From ft in TO ft in</td>
</tr>
</tbody>
</table>

---

**ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the data and/or information on this Well Report.**

- If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.
- Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes No (If yes, then complete the below fields that apply)

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _____ ft _____ in TO _____ ft _____ in

Packing Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _____ ft _____ in TO _____ ft _____ in

Surface Seal Was there an existing surface seal? Yes or No Depth of Seal 10.4 ft _____ in

Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete (Dry Bentonite) Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes No If yes, Mfr Name Pump Type HP

Static Water Level (Circle One and fill in the blanks if needed)

Yes Measured Level (Below top of well) 110 ft _____ in Date Measured 9/11/15

Flowing Artesian (Circle One) Greater Than or Equal To ____ GPM ____ PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)

Dry Hole

Unusable Water Strata? (Circle One) Yes No If Yes is circled, method of sealing strata off

Strata 1 (Specify Unusable Water Type) From _____ ft _____ in TO _____ ft _____ in

Strata 2 (Specify Unusable Water Type) From _____ ft _____ in TO _____ ft _____ in

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test Date of test 9/11/15 (Circle One) Greater Than or Equal To _____ GPM, with ____ Drawdown after ____ hrs ____ min

Air Test Date of test 9/11/15 (Circle One) Greater Than or Equal To 10 GPM, with stem set at ____ ft 0 in

Pump Test Date of test ____ Test performed by ____

Note: Drawdown=the amount the water level is lowered below the static level

Yield gpm, with ____ ft _____ in; Drawdown after ____ hrs ____ min Yield gpm, with ____ ft _____ in; Drawdown after ____ hrs ____ min

Yield gpm, with ____ ft _____ in; Drawdown after ____ hrs ____ min Yield gpm, with ____ ft _____ in; Drawdown after ____ hrs ____ min

Yield gpm, with ____ ft _____ in; Drawdown after ____ hrs ____ min Yield gpm, with ____ ft _____ in; Drawdown after ____ hrs ____ min

Note: Recovery=The time taken at zero when the pump is turned off. Water level is measured from the well top to…Ask Lars for wording

Time __ hrs ____ min; Water Level __ ft _____ in Time __ hrs ____ min; Water Level __ ft _____ in

Time __ hrs ____ min; Water Level __ ft _____ in Time __ hrs ____ min; Water Level __ ft _____ in

Time __ hrs ____ min; Water Level __ ft _____ in Time __ hrs ____ min; Water Level __ ft _____ in

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

Layer Formation Description From To Layer Formation Description From To

overburden 0 98

basalt firm 98 139

clay 139 147

sand + water 147 150

clay 150 153

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well instruction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

Driller Trainee Engineer Name(Print) Roger Witt

Drilling Company WIT WELL DRILLING

Address 607 South Grade Rd.

City, State, Zip Pullman, WA 99163

Phone Number 509-682-3455

Email Address witt@comcast.net

If TRAINEE, Mentor Driller License No.

Mentor Driller Signature

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
JERRY MOTLEY WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, September 27, 2016

Well Log ID: 338863 Elev (ft): 2670 ±10 Depth (ft): 230 7.5’ Quad: Viola

Latitude: 46.749615° Longitude: -117.069174° decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 30, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
4469 Pullman Airport Road, Pullman, Wash.; on south side of road

Location Method:
Location is for well house east of 4467 Pullman Airport Road; Whitman County Assessor; Google Earth imagery; topographic map; Mr. Trent Goetze (personal commun., March 14, 2018) explained that this was a group well and was located up the hill from Mr. Motley's former residence at 4469.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>115 – 137</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>137 – 167</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td>167 – 216</td>
</tr>
<tr>
<td>Basalt</td>
<td>216 – 230</td>
</tr>
</tbody>
</table>

*Correlates to basalt encountered in IDWR wells (Bush, 2006) and outcrops mapped by Hooper and Webster (1982) and Bush and Provant (1998).
Comments:

Whitman County Tax Parcel 200004615303915, 4467 PULLMAN AIRPORT RD, LT B-2 MOTLEYS AIRPORT AC SHT PLT #1, owners are now WALL, WILLIAM/SHELA; 4.62 acres; 03/01/04: grantor was MOTLEY, GERALD to WALL, WILLIAM/SHELA.

Well house, at left of brick home (4467 Pullman Airport Road); well serves multiple homes.
References Cited:


### Water Well Report

**State of Washington**

**Notice of Intent**

**File Original and First Copy with**

**Department of Ecology**

**Second Copy**

**Owner's Copy**

**Third Copy**

**Driller's copy**

---

**Owner**

**Name: JERRY MOTLEY**

**Address:**

SW 640 FRONT ST., PULLMAN, WA 99163

**Location of Well**

**County: WHITMAN**

**Street Address of Well**

**4452 N PULLMAN RD, WA 99163**

**TAX PARCEL NO.**

---

**Proposed Use**

- Domestic
- Industrial
- Municipal
- Irrigation
- Test Well
- Other

**Type of Work**

- New Well
- Deeper
- Drilled
- Reconditioned
- Decommission

**Dimensions**

- Diameter of well: 8 inches
- Depth of completion: 230 feet

**Construction Details**

- Casing installed: 8 inches, 121 ft to 230 ft
- Perforations: 90 in, 12 in, 170 ft to 230 ft
- Screens: Yes
- Material placed from: 121 ft

**Water Levels**

- Land surface elevation above mean sea level: ft
- Static level: ft
- Artesian pressure: lbs per square inch
- Artesian water controlled by: (cap valve etc.)

**Well Tests**

- Was a pump test made: Yes / No
- Yield: gal/min
- Recovery data: time taken as zero when pump turned off
- Date of test:
- Bailer test: gal/min
- Artesian flow: gpm
- Temperature of water: Was a chemical analysis made: Yes / No

---

**Well Log or Decommissioning Procedure Description**

**MATERIAL**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>115</td>
</tr>
<tr>
<td>115</td>
<td>137</td>
</tr>
<tr>
<td>137</td>
<td>167</td>
</tr>
<tr>
<td>167</td>
<td>216</td>
</tr>
<tr>
<td>216</td>
<td>230</td>
</tr>
</tbody>
</table>

**SOIL**

- BASALT MEDIUM GRAY
- CLAY BROWN
- BASALT WEATHERED BROWN
- BASALT MEDIUM GRAY

---

**WELL CONSTRUCTION CERTIFICATION**

- **Type or Print Name:** TED WRIGHT
- **License No.:** 0532
- **Trainee Name:** GARY WRIGHT
- **Drilling Company:** MCPHERSON & WRIGHT DRILLING

---

**Address:** 2246 BURRELL, LEWISTON, ID, 83501

**Contractor's Registration No.:** MCPHEW135N1

**Date:** 6/9/02

---

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407 6600. The TDD number is (360) 407 6006.
**MOTLEY & MOTLEY WELL 1**

[**DRILLED 2001**]

**Location Information**

| Well Log ID: | 321965 | Elev (ft): | 2490 ±10 | Depth (ft): | 340 | 7.5' | Quad: Moscow West |

Latitude: **46.729754°**  
Longitude: **-117.089533°**  decimal degrees (WGS84)

¼, ¼, NW ¼, Sec. 1, T. 14 N, R. 45 E

**Well Address and (or) Other Location Information:**
6901 State Route 270, Pullman, Wash.; on south side of road, west of intersection with Sunshine Road

**Location Method:**
Location is for well (latitude and longitude from Candel, 2014, p. 166, well sample B); Whitman County Assessor; Google Earth imagery; topographic map

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
</tr>
<tr>
<td>To</td>
</tr>
</tbody>
</table>

*The well log (well tag ACG-231) in driller's report provided in Candel (2014, p. 149) does not appear to be for a well at this location, based on well logs and interpretations for the nearby DOE Pullman Test and Observation well (Brown, 1976) and Motley & Motley well 2. Or, perhaps, the driller lumped too many rock types together in his descriptions.*
Comments:

Whitman County Tax Parcel 200004514012890, NW 1/4 PT S 1/2 S OF RR & W OF RD; owner now is AITLEY PROPERTY LLC, 6901 SR 270, PULLMAN WA; 32.85 acres.

Aitley Property LLC (UBI No. 602 104 055) registered agent is STEVEN JONES, 2208 W 2ND AVE, SPOKANE, WA, 99201; governors are KENNETH AILOR, WILLIAM MOTLEY JR, and FRANK MOTLEY (Washington Secretary of State, 2018).

Motley & Motley well 2 was drilled in 2018.

References Cited:


**State of Washington**

**Water Well Report**

**Washington Water Right Permit No:** WE00084

**Unique Well ID:** ACG-231

**Location of Well:** County WHITMAN  
Address: PO Box 421  
Pullman WA 99163

**Proposed Use:** DOMESTIC

**Dimensions:** Diameter of well: 6 inches  
Depth of completed well: 340 feet

**Construction Details:**
- Casing Installed: WELDED
- Diameter: 8, +1, -26
- WELDED: 6, +2, -247
- PVC: 4, -200, -340

**Perforations:**
Type of Perforator Used: skill saw

**Pump:**
- Manufacturer: H P

**Water Levels:**
- Static level: 200
- Artesian Pressure: Date

**Well Tests:**
- Drawdown is amount water level is lowered below static level.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
  - Time: Level: Time: Level: Time: Level
  - Baller Test: gal per min: drawdown: after

**Lithology, Water Quality, Temperature:**
- From: To: Remarks
  - 0: 2: Gravel
  - 2: 25: Basalt broken w/clay
  - 25: 120: Basalt black w/occasional clay layers
  - 120: 165: Basalt black
  - 165: 167: Void
  - 167: 235: Basalt medium & soft
  - 235: 247: Basalt gravels & sand
  - 247: 300: Basalt black medium
  - 300: 325: Basalt fractured w/H2O
  - 325: 340: Basalt black medium

**Received:**
- Department of Ecology  
Eastern Regional Office

**Well Construction Certification:**
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**Type or Print Name:** Jim McLeslie  
**License No:** 2257

**Drilling Company:** H2O Well Service, Inc.  
**License No:** 2352

**Contractor's Registration No:** H20WES101DW  
**Date:** 5/30/01

---

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 2, 2018

Well Log ID: 1757749
Elev (ft): 2500 ±10
Depth (ft): 340
Quad: Moscow West

Latitude: 46.729533°
Longitude: -117.088954°
decimal degrees (WGS84)

1/4, 1/4, NW 1/4, Sec. 1, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
6901 State Route 270, Pullman, Wash.; on south side of road, west of intersection with sunshine Road

Location Method:
Location is for large industrial building; Whitman County Assessor; Google Earth imagery; topographic map

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Dirt</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown and black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>95</td>
</tr>
<tr>
<td>*R2 magnetostratigraphic unit(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>*Break between N2 and R2 estimated</td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514012890, NW 1/4 PT S 1/2 S OF RR & W OF RD; owner now is AITLEY PROPERTY LLC, 6901 SR 270, PULLMAN WA; 32.85 acres.

Aitley Property LLC (UBI No. 602 104 055) registered agent is STEVEN JONES, 2208 W 2ND AVE, SPOKANE, WA, 99201; governors are KENNETH AILOR, WILLIAM MOTLEY JR, and FRANK MOTLEY (Washington Secretary of State, 2018).

Motley & Motley well 1 (location from Candel, 2014, p. 166, well sample B) was drilled in 2001.

References Cited:


WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission

Construction
Decommission

Notices of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: ☐ New well ☐ Reconditioned Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well: 10 in.; Diam. Drilled: 38 ft.
Depth of completed well: 340 ft.

CONSTRUCTION DETAILS

Casing: ☐ Welded Diam. from: +2 ft. to: -38 ft.

Installed: ☐ Liner installed Diam. from: 30 ft. to: 340 ft.

Perforations: ☐ Yes ☐ No

Type of perforator used

SIZE of perfs: 1/4 in. by 4 in. and no. of perfs: 3/4 in. from 300 ft. to 340 ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer’s Name

Diam. Slot size: from: ft. to: ft.
Diam. Slot size: from: ft. to: ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand

Materials placed from: ft. to: ft.

Surface Seal: ☐ Yes ☐ No To what depth: 36 ft.

Material used in seal

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water

Method of sealing strata off

PUMP: Manufacturer’s Name

WATER LEVELS: Land-surface elevation above mean sea level: 250 ft.

Static level: 250 ft. below top of well Date: 5-4-18

Artesian pressure lbs. per square inch Date:

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal./min. with ft. drawdown after hrs.

Artiest 30 gal./min. with stem set at 340 ft. for 1 hrs.

Artesian flow g.p.m. Date

Temperature of water: 52° Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (Print): Brett Uhlenkott
Driller/Engineer/Trainee Signature
Driller or trainee License No. 26494

Drilling Company: Brett Uhlenkott Drilling
Drilling Company Address: PO Box 233
City, State, Zip: Cottonwood, ID 83522
Contractor’s Registration No.: EONDBRE1918A Date: 5-31-18

MOUNTAIN VIEW PARK WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 8, 2016

Well Log ID: NA Elev (ft): 2615 Depth (ft): 344 7.5’ Quad: Moscow East

Latitude: 46.743505 Longitude: -116.972353 decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 9, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
2052 West Mountain View Road, Moscow, Idaho, on south side of road; well is likely in building housing restrooms (south of basketball court).

Location Method:
Location is for assumed well house; Latah County Assessor; Google Earth imagery; topographic map; elevation from Bennett (2009). Site visit (September 20, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Dirt</td>
<td>From 0 To 7</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>From 7 To 19</td>
</tr>
<tr>
<td>Sand</td>
<td>From 19 To 26</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>From 26 To 45</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>From 45 To 75</td>
</tr>
<tr>
<td>*Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards(?)</td>
<td>Basalt, soft</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>From 135 To 145</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, hard</td>
</tr>
</tbody>
</table>
Basalt, soft

Latah Formation
  Vantage Member
  Sand, brown

<table>
<thead>
<tr>
<th>Layer</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>311</td>
<td>329</td>
</tr>
<tr>
<td>Vantage Member</td>
<td>329</td>
<td>344</td>
</tr>
</tbody>
</table>

**Comments:**

*The uppermost basalt was interpreted as a Saddle Mountains flow, but the Lolo could have invaded the sediments and created the same feature.

Latah County Tax Parcel RPM100000000GA, City of Moscow, Schumacher's Addition, 15.63 Acres of Lot G NW¼.

**References Cited:**

Figure G14. Moscow #3 well information.

Figure G15. Mountain View Park well information.
MARY MUNSON WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 8, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 617177</th>
<th>Elev (ft): 2600 ±10</th>
<th>Depth (ft): 370</th>
<th>7.5’</th>
<th>Quad: Albion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.752825</td>
<td>Longitude: -117.142855</td>
<td>decimal degrees (WGS84)</td>
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<td></td>
</tr>
<tr>
<td>¼, SE ¼, SE ¼, Sec. 28, T. 15 N, R. 45 E</td>
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</tbody>
</table>

Well Address and (or) Other Location Information:
11 Carriage Hill Court, Pullman, Wash., west side of road; off Eagle Lane

Location Method:
Location is for house; Whitman County Tax Assessor; Google Earth imagery, topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
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<tr>
<td>Soil, black</td>
<td>0 – 1</td>
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<tr>
<td>Palouse Formation</td>
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<tr>
<td>Clay, light brown</td>
<td>1 – 59</td>
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<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>59 – 210</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>210 – 218</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>218 – 231</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
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<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>231 – 304</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>304 – 317</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>317 – 354</td>
</tr>
</tbody>
</table>
Basalt, weathered 354 – 361
Basalt, hard 361 – 370

Comments:
Whitman County Tax Parcel 200004515284909, SE1SE1/4 LOT RC-1 CARRIAGE HILL SHPLT DIS C BLA SURVEY 695516 OWNERSHIP C; owners are now OATLEY, JON/MELISSA; grantors were MUNSON, JOHN/MARY, on 05/14/13; two story residence built in 2006.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Dog ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 8" inches, drilled 370 ft.
Depth of completed well 370 ft.

CONSTRUCTION DETAILS

Casing: ☐ Welded 8" Diam. from +1 ft. to 70 ft.
Installed: ☐ Liner installed 8" Diam. from 50 ft. to 370 ft.
☐ Threaded "Diam. From ft. to ft.

Performances:
☐ Yes ☐ No

Type of perforator used SAW

SIZE of perfor: 1/8 in. by 1/2 in. and no. of perfor 90 from 310 ft. to 370 ft.

screens: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name

Type of permeable material: Water soaked to
Size of gravel/sand

Gravel/Filter packed: ☐ Yes ☐ No

Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 70 ft.

Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type of pump

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 190 ft. below top of well Date 11/4/05
Artesian level lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal./min. with ft. drawdown after hrs.

Arttest 30 gal./min. with stem set at 365 ft. for hrs.

Artesian flow g.p.m. Date

Temperature of water °F Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (w/ ) TED WRIGHT

Driller/Engineer/Trainee Signature

Driller or trainee License No.

IF TRAINEE: Driller's License No.

Driller's Signature

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**HOWARD MUSICK WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, August 8, 2016

Well Log ID: NA  Elev (ft): 2630 ±10  Depth (ft): 120  Quad: Viola

Latitude: 46.83953  Longitude: -117.024234  decimal degrees (WGS84)

¼, SE ¼, NE ¼, Sec. 1, T. 40 N, R. 6 W

**Well Address and (or) Other Location Information:**
1309 Main Street, Viola, Idaho; west side of road, north of Miller Street and south of Four Mile Road.

**Location Method:**
Lots 2 and 3, Fourmile Block 1, Viola (driller’s report); Latah County Assessor; Google Earth imagery; topographic map. PLSS incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0 – 20</td>
</tr>
<tr>
<td>No data (old well)</td>
<td></td>
</tr>
<tr>
<td>*Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td>20 – 34</td>
</tr>
<tr>
<td>Sand and clay (driller reports &quot;decomposed granite&quot;)</td>
<td>20 – 34</td>
</tr>
<tr>
<td>Sand (driller reports &quot;granite&quot;)</td>
<td>34 – 38</td>
</tr>
<tr>
<td>Sand and clay (driller reports &quot;decomposed granite&quot;)</td>
<td>38 – 88</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>88 – 120</td>
</tr>
<tr>
<td>Granite(?) hard</td>
<td></td>
</tr>
</tbody>
</table>
**Comments:**

*It is very difficult to distinguish decomposed granite from Sediments of Bovill in drill logs.

Latah County Tax Parcel RP01640001002C, 1309 MAIN ST; owner now is MUSICK, DEBRA E; 1/2 INT; **FOURMILE BLK 1 LOTS 2 & 3, S 10' OF LOT 1, 0.04 AC; SENE 1 40 6.**

Debby Musick of Viola is the daughter of Howard Musick (Moscow-Pullman Daily News, 2013).

Street address of 1304 Main Street, Viola, for Howard Musick was provided in public notice for Case No. C-1734 (Moscow-Pullman Daily News, 1988).

**References Cited:**


WELL DRILLER’S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

1. WELL OWNER

Name: Howard Musick
Address: 241 Pocatello, Idaho
Owner’s Permit No.: 87-69-N-15-1-88372

2. NATURE OF WORK

☐ New well ☑ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☑ Domestic ☐ Irrigation ☐ Test
☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED

☑ Cable ☐ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole: 8 inches
Total depth: 120 feet

Casing schedule:
☐ Steel ☐ Concrete

Thickness: 8 inches
Diameter: 8 inches
From: 250 feet
To: 30 feet

Was a packer or seal used? ☑ Yes ☐ No

Perforated? ☑ Yes ☐ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation: 8 inches by 8 inches

Number of perforations from To

Perforations feet

Well screen installed? ☐ Yes ☑ No

Manufacturer’s name: 

Manufacturer’s Model No.: 

Type: 

Diameter Slot size Set from To feet to feet

Diameter Slot size Set from To feet to feet

Gravel packed? ☑ Yes ☐ No Size of gravel: feet to feet

Placed from To what depth feet

Surface seal? ☑ Yes ☐ No To what depth feet

Material used in seal: ☑ Cement grout ☐ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.

7. WATER LEVEL

Static water level: 50 feet below land surface
Flowing? ☑ Yes ☐ No G.P.M. flow: 9
Temperature: ° F.
Quality: Grade
Artesian closed-in pressure: p.s.i.
Controlled by: ☑ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☑ Bailer ☐ Other

Discharge G.P.M.: Draw Down Hours Pumped: none

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Diam. From</th>
<th>To</th>
<th>Depth</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>8.25</td>
<td>8.5</td>
<td>6</td>
<td>clay</td>
</tr>
<tr>
<td>3</td>
<td>8.25</td>
<td>8.5</td>
<td>12</td>
<td>sandstone</td>
</tr>
<tr>
<td>4</td>
<td>8.25</td>
<td>8.5</td>
<td>18</td>
<td>sandstone</td>
</tr>
</tbody>
</table>

10. Work started: 7-14-69 finished: 7-25-69

11. DRILLER’S CERTIFICATION

This well was drilled under my supervision and this report is true to the best of my knowledge.

Driller’s or Firm’s Name: O.E. Dyer
Number: 13
Address: Block 18, Lot 3, Townsite
City: Pocatello, Idaho

Date: 7-15-69

USE ADDITIONAL SHEETS IF NECESSARY
**BILL MYERS WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 20, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>D0013365</th>
<th>Elev (ft):</th>
<th>2650 ±10</th>
<th>Depth (ft):</th>
<th>150</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
</table>

Latitude: 46.831567°  
Longitude: -117.023209°  
decimal degrees (WGS84)

SE ¼, SE ¼, SE ¼, Sec. 1, T. 40 N, R. 6 W

**Well Address and (or) Other Location Information:**
1042 Rothfork Road, Viola, Idaho; on northeast side of road

**Location Method:**
Location is for well, in field west of house (and large shed which is north of house); Latah County Assessor; Google Earth imagery; topographic map; TelephoneDirectories.us (2017); site visit March 21, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, black gray</td>
<td>0 – 19</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy, tan</td>
<td>19 – 65</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>65 – 120</td>
</tr>
<tr>
<td>Sand(?), brown</td>
<td>120 – 135</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>135 – 150</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N06W019101, owner now is KNIGHT, SHARON; 1042 ROTHFORK RD; 3.47 AC TAX #5869 SESE 1 40 6.

Well is in field, west of large, back shed and to left of old fuel tank

William T. Myers lived at 1042 Rothfork Road, Viola, Idaho (TelephoneDirectories.us, 2017).

References Cited:
IDaho Department of Water Resources
Well Driller's Report

1. WELL TAG NO. D 00 133.65
   Drilling Permit No. 765 307
   Other IDWR No.

2. Owner:
   Name: Bill Meyer
   Address: 2707 Hwy. Rd.
   City: Coeur D'Alene
   State: WA Zip: 99021

3. Location of Well by Legal Description:
   Sketch map location must agree with written location.
   Twp. 40 North or South
   Rge. 5 East or West
   Sec. 1
   Gov't Lot
   County:
   Latitude: 48° 30' 0"
   Longitude: 116° 35' 0"
   Address of Well Site:
   City:

4. Use:
   Domestic
   Municipal
   Monitor
   Irrigation
   Thermal
   Injection
   Other

5. Type of Work:
   Check all that apply
   (Replacement etc.)
   New Well
   Modify
   Abandonment
   Other

6. Drill Method:
   Air Rotary
   Cable
   Mud Rotary
   Other

7. Sealing Procedures:
   Seal/Filter Pack
   Amount
   Method
   Top Pour
   Denote
   0.60
   400#

8. Casing/Liner:
   Diameter
   From
   To
   Gauge
   Material
   Casing
   Liner
   Welded
   Threaded
   4 1/2
   -70
   -80
   Steel

Length of Headpipe
Length of Tailpipe

9. Perforations/Screen:
   Perforations
   Method
   Saw
   Screens
   Screen Type
   -
   From
   To
   Slot Size
   Number
   Diameter
   Material
   Casing
   Liner
   150
   150
   1/2
   4 1/2
   PVC

10. Static Water Level or Artesian Pressure:
    Depth: 12 ft. below ground
    Artesian pressure ~ lb.
    Depth flow encountered: 12 ft.
    Describe access, port or control devices:

11. Well Tests:
    Pump
    Bailer
    Air
    Flowing Artesian
    Yield
    Drawdown
    Pumping Level
    Time
    1.00

   Water Temp.
   Bottom hole temp.
   Water Quality Test or Comments: Good Use
   Depth first Water Encounter: 12.5'

12. Lithologic Log:
    (Describe repairs or abandonment)

   Well Dia.
   From
   To
   Remarks: Lithology, Water Quality & Temperature
   Y
   N
   8 6 19
   Black Clay
   7 8 17
   Black Clay
   17 6 7 14
   Sand & Stone
   17 0 14
   Sand
   15
   7
   15
   7
   6 7
   14
   8 15
   8 15
   10
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   10

13. Driller's Certification:
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Unknown Drilling
    Firm No.
    Firm Official: Signature
    Date: 7/5/00
    Driller or Operator: Signature
    Date: 7/5/00

Form 238-1
11/97

1247
Forward White Copy to Water Resources
WARREN NEAL WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 26, 2016

Well Log ID: 884438   Elev (ft): 2530 ±10   Depth (ft): 280   Quad: Elberton

Latitude: 46.992493   Longitude: -117.163083   decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 5, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
304 Lange Road, Garfield, Wash., on east side of road; house is about 600 ft northeast beyond first house on shared driveway

Location Method:
Location is for house; Whitman County Assessor; Google Earth; topographic map. Site visit (April 18, 2016); did not see a well (but observed an old well for 302 Lange Road by corner of small white shed, just east of first house on driveway).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member (Basalt of Lolo) and Roza Member, undifferentiated</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>23</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>32</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>174</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>192</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>207</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>230</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>251</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>255</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 128950000000029, 304 LANGE RD 99130, GFD S1/2 5-17-45 NEAL LANGE RD SHPLT#716912 6.37AC, owner is NEAL, WARREN, 1 story residence built in 2014.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Construction
- Decommission

Notice of Intent Number 364057

Proposed Use:
- Domestic
- Industrial
- Municipal
- None
- Irrigation
- Test Well
- Other

Type of Work:
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Dug
- Bored
- Driven
- Reconstructed
- Deepened
- Cable
- Rotary
- Jettied

Dimensions:
- Diameter of well 8 inches, drilled 280 ft.
- Depth of completed well 280 ft.

Construction Details:
- Casing:
  - Welded
  - Diam. from 8 to 28 ft.
- Installed:
  - Liner installed 4.1/2" Diam. from 7 ft. to 280 ft.
  - Threaded
- Perforations:
  - Yes
- No
- Size of perfs 1/8 in. by 12 in. and no. of perfs 90 from 245 ft. to 305 ft.

Screens:
- Yes
- No
- K-Pac
- Location
- Manufacturer's Name
- Type
- Model No.
- Diam. Slot size
- Diam. Slot size
- Gravel/Filter pack:
  - Yes
  - No
  - Size of gravel/sand
- Materials placed from ft. to ft.
- Surface Seal:
  - Yes
  - No
  - To what depth 28 ft.

Material used in seal:
- BENTONITE

Did any strata contain unusable water?
- Yes
- No

Type of water:
- Depth of strata

Method of sealing strata:

Pump:
- Manufacturer's Name
- Type
- H.P.

Water Levels:
- Land-surface elevation above mean sea level ft.
- Static level 192 ft. below top of well Date 5/9/13
- Artesian pressure lbs. per square inch Date
- Artesian water is controlled by (cap, valve, etc.)

Well Tests:
- Drawdown is amount water level is lowered below static level
- Was a pump test made?
  - Yes
  - No
  - If yes, by whom?
  - Yield: gal/min. with ft. drawdown after hrs. Drawdown after hrs.
  - Temperature of water

Start Date 4/29/13
Completed Date 5/7/13

Well Construction Certification:
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.
- Driller Engineer Trainee
- Name (print) TED WRIGHT
- Driller/Engineer/Trainee Signature
- Driller or trainee license No. 0532
- IF TRAINEE: Driller's license No.
- Driller's Signature:

ECY 059-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Well Log ID: D0039897  Elev (ft): 2790 ±10  Depth (ft): 490  Quad: Robinson Lake

Latitude: 46.780149°  Longitude: -116.970530°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1045 Idlers Rest Road, Moscow, Idaho; on west side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 24</td>
</tr>
<tr>
<td>Sand</td>
<td>24 – 98</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>98 – 153</td>
</tr>
<tr>
<td>*Idaho Batholith(?)</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>153 – 490</td>
</tr>
</tbody>
</table>

*Difficult to pick contact between sediments of Bovill and granite
Comments:

Latah County Tax Parcel RP40N05W284828, owner is NEEDHAM, SHANE; 1045 IDLERS REST RD, 39.23 AC TAX #6450 NESW, 28 40 5.

References Cited:
IDAH0 DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL TAG NO. D 00 39 897
   DRILLING PERMIT NO. 82 9 687
   Water Right or Injection Well No.

2. OWNER:
   Name: Shana Needler
   Address: 883 Guernica Drive
   City: Moscow
   State: ID
   Zip: 83843

3. LOCATION OF WELL by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well.
   Twp. 40 North or South □
   Rge. 66 or West □
   Sec. 28
   Govt. Lot
   County
   Township
   Range
   Section
   Late: ::
   Address of Well Site
   City
   Miles N of

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other

5. TYPE OF WORK check all that apply (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD:
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   Seal Material From To Weight/Volume Seal Placement Method
   Bentonite 0 80 400 lbs dry

8. CASING/LINER:
   Diameter From To Gauge Material Casing Liner Welded Threaded
   4 1/2 10 4 3/8 49 0 160 PVC
   Length of Headpipe
   Length of Tailpipe
   Packer □ Y □ N Type

9. PERFORATIONS/SCREENS PACKER TYPE
   Perforation Method
   Screen Type & Method of Installation
   From To Slot Size Number Diameter Material Casing Liner
   4 1/2 10 4 3/8 49 0 160 PVC

10. FILTER PACK
    Filter Material From To Weight/Volume Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    40 ft. below ground Artesian pressure 10 ft. Describe access port or control devices:

12. WELL TESTS:
    □ Pump □ Bailer □ Air □ Flowing Artesian
    Yield gal./min. Drawdown Pumping Level Time
    0.0 gal.

    Water Temp. 85° Bottom hole temp. 65°
    Water Quality test or comments:
    Depth first Water Encounter 4678

13. LITHOLOGIC LOG: (Describe repairs or abandonment) Water
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature Y N
    10 0 2 dirt
    2 0 4 clay
    9 0 6 sand
    1 0 3 4 gravel
    1 7 2 3 sand gravel
    3 0 5 3 gravel
    3 0 2 2 gravel
    4 0 4 3 gravel
    4 0 4 3 gravel

14. DRILLER’S CERTIFICATION
    I/we certify that all minimum well construction standards were complied with at the time
    the rig was removed.
    Company Name: Mauer Drilling
    Principal Driller: Wm. W. Mauer
    Driller or Operator II:
    Date: 3/17/05
    Operator I: D. M. Mauer
    Firm No: 125
    Principal Driller and Rig Operator Requires.
    Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
HOLLY NEIBERGS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 1, 2016

Well Log ID: 465712 Elev (ft): 2630 ±10 Depth (ft): 475 7.5’ Quad: Palouse

Latitude: 46.914805 Longitude: -117.063143 decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 6, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
1310 E 9th Street, Palouse, Wash.; east of WA 272; access is via E 8th St, then left (northeast) onto B Street North, a shared drive (0.15 mi) extends to the right (east, then north) to gated property at the end.

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions and tax parcel number are incorrect on driller’s report, and last name is misspelled. Site visit (November 13, 2016) but did not see a well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>100</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>¹Sand</td>
<td>275</td>
</tr>
<tr>
<td>²Clay, brown</td>
<td>368</td>
</tr>
</tbody>
</table>
Comments:

1 Driller reported sandstone.

2 Driller reported shale.

Whitman County Tax Parcel 808000000000120, 1310 E 9TH ST, PALOUSE N1/2 6-16-46 Lot 00, Block 00 TT-AH-4 8AC; owners are NEIBERGS, JOSEPH/HOLLY; 8.0 acres.

References Cited:
Please print, sign and return to the Department of Ecology

**Water Well Report**

**Construction/Decommission**
- **Construction**
- **Decommission**

**ORIGINAL INSTALLATION Notice of Intent Number**

- **PROPOSED USE:** DeWater
- **TYPE OF WORK:** New well
- **DIMENSIONS:** Diameter of well 77 inches, drilled 225 ft.
- **DEPT OF COMPLETED WELL:** 425 ft.

**CONSTRUCTION DETAILS**
- **Casing:** 7 in. Diam. from 22 to 425 ft.
- **Installed:** Liner installed 7 in. Diam. from 22 to 425 ft.

**Perforations:**
- **Yes**
- **No**

**Screens:**
- **Yes**
- **No**

**Manufacturer's Name:**

**Diam. Slot size from ft. to ft.**
- **Gallon Filter packed:**
- **Size of gravel/sand:**

**Gravel Filter packed:**
- **Yes**
- **No**

**Surface Spat:**
- **Yes**
- **No**

**Material used in seal:**

**Did any strata contain usable water:**
- **Yes**
- **No**

**Type of water:**

**Method of sealing strata off:**

**WATER LEVELS:**
- **Static Level:** 252 ft. below top of well Date 12-5-06
- **Artesian Pressure:** lbs. per square inch Date
- **Artesian water is controlled by:** (cap, valve, etc.)

**WELL TESTS:**
- **Drawdown is amount water level is lowered below static level**
- **Was a pump test made:**
- **Yes**
- **No**

**Yield:**
- **gall/min. with ft. drawdown after hrs.**
- **gall/min. with ft. drawdown after hrs.**
- **gall/min. with ft. drawdown after hrs.**

**Recovery data (time taken to zero when pump turned off)**
- **Time**
- **Water Level**

**Date of test:**
- **Boiler test**
- **Aintest**
- **Artesian flow**
- **Temperature of water**

**WELL CONSTRUCTION CERTIFICATION:**

**Driller/Engineer/Trainee Name:**

**Driller/Engineer/Trainee Signature:**

**Driller or trainee License No.:** 2766

**ECONOMIC CUMULATIVE BUDGET**

**CURRENT Notice of Intent No.**

**Unique Ecology Well ID Tag No.**

**Water Right Permit No.:**

**Property Owner Name:**

**Well Street Address:**

**City:**

**County:**

**Location:**

**Lat/Long (s, t, r):**

**still REQUIRED:**

**Tax Parcel No.:**

**DEPARTMENT OF ECOLOGY EASTERN REGIONAL OFFICE**

**LEC 2.0 2006**

**DEPARTMENT OF ECOLOGY**

**WELL DRILLING UNIT**

**DEPARTMENT OF ECOLOGY EASTERN REGIONAL OFFICE**

**Start Date:**

**Completed Date:**
CHRISTOPHER NEWMAN WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 10, 2016; November 9, 2018

Well Log ID: 164452  Elev (ft): 2340 ±10  Depth (ft): 100  Quad: Albion

Latitude: 46.757980°  Longitude: -117.221170°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1001 Armstrong Road, Pullman, Wash., on south side of road

Location Method:
Latitude, longitude, and elevation from Moxley (2012, p. 73, DW-05); only house in SW¼, NW¼, sec. 25; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, gray</td>
<td>25</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, white</td>
<td>52</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>55</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>85</td>
</tr>
<tr>
<td>Basalt</td>
<td>88</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415252905, 1001 ARMSTRONG RD, NW PT; owner is now ANDERSON, JON P; 2.0 acres, 1 story residence built in 1917.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Christopher D. Newman
Address: Rt. 1, Box 91K, Pullman, Washington

(2) LOCATION OF WELL: County: Whitman

(3) PROPOSED USE: Domestic [ ], Industrial [ ], Municipal [ ], Irrigation [ ], Test Well [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one): 
New well [ ], Method: Dug [ ], Bored [ ], Deepened [ ], Rec kidded [ ], Reconditioned [ ], Irrigation [ ]

(5) DIMENSIONS:
Diameter of well: 8 inches
Drilled: 100 ft., Depth of completed well: 100 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 ft., Diam. from 1 ft. to 36 ft.
Threaded [ ], Welded [ ], Plastic [ ]
Perforations: Yes [ ] No [ ]
Type of perforator used: Plastic
Size of perforations: 1/16th holes by
20 ft. perforations from 60 ft. to 100 ft.
40 ft. perforations from 30 ft. to 60 ft.

Screen: Yes [ ] No [ ]
Manufacturer's Name: 
Type: 
Diam.: Slot size: from ft. to ft.
Diam.: Slot size: from ft. to ft.
Gravel packed: Yes [ ] No [ ] Size of gravel: 
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ]
To what depth? 36 ft.
Material used in seal: 
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water: 
Depth of strata: 
Method of sealing strata off:

(7) PUMP: Manufacturer's Name: 
Type: 

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 2290 ft.
Static level: 21 ft. below top of well Date: 2/13/74
Artesian pressure: lbs. per square inch Date: 
Artesian water is controlled by: 

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom? Adcock Drill
Yield: 12 gal./min. with ft. drawdown after hrs.

AIR TEST MADE

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
</table>

Date of test
Flow test: gal./min. with ft. drawdown after hrs.
Artesian flow: 40 ft. Date:
Temperature of water: W. Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, any show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Brown Clay</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Gray basalt</td>
<td>25</td>
<td>52</td>
</tr>
<tr>
<td>White sand</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>Gray basalt</td>
<td>55</td>
<td>85</td>
</tr>
<tr>
<td>Broken basalt</td>
<td>85</td>
<td>88</td>
</tr>
<tr>
<td>Gray basalt</td>
<td>88</td>
<td>100</td>
</tr>
</tbody>
</table>

RECEIVED
MARCH 26, 1974
DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE


WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Adcock Air Drilling
Type: [ ]
Address: 511 Airway Drive Lewiston, Idaho 835

(Signed) [ ]
(Well Driller)

License No: 0532 Date: March 22, 1974

S.F. No. 1356-OS-Rev. 4-71
(USE ADDITIONAL SHEETS IF NECESSARY)

1259
### NORBERT NIEHENKE WELL 1

**[Drilled in 1953]**

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, January 20, 2018

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<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2650 ±10</th>
<th>Depth (ft):</th>
<th>356</th>
<th>7.5’ Quad: Viola</th>
</tr>
</thead>
</table>

Latitude: 46.776938° Longitude: -117.012846° decimal degrees (WGS84)

SE ¼, NE ¼, SW ¼, Sec. 30, T. 40 N, R. 5 W

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**Well Address and (or) Other Location Information:**

1151 Estes Road, Moscow, Idaho; on south side of road

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**Location Method:**

Location is for house; Latah County Assessor; Google Earth imagery; topographic map; Crosthwaite (1975, p. 9, 31) incorrectly spelled last name "Niehanki" and also stated that although well log goes to 356 ft the well was measured and found to be 308.9 ft in depth; site visit March 20, 2018

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**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td>Sediments of Bovill</td>
</tr>
<tr>
<td>Sand</td>
<td>0 – 90</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>280 – 310</td>
</tr>
<tr>
<td>¹Sand and clay with mica</td>
<td>310 – 356</td>
</tr>
</tbody>
</table>

¹Driller reported this unit as decomposed granite; I interpreted as sediment.
Comments:
Latah County Tax Parcel RP40N05W304940; NIEHENKE FAMILY LLC; 1151 ESTES RD; 39.5 AC NESW; 37.51 AC GOVT LOT 3; 39.99 AC GOVT LOT 4; SESW, 30°40'5.

References Cited:
### 40N-6W-36acal. W. O'Donnel

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Rock, hard</td>
<td>80</td>
<td>200</td>
</tr>
<tr>
<td>Crevices</td>
<td>4</td>
<td>204</td>
</tr>
<tr>
<td>Rock, hard</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### 40N-5W-17abal. Elvin Erickson

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
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<tbody>
<tr>
<td>Clay</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>Granite, firm</td>
<td>56</td>
<td>121</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>5</td>
<td>126</td>
</tr>
<tr>
<td>Granite, decomposed, soft</td>
<td>15</td>
<td>141</td>
</tr>
<tr>
<td>Granite seams at 425 feet with water</td>
<td>314</td>
<td>455</td>
</tr>
</tbody>
</table>

### 40N-5W-18acdl. Gerald Coomes

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granite, decomposed, soft</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>Granite, light, solid, very little water</td>
<td>267</td>
<td>351</td>
</tr>
</tbody>
</table>

### 40N-5W-25ddbl. Roy E. Williams

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt, black</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clay, mountain</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Granite, hard and soft layers</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Granite, medium hard</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>20</td>
<td>56</td>
</tr>
<tr>
<td>Granite, hard and soft layers, water</td>
<td>117</td>
<td>173</td>
</tr>
</tbody>
</table>

### 40N-5W-27cbal. Leo Bosse

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt, black</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>20</td>
<td>52</td>
</tr>
<tr>
<td>Granite, hard and soft layers, water</td>
<td>4</td>
<td>56</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>27</td>
<td>83</td>
</tr>
<tr>
<td>Granite, hard and soft layers, water</td>
<td>16</td>
<td>99</td>
</tr>
</tbody>
</table>

---

### 40N-5W-30cadl. Norbert Niehanki

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>190</td>
<td>280</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>30</td>
<td>310</td>
</tr>
<tr>
<td>Granite, decomposed micaceous, water bearing</td>
<td>16</td>
<td>356</td>
</tr>
<tr>
<td>Measured depth 308.9 by R. L. Washburn, USGS, Oct. 29, 1953</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 40N-5W-33bdal. A. E. Koster

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt, black</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Clay, blue, water</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>27</td>
<td>55</td>
</tr>
<tr>
<td>Clay, blue, water</td>
<td>30</td>
<td>85</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>7</td>
<td>92</td>
</tr>
</tbody>
</table>

### 40N-5W-36acc2. Harold Lyon

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>Granite, medium</td>
<td>17</td>
<td>47</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>23</td>
<td>70</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>3</td>
<td>73</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>62</td>
<td>135</td>
</tr>
<tr>
<td>Clay and granite, white</td>
<td>11</td>
<td>146</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>5</td>
<td>151</td>
</tr>
<tr>
<td>Granite, hard</td>
<td>49</td>
<td>200</td>
</tr>
<tr>
<td>Granite, soft</td>
<td>20</td>
<td>220</td>
</tr>
</tbody>
</table>

### 40N-5W-36acdl. Dave Headrick

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granite, pink, solid</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Granite, pink, rotten, caving</td>
<td>23</td>
<td>73</td>
</tr>
<tr>
<td>Granite and sand, white, quartz</td>
<td>122</td>
<td>195</td>
</tr>
</tbody>
</table>

From Crosthwaite (1975).
NORBERT NIEHENKE WELL 2

[DRILLED IN 1991, DEEPENED IN 1995]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 25, 2016


Latitude: 46.75835°  Longitude: -117.011943°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
2100 / 2102 Mix Road, Moscow, Idaho; east side of road, opposite Canter Wood subdivision; two residences off one driveway

Location Method:
Location is for well north of driveway to two manufactured homes; Latah County Assessor; Google Earth imagery; topographic map. Site visit (March 20, 2018).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
<td>85</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>106</td>
<td>128</td>
</tr>
<tr>
<td>Clay(?)</td>
<td>99</td>
<td>106</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>106</td>
<td>128</td>
</tr>
<tr>
<td>*No information</td>
<td>128</td>
<td>130</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand, with clay</td>
<td>130</td>
<td>185</td>
</tr>
<tr>
<td>Clay</td>
<td>185</td>
<td>193</td>
</tr>
<tr>
<td>Sand</td>
<td>193</td>
<td>225</td>
</tr>
</tbody>
</table>
Comments:

*Well was deepened from 128 ft to 225 ft in 1995; no information exists for the interval 128–130 ft interval.

Latah County Tax Parcel RP40N05W318551, owner now is NIEHENKE FAMILY LLC (who also owns the parcel to the south in sec. 6, T 39 N, R 5 W).

Well is in field, beyond mailboxes

References Cited:
1. WELL OWNER
Name: Robert McHone
Address: McCan, ID
Drilling Permit No.: 87-91-N-25
Water Right Permit No.: 

2. NATURE OF WORK
- New well
- Deepened
- Replacement
- Well diameter increase
- Abandoned (describe abandonment procedures such as materials, plug depths, etc., in lithologic log)

3. PROPOSED USE
- Domestic
- Irrigation
- Test
- Municipal
- Industrial
- Stock
- Waste Disposal or Injection
- Other

4. METHOD DRILLED
- Rotary
- Air
- Hydraulic
- Other

5. WELL CONSTRUCTION
- Casing schedule: Steel
- Diameter: 8 inches
- Thickness: 8 inches
- Was casing drive shoe used?: Yes
- Was a packer or seal used?: Yes
- Perforated?: Yes
- How perforated?: Factory
- Size of perforation: Inches
- Number of perforations: From to
- Well screen installed?: Yes
- Manufacturer’s name:
- Type:
- Model No.:
- Diameter: 8 inches
- Slot size: Set from feet to feet
- Gravel packed?: Yes
- Placed from feet to feet
- Surface seal depth: 89 feet
- Material used in seal: Bentonite
- Sealing procedure used: Slurry pit
- Method of joining casing: Threaded
- Describe access port:

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
- Static water level: 70 feet below land surface
- Flowing?: Yes
- G.P.M. flow: P.S.I.
- Artesian closed-in pressure: p.s.i.
- Controlled by: Valve
- Temperature of quality: 
- Describe artesian or temperature zones below:

8. WELL TEST DATA
- Discharge G.P.M.: approx. 15
- Pumping Level:
- Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Diam.</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0.85</td>
<td>Quercbarn</td>
<td>Yes No</td>
</tr>
<tr>
<td>8.89</td>
<td>Basalt_Firm</td>
<td>Yes No</td>
<td></td>
</tr>
<tr>
<td>106.188</td>
<td>Basalt_Firm</td>
<td>Yes No</td>
<td></td>
</tr>
</tbody>
</table>

10. Work started: 2/15/91 finished: 2/28/91

11. DRILLERS CERTIFICATION
I, We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Littlewell Drilling
 Firm No.: 58
Address: 580000 Loc 13 Date 1/18/91
Signed by (Firm Official): Earl J. Little
(Operator): Roger Little

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
**11. WELL TESTS:**

- **Yield of Well:**
- **Drawdown:**
- **Pumping Level:**
- **Time:**

<table>
<thead>
<tr>
<th>Yield</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Water Temp.:**
- **Bottom hole temp.:**
- **Water Quality test or comments:**

<table>
<thead>
<tr>
<th>Water Temp.</th>
<th>Bottom hole temp.</th>
<th>Water Quality test or comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**12. LITHOLOGIC LOG:**

<table>
<thead>
<tr>
<th>Rock Type</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand &amp; Clay</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Gravel &amp; Sand &amp; Clay</td>
<td></td>
</tr>
<tr>
<td>Gravel &amp; Sand</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rock Type</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**13. DRILLER’S CERTIFICATION:**

- **We certify that all minimum well construction standards were complied with at the time the rig was removed.**

- **Firm Name:** Witt Well Drilling
- **Firm No:** 58
- **Firm Official:** Earl Witt
- **Date:** 6/10/95
- **Supervisor or Operator:** Roger Goodwin
- **Date:** 6/10/95

FORWARD WHITE COPY TO WATER RESOURCES
Norbert Niehenke Well 3

[Drilled in 2013]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 30, 2016

Well Log ID: D0061490
Elev (ft): 2660 ±10
Depth (ft): 255
Quad: Moscow West

Latitude: 46.686533
Longitude: -117.021300 decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 30, T. 39N, R. 5W

Well Address and (or) Other Location Information:
3125 U.S. 95 South, Moscow, Idaho, on northwest side of road

Location Method:
Latitude and longitude from driller’s report (misspelled last name); Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Palouse Formation and Latah Formation (sediments of Bovill)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>134</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
</tr>
<tr>
<td>134</td>
<td>158</td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td></td>
</tr>
<tr>
<td>158</td>
<td>177</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>203</td>
</tr>
<tr>
<td>Clay, red</td>
<td></td>
</tr>
<tr>
<td>203</td>
<td>224</td>
</tr>
<tr>
<td>Sand and clay(?)</td>
<td></td>
</tr>
<tr>
<td>224</td>
<td>255</td>
</tr>
</tbody>
</table>
Comments:

1. Unit is thick and interpreted to include two units, but there are no data to pick a boundary.

2. Driller reported as decomposed granite.

There are two wells at this property: Dwayne Andrews (drilled in 1994), and Norbert Niehenke well 2.

Latah County Tax Parcel RP39N05W306315, 3125 HWY 95 S, owner is NIEHENKE, NORBERT, 10.08 acres.

References Cited:
1. WELL TAG NO. D 0061490

Drilling Permit No. ________________
Water right or injection well # ________________

2. OWNER
Name NORBERT NICHENKE
Address 3125 HWY 95S
City MOSCOW State ID Zip 83843

3. WELL LOCATION:
Twp. 39 North [ ] or South [ ]
Rge. 5 East [ ] or West [ ]
Sec. 30 [ ]

Gov't Lot [ ]
County LATAH [ ]

Lat. 46N ° 41 192’ (Deg. and Decimal minutes)
Long. 117W ° 01 278’ (Deg. and Decimal minutes)

Twp. 39W Sec. 30 Lot 5

4. USE:
[ ] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation [ ] Thermal [ ] Injection [ ] Other [ ]

5. TYPE OF WORK:
[ ] New Well [ ] Replacement well [ ] Modify existing well [ ] Abandonment [ ] Other [ ]

6. DRILL METHOD:
[ ] Air Rotary [ ] Mud Rotary [ ] Cable [ ] Other [ ]

7. SEALING PROCEDURES

Seal material From (ft) To (ft) Quantity (lbs or ft) Placement method/procedure
Bentonite +1 58 27 DRY

8. CASING/LINER:

Diameter (nominal) From (ft) To (ft) Gauge/ Schedule Material Casing Liner Threaded Welded
8” +1 134 250 STEEL X X X X
6” 35 255 200 PVC X X X X

Was drive shoe used? Y N Shoe Depth 134’

9. PERFORATIONS/Screens:
Perforations Y N Method SAW
Manufactured screen Y N Type

Method of installation

From (ft) To (ft) Slot size Number/ft Diameter (nominal) Material Gauge or Schedule
160’ 230’ 1/8x12 120 6” PVC 200

Length of Headpipe
Length of Tailpipe

10. FILTER PACK:
Filter Material From (ft) To (ft) Quantity (lbs or ft) Placement method

11. FLOWING ARTESIAN:
Flowing Artesian? Y N Artesian Pressure (PSIG) _______
Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
Depth first water encountered (ft) 158
Static water level (ft) 101’

Water temp. (°F) 53
Bottom hole temp. (°F) _______

Describe access port WELL CAP

Well test: Test method:

<table>
<thead>
<tr>
<th>Drawdown (feet)</th>
<th>Discharge or yield (gpm)</th>
<th>Test duration (minutes)</th>
<th>Pump</th>
<th>Bailor</th>
<th>Air</th>
<th>Flowing artesian</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1 HR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. From (in) To (ft) Remarks, lithology or description of repairs or abandonment, water temp.

<table>
<thead>
<tr>
<th>Water Level</th>
<th>Quality</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0</td>
<td>2 SOIL BLACK</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>134 CLAY BROWN</td>
</tr>
<tr>
<td>8</td>
<td>134</td>
<td>158 BASALT BLACK MEDIUM</td>
</tr>
<tr>
<td>8</td>
<td>158</td>
<td>177 BASALT WEATHERED BROWN</td>
</tr>
<tr>
<td>8</td>
<td>177</td>
<td>203 CLAY BROWN</td>
</tr>
<tr>
<td>8</td>
<td>203</td>
<td>224 Clay RED</td>
</tr>
<tr>
<td>8</td>
<td>224</td>
<td>255 GRANITE DECOMPOSED</td>
</tr>
</tbody>
</table>

14. DRILLER’S CERTIFICATION

We certify that all minimum well construction standards were complied with at the time the rig was removed.

MCPHERSON & WRIGHT

Company Name DRILLING Co. No. 0376

*Principal Driller Ted Wright Date 7/13/13
*Driller Date
*Operator II Date 7/13/13
Operator I Dates

* Signature of Principal Drillers and rig operator are required.

Received
NOV 20 2013

IDWR / NORTH

Completed Depth (Measurable) 255

Date: Started 6/19/13 Completed 6/26/13

Form provided by Forms On-A-Disk - (214) 340-9426 - www.FormsOnADisk.com

1269
## SCOTT NILSSON WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 11, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>453445</th>
<th>Elev (ft):</th>
<th>2550 ±10</th>
<th>Depth (ft):</th>
<th>155</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Palouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.916010°</td>
<td>Longitude:</td>
<td>-117.045978°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>¼, NE ¼, NW ¼, Sec. 5, T. 16N, R. 46E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Well Address and (or) Other Location Information:

1271 North River Road, Palouse, Wash.; on north side of road

### Location Method:

Location is for only inhabited house in NE¼ NW¼, Section 5, on North River Road at location noted on driller’s report; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018.

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>0 – 4</td>
</tr>
<tr>
<td>Basalt</td>
<td>4 – 79</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>79 – 86</td>
</tr>
<tr>
<td>Basalt</td>
<td>86 – 138</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>138 – 155</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 826900000000031, 1271 N PALOUSE RIVER RD 99111, H PALOUSE N1/2 S-16-46 20.41; owners now are HEGG, MARK R/NANCY A; 20.0 acres; one story residence built in 1997.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**WATER RIGHT Permit No.**

**OWNER:** Name **SCOTT NISSEN**  
Address **8880 W. Place, Capital WA**

**LOCATION OF WELL:**  
County **Whatcom**  
SE 1/4 NW 1/4 Sec 5 T 16N R 46E WM

**STREET ADDRESS OF WELL** (or nearest address) **N. River Dr., Pullman WA**

**PROPOSED USE:**  
Domestic [ ]  Industrial [ ]  Municipal [ ]

DeWater [ ]  Test Well [ ]  Other [ ]

**TYPE OF WORK:**  
Owner's number of well  
(If more than one)

Abandoned [ ]  New well [ ]  Method: Dug [ ]  Bored [ ]

Reconditioned [ ]  Driven [ ]  Rotary [ ]  Jetted [ ]

**DIMENSIONS:**  
Diameter of well 8 ½ ft.  
Depth of completed well 155 ft.

**CONSTRUCTION DETAILS:**

Casing Installed: 8 ft. Diam. from +1 ft. to 21 ft.

Welded  
Linear installed  
Threaded  

Perforations: Yes [ ]  No [X]

Type of perforator used

**SIZE of perforations**  
in. by in.

Perforations from to ft.

Perforations from to ft.

Perforations from to ft.

**Screens:**  
Yes [ ]  No [X]

Manufacturer's Name

**Type:**  
Model No.  
Diam. Slot尺寸 ft. to ft.

Diam. Slot尺寸 ft. to ft.

Gravel packed: Yes [ ]  No [X]

Size of gravel

Gravel placed from ft. to ft.

Surface seal: Yes [ ]  No [X]

To what depth? 21 ft.

Material used in seal

Did any strata contain unusable water? Yes [ ]  No [X]

**Type of water?**  
Depth of strata

**Method of sealing strata off**

**PUMP:**

Manufacturer's Name

**Type:**

H.P.

**WATER LEVELS:**

Land-surface elevation above mean sea level ft.

Static level 35 ft. below top of well Date 7-28-99

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (Cap, valve, etc.)

**WELL TESTS:**

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes [X]  No [ ]

If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

**WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cretaceous</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Basalt Breccia</td>
<td>4</td>
<td>90</td>
</tr>
<tr>
<td>Basalt Weathered</td>
<td>79</td>
<td>86</td>
</tr>
<tr>
<td>Basalt Musical</td>
<td>86</td>
<td>133</td>
</tr>
<tr>
<td>Sand</td>
<td>133</td>
<td>155</td>
</tr>
</tbody>
</table>

**RECEIVED**

FEB 28 2000

DEPARTMENT OF ECOLOGY

Work Started 7-28-99  Completed 7-28-99

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME**

**Address**

(Signed) **J. Wright**

**License No.**

Contractor's Registration No. **McPherson**

Date 9-20-2000

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.
GARY NYGAARD WELL 1

[DRILLED IN 1979]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2520 ±10</th>
<th>Depth (ft):</th>
<th>304</th>
<th>Quad:</th>
<th>Potlatch</th>
</tr>
</thead>
</table>

Latitude: 46.922392° Longitude: -116.962655° decimal degrees (WGS84)

____ ¼, NE ¼, SE ¼, Sec. 4, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1362 State Route 6, Potlatch, Idaho; on north side of road

Location Method:
Assumed location is for older house in western tax parcel owned by Bertha Nygaard; Latah County Assessor; Google Earth imagery; topographic map; driller incorrectly(?) reported NW¼, SW¼, Section 3, and misspelled last name as "Nygard."

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 29</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>29 – 38</td>
</tr>
<tr>
<td>Basalt</td>
<td>38 – 272</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>272 – 279</td>
</tr>
<tr>
<td>Clay</td>
<td>279 – 304</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N05W047274, owner now is NYGAARD, BERTHA; 1362 HWY 6, 9.41 AC E 990' OF NESE, LESS TAX #5004 & #5910, 4 41 5.

Gary Nygaard died in 2001; his widow is Bertha Nygaard (Moscow-Pullman Daily News, 2001); she also owns the adjacent parcel to the east.

References Cited:

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Gary Young
Address: 
Owner's Permit No.: 87-79-N-19

2. NATURE OF WORK

□ New well □ Deepened □ Replacement
□ Abandoned (describe method of abandoning)

3. PROPOSED USE

□ Domestic □ Irrigation □ Test □ Municipal
□ Industrial □ Stock □ Waste Disposal or Injection
□ Other ____________________ (specify type)

4. METHOD DRILLED

□ Rotary □ Air □ Hydraulic □ Reverse rotary
□ Cable □ Dug □ Other

5. WELL CONSTRUCTION

Casing schedule: □ Steel □ Concrete □ Other

Thickness Diameter From To

Was casing drive shoe used? □ Yes □ No
Was a packer or seal used? □ Yes □ No
Perforated? □ Yes □ No

How perforated? □ Factory □ Knife □ Torch

Size of perforation ______ inches by ______

Number of perforations From To

Was well screen installed? □ Yes □ No
Manufacturer's name _______________________

Type Diameter Slot size Depth Set from To

Diameter Slot size Depth Set from To

Gravel packed? □ Yes □ No □ Size of gravel

Packed from feet to feet

Surface seal depth feet

Material used in seal: □ Cement-grout □ Puddling slurry □ Wall cuttings

Sealing procedure used: □ Sturry pit □ Temp. surface casing

Method of joining casing: □ Threaded □ Welded □ Solvent Weld

Describe access port _______________________

6. LOCATION OF WELL

Sketch map location must agree with written location.

N

Subdivision Name

Lot No. Block No.

County

7. WATER LEVEL

Static water level feet below land surface.

Flowing? □ Yes □ No
G.P.M. flow

Artesian closed-in pressure p.s.i.

Controlled by: □ Valve □ Cap □ Plug
Temperature °F. Quality

8. WELL TEST DATA

□ Pump □ Bailer □ Air □ Other

Discharge G.P.M.

Pumping Level

Hours Pumped

9. LITHOLOGIC LOG

Hole Diam. From To

Material

Water Yes No

FOG377

10. Work started ______ finished ______

11. DRILLERS CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name

Address

Signed by (Firm Official)

and (Operator)
GARY NYGAARD WELL 2

[DRILLED IN 2000]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D0013645  Elev (ft): 2550 ±10  Depth (ft): 255  Quad: Potlatch

Latitude: 46.922758°  Longitude: -116.960843°  decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 4, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1362 State Route 6, Potlatch, Idaho; on north side of road, newer house at end of driveway (built after 1998 and prior to 2004, based on air photo imagery). [There are two residences on this driveway, both owned now by Bertha Nygaard.]

Location Method:
Location is for house in eastern tax parcel; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Loess, clay, brown</td>
<td>1 – 43</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>43 – 239</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>239 – 255</td>
</tr>
</tbody>
</table>
Comments:

Likely Latah County Tax Parcel RP41N05W047214, owner now is NYGAARD, BERTHA; 1362 HWY 6, 15.81 AC TAX #5910 NESE, 4 41 5, MH.

Gary Nygaard died in 2001; his widow is Bertha Nygaard (Moscow-Pullman Daily News, 2001). Bertha Nygaard also owns an adjacent parcel to the west.

References Cited:

1. WELL TAG NO. DD0013645
DRILLING PERMIT NO.
Other IDWR No. 76 4 3 6

2. OWNER:
Name GARY NYGAARD
Address 1382 HWY 6
City POTLATCH
State ID Zip 83855

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. USE:
[X] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK; check all that apply
[X] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
[X] Air Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES:

<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>0</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>DRY</td>
</tr>
</tbody>
</table>

Was drive shoe used? [X] Y [ ] N
Shoe Depth(s) 52
Was drive shoe seal tested? [X] Y [ ] N
How? 300 PSI

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Guage</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>+1</td>
<td>52</td>
<td>250 STEEL</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Liner</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Welded</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Threaded</td>
</tr>
</tbody>
</table>

Length of Headpipe
Length of Tailpipe

9. PERFORATIONS/Screens:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

80 ft. below ground Artesian pressure b
Depth flow encountered ft. Describe access port or control devices: WELL CAP

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield (gpm)</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>140</td>
<td>140</td>
<td>1 HR</td>
</tr>
</tbody>
</table>

Water Temp. 51
Bottom hole temp.
Water Quality test or comments: Depth first Water Encounter 239

12. LITHOLOGIC LOG;

(Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>52</td>
<td>SOIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>43</td>
<td></td>
<td>43 CLAY BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>52</td>
<td></td>
<td>52 BASALT HARD BLACK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>239</td>
<td>255</td>
<td>239 BASALT HARD BLACK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>239</td>
<td>255</td>
<td>BASALT FRACTURED SOFT</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

RECEIVED
MAR 3 0 2001
Department of Water Resources

Completed Depth 255 (Measurable)
Date: Started 8/31/2000 Completed 9/1/2000

13. DRILLER'S CERTIFICATION:

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name MCPHERSON & WRIGHT DRILLING

Firm Official

Driller or Operator

FORWARD WHITE COPY TO WATER RESOURCES
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 617078
Elev (ft): 2262
Depth (ft): 80
7.5’ Quad: Albion

Latitude: 46.77181
Longitude: -117.23849 decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 23, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
502 Pat Old Road, Pullman, Wash., north of bend in road, well plots between house with red roof and driveway.

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-03). Whitman County Assessor; Google Earth; topographic map. PLSS subdivisions and tax parcel number are incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden: Clay, yellow</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt: Roza Member</td>
<td>Basalt, hard</td>
</tr>
<tr>
<td></td>
<td>Basalt, with clay, brown</td>
</tr>
<tr>
<td>Grande Ronde Basalt: N2 magnetostratigraphic unit</td>
<td>Sentinel Bluffs Member</td>
</tr>
<tr>
<td></td>
<td>Basalt, broken</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415232900, 502 OLD PAT RD, NW PT S 1/2, owner is now MCINTURFF, JOHN S; 3.0 acres; one story residence built in 1948 (but photo from County Assessor's files show a newer looking home, below).

Aaron Waverly "Pat" Old, died 2013 at age 101 yrs; his son is Richard Old (Moscow-Pullman Daily News, May 4, 2013).

References Cited:


# WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

**Construction/Decommission** ("x" in circle)

- Decommission ORIGINAL INSTALLATION
- Notice of Intent Number 358075

**Proposed Use:**
- [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] DeWater
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

**Type of Work:**
- Owner's number of well (if more than one)
- [ ] New well
- [ ] Reconditioned
- [ ] Drilled
- [ ] Excavated
- [ ] Bored
- [ ] Driven

**Dimensions:**
- Diameter of well 8 inches, drilled 80 ft.
- Depth of completed well 80 ft.

**Construction Details**

- Casing: [ ] Welded 8" Diam. from 0 ft. to 36 ft.
- Installed: [ ] Liner installed 8" Diam. from 10 ft. to 80 ft.
- [ ] Threaded Diam. from __________ ft. to __________ ft.

**Perforations:**
- [ ] Yes
- [ ] No
- Type of perforator used: [ ] SAW

**Size of perfor 1/8 in., by 1/2 in., and of perfor 5/8 from 40 ft. to 80 ft.**

**Screens:**
- [ ] Yes
- [ ] No
- [ ] K-Pac
- Location:
- Manufacturer's Name:
- Type: ________
- Slot size: from ft. to ft.
- Diam. Slot size: from ft. to ft.

**Gravel/Filter packed:**
- [ ] Yes
- [ ] No
- Size of gravel/sand:
- Materials placed from ft. to ft.

**Surface Seal:**
- [ ] Yes
- [ ] No
- To what depth? 36 ft.

**Material used in seal:**
- [ ] BENTONITE

**Did any strata contain unusable water?**
- [ ] Yes
- [ ] No

**Type of water:**
- Depth of strata_____

**Method of sealing strata off:**

**Pump:**
- Manufacturer's Name:
- Type: ________
- H.P. ________

**Water Levels:**
- Land surface elevation above mean sea level ________ ft.
- Static level 21 ft. below top of well Date: 8/1/07
- Artesian pressure ______ lbs. per square inch Date:_____
- Artesian water is controlled by _______

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? [ ] Yes [ ] No
- If yes, by whom:

- Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
- Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
- Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

- Recovery data (time taken as zero when pump turned off (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
</table>

- Date of test:
- Ballast test: ______ gal./min. with ______ ft. drawdown after ______ hrs.
- Artesian: ______ gal./min. with steam set at ______ for ______ hrs.
- Artesian flow ______
- Temperature of water ______

**Chemical Analysis Made?**
- [ ] Yes
- [ ] No

**Well Construction Certification:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- [ ] Driller
- [ ] Engineer
- [ ] Trainee

**Driller/Engineer/Trainee Signature:**

**Driller or trainee license No:**

**Well Completion Certification:**

**Current**

**Notice of Intent No. W21574**

**Unique Ecology Well ID Tag No. AHR734**

**Water Right Permit No.**

**Property Owner Name:**
- PAT OLD

**Well Street Address:**
- 751 PAT OLD ROAD

**City:**
- PULLMAN

**County:**
- WHITMAN

**Location:**
- NW1/4 SE1/4 Sec 23 Twn 15N R 44 EWM 8
- (s, t, r Still REQUIRED)

**Lat/Long**:
- Lat Deg ______ Long Min/Sec ______
- Long Deg ______ Long Min/Sec ______

**Tax Parcel No.**
- (Required) 2-2000-15-23-4700

**Construction or Decommission Procedure**

**Formation:** Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (Use additional sheets if necessary.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY YELLOW BROWN STIFF</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>BASALT BLACK &amp; CLAY BROWN</td>
<td>26</td>
<td>32</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>32</td>
<td>62</td>
</tr>
<tr>
<td>BASALT BROKEN BLACK MODERATE</td>
<td>51</td>
<td>80</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>62</td>
<td>80</td>
</tr>
</tbody>
</table>

**Start Date:**
- 8/2/07

**Completed Date:**
- 8/2/07

**Drilling Company:**
- MCPHERSON & WRIGHT DRILLING

**Address:**
- 2246 BURRELL

**City, State, Zip:**
- LEWISTON, ID, 83501

**Contractor's Registration No:**
- MCPH RD1351

**Date:**
- 8/22/09

ECY 009-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
HAROLD OLFS WELL

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, August 8, 2016; November 9, 2017

Well Log ID: 167621   Elev (ft): 2340   Depth (ft): 62   7.5’ Quad: Pullman

Latitude: 46.74109   Longitude: -117.19976   decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 31, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
454 Hayward Road, Pullman, Wash.; on west side of road

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-11); Whitman County Assessor; Google Earth imagery; topographic map. PLSS incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0    To 4</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, soft, with clay From 4 To 37</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard From 37 To 62</td>
</tr>
</tbody>
</table>

1282
Comments:

Whitman County Tax Parcel 121700011020000, 454 HAYWARD RD, PULLMAN FARRS 3RD LOT 2 BLOCK 11, owner is now MOUSEL, MICHELLE; grantor was OLFS ESTATE, HAROLD, on 12/06/13; one story residence built in 1977.

Mr. Harold R. Olfs died in 2013, aged 79 years (Kimball Funeral Home and Crematory, 2013).

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: HAROLD OXFORD
Address:

(2) LOCATION OF WELL: County:

(3) PROPOSED USE: Domestic □ Industrial □ Municipal □ Irrigation □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one) □ Method: Dug □ Bored □ Deepened □ Cable □ Driven □ Reconditioned □ Rotary □ Jetted □

(5) DIMENSIONS: Diameter of well _________ inches.
Drilled _______ ft. Depth of completed well ______ ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from _______ ft. to _______ ft.
Threaded □ Welded □ Perforations: Yes □ No □
Type of perforator used: □
SIZE of perforations ___________ in. by ___________ in.
perforations from _______ ft. to _______ ft.
perforations from _______ ft. to _______ ft.
perforations from _______ ft. to _______ ft.

Screens: Yes □ No □
Manufacturer's Name ____________________________ Model No. _______
Type ____________________________ Diam. _______ ft. Slot size _______ ft. to _______ ft.
Diam. _______ ft. Slot size _______ ft. to _______ ft.
Gravel packed: Yes □ No □
Size of gravel: _______ ft. to _______ ft.
Gravel placed from _______ ft. to _______ ft.

Surface seal: Yes □ No □ To what depth? _______ ft.
Material used in seal: CEMENT GRAY
Did any strata contain unusable water? Yes □ No □
Type of water? SURFACE □ DEPTH OF STRATA □
Method of sealing strata off: TEMPORARY CASTING

(7) PUMP: Manufacturer's Name ____________________________ H.P. _______
Type: ____________________________

(8) WATER LEVELS: Land-surface elevation above mean sea level... 2600 ft.
Static level _______ ft. below top of well Date _______
Artesian pressure _______ lbs. per square inch Date _______
Artesian water is controlled by _______ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom? _______
Yield: _______ gal./min. with _______ ft. drawdown after _______ hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time _______ Water Level _______ Time _______ Water Level _______ Time _______ Water Level _______

Date of test _______ Water Level _______ Time _______ Water Level _______ Time _______ Water Level _______

Date of test _______ Water Level _______ Time _______ Water Level _______ Time _______ Water Level _______

[Terms and conditions as per the document]

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: RAY MCMADEN WELL DRILLER
(Petition, firm, or corporation) (Type or print)
Address: 711 8TH AVE, KIRKLAND, WA 98033

[Signature] Ray McMillan
(Well Driller)

License No. 0392 Date: 2-1-1925

(SIGNATURE) Ray McMillan

(USE ADDITIONAL SHEETS IF NECESSARY)
BERNARD OLSON WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: NA
Elev (ft): 2530
Depth (ft): 130
7.5’ Quad: Moscow West

Latitude: 46.714260
Longitude: -117.024285
decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 24, T. 39 N, R. 6 W

Well Address and (or) Other Location Information:
1650 Sand Road, Moscow, Idaho (formerly 4086 Sand Road); farmhouse is north of bend in road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. Site visit (September 20, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>9</td>
<td>96</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>96</td>
<td>104</td>
</tr>
<tr>
<td>Sand</td>
<td>104</td>
<td>112</td>
</tr>
<tr>
<td>Clay</td>
<td>112</td>
<td>130</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N06W240016, owned by Bernard Olson, whole NE¼ sec. 24.

References Cited:
1. DRILLING PERMIT NO. 87-04 N 31 -000
Other IDWR No.

2. OWNER: BERNARD OLSON
Name:
Address: 4086 SAND RD.
City: Moscow State: ID Zip: 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

<table>
<thead>
<tr>
<th>N</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Twp. 39 North or South
Rge. 24 East or West
Sec. 14 1/4 NE
Gov't Lot 1/4 County

Address of Well Site
City: Same

(Give at least name of road - Distance to Road or Landmark)

Lt. _______ Bk. _______ Sub. Name: _______

4. PROPOSED USE:
☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK:
☐ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD:
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENONITE 0 1/9 4</td>
<td></td>
<td>Dumped</td>
</tr>
</tbody>
</table>

Was drive shoe used? Y ☐ N ☐
Was drive shoe seal tested? Y ☐ N ☐ HOW?

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; + 1</td>
<td>19</td>
<td>23</td>
<td>STEEL</td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe _______ Length of Tailpipe _______

9. PERFORATIONS/SCREENS

☐ Perforations Method
☐ Screens Screen Type

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
Depth flow encountered _______ ft. Describe access port or control devices: NENE 24 39N 60W

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2</td>
<td>10</td>
<td>1 hr</td>
<td></td>
</tr>
</tbody>
</table>

Water Temp. ____________ Bottom hole temp. ____________
Water Quality test or comments: ____________

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>0 2</td>
<td>Spil</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>1 10</td>
<td>Clay, Fire</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>1 10</td>
<td>Clay, Tan</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>1 10</td>
<td>Sand</td>
<td></td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

We certify that all minimum well construction standards were complied with at the time the rig was removed.

MCPHERSON & WRIGHT DRILLING
Firm Name: 2248 Burrell
Firm Official: Lewiston, Idaho 83501

(208) 743-7295
Date: 9-23-94

Supervisor or Operator: Date: 9-23-94

Firm No. 3716

FORWARD WHITE COPY TO WATER RESOURCES 1287
DOUG OLSON WELL
Geologic Interpretation of Water Well Driller’s Log

Well Log ID: D0041005 Elev (ft): 2530 Depth (ft): 80
Quad: Moscow West

Latitude: 46.713223 Longitude: -117.026235 decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 24, T. 39 N, R. 6 W

Well Address and (or) Other Location Information:
1670 Sand Road, Moscow, Idaho, on north side of road; west of Bernard Olson well

Location Method:
Location is for mobile home; Latah County Assessor; Google Earth imagery; topographic map. Site visit (September 20, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>16 – 46</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>46 – 58</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>58 – 80</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N06W240016, owned by Bernard Olson, whole NE¼ sec. 24.

References Cited:
1. WELL TAG NO. D 0041005
   DRILLING PERMIT NO. 537042
   Other IDWR No. 

2. OWNER:
   Name DOUG OLSON
   Address 1670 SAND RD.
   City MOSCOW State ID Zip 83843

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

   N
   W
   Twp.  39
   Rge.  6
   Sec.  24
   Gov't Lot 10 acres
   County LATAH
   Lat: 40° 14' 14" NE
   Long: 116° 12' 0" NE
   Address of Well Site SAME
   City 
   
   (Site at least name of road + Distance to Road or Landmark)

4. USE:
   X Domestic  Municipal  Monitor  Irrigation
   Thermal  Injection  Other

5. TYPE OF WORK: check all that apply
   (Replacement etc.)
   X New Well  Modify  Abandonment  Other

6. DRILL METHOD:
   X Air Rotary  Cable  Mud Rotary  Other

7. SEALING PROCEDURES:
   Soil/Filter Pack  AMOUNT  METHOD
   Material  From  To  Sacks or Pounds
   BENTONITE  0  20  7  DRY
   
   Was drive shoe used?  X Y N
   Shoe Depth(s)  20'
   Was drive shoe seal tested?  X Y N
   How?  300 PSI

8. CASING/LINER:
   Diameter  From  To  Gauge  Material  Casing  Liner  Welded  Threaded
   8  +1  20  1/8 STEEL  X
   6  10  80  200 PVC  X  X
   Length of Headpipe  Length of Tailpipe

9. PERFORATIONS/SCREENS:
   X Perforations  Method SAW
   Screens  Screen Type
   From  To  Slot Size  Number  Diameter  Material  Casing  Liner
   40  80  1/8  60  6 PVC  X
   
10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    22 ft. below ground  Artesian pressure lb.
    Depth flow encountered ft.  Describe access port or control devices:
    WELL CAP

11. WELL TESTS:
   Yield gal/min.  Drawdown  Pumping Level  Time
   50  75  1 HR
   Office Use Only
   Inspected by Twp  Rge  Sec  Lat:  Long:
   1/4  1/4  1/4
   Water Temp.  55 Bottom hole temp.
   Water Quality test or comments: Depth first Water Encounter 54

12. LITHOLOGIC LOG:
   (Describe repairs or abandonment)
   Water
   Bore Dia.  From  To  Remarks  Lithology, Water Quality & Temperature  Y  N
   14  0  3  SOIL
   14  3  16  CLAY
   14  16  20  BASALT
   8  20  46  BASALT
   8  46  58  BASALT BROKEN
   8  58  80  CLAY
   R E C E I V E D
   NOV 04 2005
   IDWR/North

13. DRILLER'S CERTIFICATION:
    We certify that all minimum well construction standards were complied with at
    the time the rig was removed.
    Company Name MCPHERSON & WRIGHT DRILLING
    Firm Official
    Driller or Operator
    Date 11/1/2005
    Date 11/1/2005
    (Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES
### WILLIAM ORSBORN WELL

**Geologic Interpretation of Water Well Driller’s Log**

**By John H. Bush, October 8, 2016**

---

**Well Log ID:** 616748  
**Elev (ft):** 2430 ±10  
**Depth (ft):** 255  
**Quad:** Colfax North

**Latitude:** 46.896721  
**Longitude:** -117.314598  
**decimal degrees (WGS84)**

---

**Well Address and (or) Other Location Information:**
2802 WA 272, Colfax, Wash., on north side of road; well is just west of the western driveway and in front of shed.

---

**Location Method:**
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect and last name misspelled "Osborn" on driller’s report. Site visit (September 13, 2016).

---

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>From: 0    To: 4</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>From: 4    To: 98</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>From: 98   To: 139</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From: 139  To: 211</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>From: 211  To: 225</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From: 225  To: 255</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004416071690, 2802 SR 272, NE1/4 PT N1/2 N OF HWY, owners are ORSBORN, WILLIAM/PEGGY; 2.0 acres, 1 story residence built in 2002.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Drilled ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jettied

DIMENSIONS: Diameter of well __ inches, drilled __ ft.
Depths of completed well __ ft.

CONSTRUCTION DETAILS
Casing: ☐ Welded ☐ Diam. from __ ft. to __ ft.
Installed: ☐ Liner installed ☐ Diam. from __ ft. to __ ft.
☐ Threaded ☐ Diam. From __ ft. to __ ft.

Perforations: ☐ Yes ☐ No
Type of perforator used __

Size of perfor __/16 in. by __ in. and no. of perfor __/16 in. from __ ft. to __ ft.

Screws: ☐ Yes ☐ No ☐ K-Pac Location __

Manufacturer's Name __

Type __ Slot size from __ ft. to __ ft.
Diam __ Slot size from __ ft. to __ ft.
Gravel/Filter packed: ☐ Yes ☐ No
Size of gravel/sand __
Materials placed from __ ft. to __ ft.

Surface Seal: ☐ Yes ☐ No
To what depth? __ ft.

Material used in seal __

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water __

Depth of strata __

Method of scaling strata __

PUMP: Manufacturer's Name __

Type __ H.P. __

WATER LEVELS: Land-surface elevation above mean sea level __ ft.

Static level __ ft. below top of well Date __/__/07

Artesian pressure __ lbs. per square inch Date __/__/07

Artesian water is controlled by __ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No

If yes, by whom __

Yield __ gal./min. with __ ft. drawdown after __ hrs.

Yield __ gal./min. with __ ft. drawdown after __ hrs.

Yield __ gal./min. with __ ft. drawdown after __ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time __ Water Level __ Time __ Water Level __ Time __ Water Level __

Date of test ____________

Bailer test __ gal./min. with __ ft. drawdown after __ hrs.

Arrest __ gal./min. with stem set at 250 ft. for __ hrs.

Artesian flow __ g.p.m. Date __/__/07

Temperature of water __ Was a chemical analysis made? ☐ Yes ☐ No

SEP 11 2009

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Start Date 7/9/07 Completed Date 7/11/07

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee ☐ Name (Print) TED WRIGHT
Driller/Engineer/Trainee Signature ___________________________

Driller or trainee License No. ___________________________

IF TRAINEE: Driller's License No. ___________________________

Driller's Signature ___________________________

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.
Persons with a hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
SARAH OTNESS WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: NA Elev (ft): 2646 Depth (ft): 197 Quad: Robinson Lake

7.5’

Latitude: 46.752448° Longitude: -116.958940° decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 3, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
3110(?) Darby Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006, HCP_wells shapefile); Latah County Assessor; Google Earth imagery; topographic map; driller switched subsections.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>2 – 29</td>
</tr>
<tr>
<td>Clay, white</td>
<td>29 – 42</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>42 – 54</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>54 – 65</td>
</tr>
<tr>
<td>Clay, white</td>
<td>65 – 73</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>73 – 75</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>75 – 80</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>80 – 106</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>106 – 107</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, wood, clay</td>
<td>107 – 117</td>
</tr>
<tr>
<td>Basalt</td>
<td>117 – 142</td>
</tr>
<tr>
<td>Basalt, soft, wood</td>
<td>142 – 167</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N05W033612, WILLARD, JANICE M; 3110 DARBY RD, 39.78 AC SWNW; N 33.19' OF NWSW, 3 39 5.

References Cited:

WELL DRILLER'S REPORT

State of Idaho
Department of Water Administration

WELL OWNER

Name: Sarah Otness
Address: Box 531 Dover Highway Sandpoint, Idaho 83864
Owner's Permit No.: 87-17-N-2

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE:

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Other (specify type)
☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection

4. METHOD DRILLED

☐ Cable  ☐ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION

Diameter of note: 8 inches Total depth: 197 feet
Casing schedule: ☐ Steel  ☐ Concrete
Thickness inches Diameter inches
250 8
122

Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No
How perforated?  ☐ Factory  ☐ Knife  ☐ Torch
Size of perforation: inches by inches
Number of perforations
From  To

Well screen installed?  ☐ Yes  ☐ No
Manufacturer's name
Type:  ☐ Model No.: 
Diameter:  Set from feet to feet
Slot size:  
Diameter:  Set from feet to feet
Slot size:  
Gravel packed?  ☐ Yes  ☐ No Size of gravel
Placed from feet to feet
Surface seal depth: 8 & 18 Material used in seal:  ☐ Cement grout
Bentonite &  ☐ Pudding clay  ☐ Well cuttings
Sealing procedure used:  ☐ Starved pit  ☐ Temporary surface coming

6. LOCATION OF WELL

Sketch map location must agree with written location.

Subdivision Name:
Lot No.: Block No.:

County: Idaho

7. WATER LEVEL

Static water level: 148 feet below land surface
Flowing?  ☐ Yes  ☐ No G.P.M. flow:
Temperature: ° F. Quality:
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA

☐ Pump  ☐ Drill  ☐ Other
Discharge G.P.M.: Draw Down: Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diam.</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>Black clay</td>
<td>x</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>Yellow clay</td>
<td>x</td>
</tr>
<tr>
<td>29</td>
<td>42</td>
<td>White clay granite</td>
<td>x</td>
</tr>
<tr>
<td>54</td>
<td>65</td>
<td>Sand &amp; gravel</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>75</td>
<td>Yellow clay granite</td>
<td>x</td>
</tr>
<tr>
<td>80</td>
<td>106</td>
<td>Sand, gravel, granite 28 g</td>
<td>x</td>
</tr>
<tr>
<td>106</td>
<td>107</td>
<td>Gray clay</td>
<td>x</td>
</tr>
<tr>
<td>107</td>
<td>115</td>
<td>Bookwood, black clay</td>
<td>x</td>
</tr>
<tr>
<td>115</td>
<td>117</td>
<td>Blue clay</td>
<td>x</td>
</tr>
<tr>
<td>117</td>
<td>142</td>
<td>Basalt</td>
<td>x</td>
</tr>
<tr>
<td>142</td>
<td>167</td>
<td>Quartz, basalt layers, wood</td>
<td>x</td>
</tr>
<tr>
<td>167</td>
<td>188</td>
<td>Hard basalt</td>
<td></td>
</tr>
<tr>
<td>188</td>
<td>197</td>
<td>Hard &amp; soft layers basalt</td>
<td>x</td>
</tr>
</tbody>
</table>

10. Work started 1-19-77 finished 3-4-77

11. DRILLERS CERTIFICATION

Firm Name: Don Town Well Drilling  Firm No.: 155
Address: Rt 4 Box 429 Moscow, Idaho 2-28-77
Signed by (Firm Official): J. E.
(Operator):
GLENN OWEN WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 10, 2018

Well Log ID: NA    Elev (ft): 2631    Depth (ft): 183    Quad: Robinson Lake

Latitude: 46.754619°   Longitude: -116.964071°   decimal degrees (WGS84)


Well Address and (or) Other Location Information:
2901 Moscow Mountain Road, Moscow, Idaho; on south side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006, HCP_wells shapefile); Latah County Assessor; Google Earth imagery; topographic map; driller misspelled first name as "Glen" and reported incorrect subsections.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, dark brown</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>*Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 111</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>111 – 132</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>132 – 171</td>
</tr>
<tr>
<td>Clay, with wood</td>
<td>171 – 172</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>172 – 181</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>181 – 189</td>
</tr>
</tbody>
</table>

*Includes loess
Comments:

Latah County Tax Parcel RP39N05W041963, owner now is OWEN, SANDRA M; 2901 MOSCOW MTN RD, W 706.21' OF SENE, 4 39 5.

Glenn Byron Owen was born on September 24, 1947 and died Saturday, April 24, 2010; Glenn was a resident of Moscow, Idaho (tributes.com, 2018). Sandra Owen was his wife (Moscow-Pullman Daily News, 2010).

References Cited:


STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
NOV 30 1988

Name: 
Address: 
Owner's Permit No.: 87-88-N-23

2. NATURE OF WORK
☐ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel ☐ Concrete ☐ Plastic
☐ Other

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Thickness</th>
<th>From</th>
<th>To</th>
<th>Depth</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.50 inches</td>
<td>8 inches</td>
<td>1 feet</td>
<td>118 feet</td>
<td>103 feet</td>
<td>183 feet</td>
</tr>
<tr>
<td>3.50 inches</td>
<td>8 inches</td>
<td>1 feet</td>
<td>118 feet</td>
<td>103 feet</td>
<td>183 feet</td>
</tr>
</tbody>
</table>

Was casing drive shoe used? ☐ Yes ☐ No
Was a packer or seal used? ☐ Yes ☐ No
Perforated? ☐ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☐ Torch
Size of perforation: ☐ No ☐ Yes (inches by inches)

<table>
<thead>
<tr>
<th>Number of perforations</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>143 feet</td>
<td>183 feet</td>
</tr>
</tbody>
</table>

Well screen installed? ☐ Yes ☐ No
Manufacturer's name:

6. LOCATION OF WELL
Sketch map location must agree with written location.

Subdivision Name:
Lot No.:
Block No.:
County:

7. WATER LEVEL
Static water level 119 feet below land surface.
Flowing? ☐ Yes ☐ No
G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature °F.
Quality

8. WELL TEST DATA
☐ Pump ☐ Bailer ☐ Air ☐ Other
Discharge G.P.M.: 
Pumping Level:
Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore</th>
<th>Depth</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2</td>
<td>Sand and Gravel</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Clay - gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
<tr>
<td>133</td>
<td>133</td>
<td>Clay and gravel</td>
</tr>
</tbody>
</table>

10. Work started 9-27-88 finished 9-28-88

11. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Wright & Wilson Drilling
Date: 10-5-88
Signed by (Firm Official) 
Operator:

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
PAC WEST PRE-MIX WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 6, 2016

Well Log ID: 171298   Elev (ft): 2521.424   Depth (ft): 379   7.5’ Quad: Moscow West

Latitude: 46.73935   Longitude: -117.05435   decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 31, T. 15 N, R. 46 E

Well Address and (or) Other Location Information:
5951 Pullman Airport Road, Pullman, Wash., on west side of road (at northwest corner of intersection with WA 270); well is barricaded by concrete blocks, on southwest side of the driveway

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile). Site visit (April 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 18</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>18 – 38</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>38 – 39</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>39 – 133</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>133 – 137</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>137 – 190</td>
</tr>
<tr>
<td>Shale, black</td>
<td>190 – 195</td>
</tr>
<tr>
<td>1Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>2Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating hard and soft</td>
<td>195 – 267</td>
</tr>
</tbody>
</table>
Basalt, fractured
Latah Formation
Sediments of Moscow
Clay, shale, sand

Comments:

1 Contact was difficult to interpret; it is possible that Vantage is about 30 ft thicker?

2 Grande Ronde Basalt was interpreted to be Meyer Ridge Member(?) based upon elevation comparisons to DOE Pullman Test and Observation Well where chemistry was used for stratigraphic determinations (Conrey and Wolff, 2010).

Whitman County Tax Parcel 200004615314902, 5951 PULLMAN-AIRPORT RD, SE1/4 NE1/4 PT TRACT A, now owned by TWO-GM LLC (6901 SR 270), 6.95 acres; grantor was THREE FORKS DEV LLC on 09/01/03.

TWO-GM LLC is active (Washington Secretary of State, 2016); governors are MOTLEY, JR, WILLIAM E and MOTLEY, FRANK JEFFREY (both at NW NICOLE COURT, PULLMAN).
References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name - Pac WEST Dr Mix
Address - PO Box 9084 Moscow, ID 83843

(2a) STREET ADDRESS OF WELL (or nearest address)
County - Whitman

(3) PROPOSED USE:
- Domestic
- Irrigation
- Municipal
- DeWater

(4) TYPE OF WORK:
- Owner's number of well
- Method: Dug
- Bored
- Deepened
- Cable
- Driven
- Rotary
- Jetted

(5) DIMENSIONS:
- Diameter of well: 8 inches
- Depth of completed well: 379 feet

(6) CONSTRUCTION DETAILS:
- Casing installed: 8
- Diameter from: 31 ft.
- Liner installed: 31 ft.
- Threaded
- Perforations: Yes
- Size of perforations: in.
- Material used in seal: Bentonite + Cement
- Did any strata contain unusable water? Yes
- Type of water:
- Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type:

(8) WATER LEVELS:
- Static level: 255 ft.
- Artesian pressure: lbs. per square inch
- Artesian water is controlled by

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- Yield: gal./min.
- Water level measured from:
- Time drawn down after:

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
- Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of material.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt Firm</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Clay</td>
<td>35</td>
<td>60</td>
</tr>
<tr>
<td>Black Shale</td>
<td>60</td>
<td>195</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>195</td>
<td>218</td>
</tr>
<tr>
<td>Basalt Soft</td>
<td>218</td>
<td>242</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>242</td>
<td>252</td>
</tr>
<tr>
<td>Basalt Soft</td>
<td>252</td>
<td>262</td>
</tr>
<tr>
<td>Clay</td>
<td>262</td>
<td>318</td>
</tr>
<tr>
<td>Clay-Shale-Sand</td>
<td>318</td>
<td>379</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: WITT WELL DRILLING
Address: 1900 Pershing Lewison Blvd
(Signed) Roger Witt
License No. 0673

Contractor's Registration No.
Date 9/17/95

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.
PALOUSE CITY WELL 3
[DRILLED IN 2000]
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 18, 2016

Well Log ID: 317591
Elev (ft): 2505.41
Depth (ft): 460
Quad: Palouse

Latitude: 46.905867
Longitude: -117.082801
decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 1, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
West Spokane Street, Palouse, Wash., at south end of ~700-ft long lane. The lane runs parallel to ID 27 southwest of city center.

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); site visit (August 26, 2015). Steve Robischon (written commun., October 13, 2015) verified site as well 3. [Note that Ralston Hydrologic Services (2000) referred to this site as well #2, and in a previous report (Ralston, 1996) referred to Palouse city wells 1, 2, and 3.]

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>3 – 188</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, fine</td>
<td>188 – 218</td>
</tr>
<tr>
<td>Clay, blue, with sand</td>
<td>218 – 312</td>
</tr>
<tr>
<td>Clay, brown, with basalt chips</td>
<td>312 – 319</td>
</tr>
<tr>
<td>Clay, brown, with sand</td>
<td>319 – 330</td>
</tr>
<tr>
<td>*Basalt, with clay seams</td>
<td>330 – 358</td>
</tr>
<tr>
<td>Clay, brown, with sand</td>
<td>358 – 395</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
</tbody>
</table>

1304
Meyer Ridge Member

<table>
<thead>
<tr>
<th>Material</th>
<th>Depth Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, hard</td>
<td>395 – 402</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>402 – 420</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>420 – 423</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>423 – 435</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>435 – 447</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>447 – 449</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>449 – 460</td>
</tr>
</tbody>
</table>

Comments:

*This basalt interval from 330–358 ft is interpreted as an invasive unit into the Vantage from either the overlying Lolo flow or underlying Meyer Ridge Member (R2), or it could also be a flow from the N2. The Meyer Ridge Member in the bottom of the well was determined from chemistry provided by John Bush and identified by Conrey and others (2013).

Ralston Hydrologic Services (2000) reported on the testing and construction of this well (his Palouse #2, which is our Palouse city well 3).

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON
WATER Right Permit No. G3-24434P
UNIQUE WELL I.D. # ACW-666
Notice of Intent: W121477

OWNER: City of Palouse %Kimball Eng, Eastern Regional Office

LOCATION OF WELL: County Whitman
(2a) STREET ADDRESS OF WELL: 151 Main Rd, Lewiston Id 83501

DEPT. OF ECOLOGY

PROPOSED USE:
□ Domestic □ Industrial □ Municipal
□ Irrigation □ Test Well □ Other
□ DeWater

TAX PARCEL NO.

TYPE OF WORK:
□ New Well □ Deepened □ Reconditioned
□ Decommission □ Dug □ Bored
□ Cable □ Driven □ Rotary
□ Jettied

DIMENSIONS:
Diameter of well 16" and 12" inches
Drilled 460 ft. Depth of completed well 432.5 ft.

CONSTRUCTION DETAILS
Casing Installed:
□ Welded □ Liner installed
□ Threaded

Perforations:
□ Yes □ No

Screens:
□ Yes □ No □ K-Pac Location

Manufacturer's Name

Type
Stainless Steel

Model No.

Diam.
10" Slot Size
150 from 397.5 to 432.5 ft.

Gravel/Filter packed:
□ Yes □ No □ Size of gravel/sand

Material placed from 432.5 ft. to 444 ft.

Surface seal:
□ Yes □ No To what depth? 400 ft.

Material used in seal

Did any strata contain usable water? □ Yes □ No

Type of water?
Surface

Depth of strata

Method of sealing strata off Cased off and cemented

PUMP:
Manufacturer's Name

Type:

WATER LEVELS:
Land-surface elevation above mean sea level 250 ft.

Static level ft. below top of well
Date

Artesian pressure lbs. per square inch
Date

Artesian water is controlled by
(Cap, valve, etc.)

WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? □ Yes □ No
If yes, by whom? H20 Well Svc
Yield: 800+ gal./min. with ft. drawdown after hrs.
Yield: 800+ gal./min. with ft. drawdown after hrs.
Yield: 800+ gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level

Date

Bailier test gal./min. with ft. drawdown after hrs.

Airtest 800+ gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.
Date

Temperature of water
Was a chemical analysis made? □ Yes □ No

WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL FROM TO
Topsoil 0 3
Basalt Fractured 3 188
Sand Fine W/Water 188 218
Clay Blue Gray W/Sand 218 312
Clay Brown W/Basalt Chips 312 319
Clay Brown W/Sand 319 330
Basalt W/Basalt Chips 330 358
Clay W/Basalt Chips 358 368
Clay Brown W/Basalt Chips 368 395
Basalt Hard 395 402
Basalt Fractured W/Water 402 420
Basalt Hard 420 423
Basalt Fractured W/Water 423 435
Basalt Hard 435 447
Basalt W/Green Hard Clay 447 449
Basalt Broken 449 460

Work Started 12/03/99 Completed 01/13/00

WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name Louie Hanner
License No. 1472
(Licensed Driller/Engineer)

Trainee Name

Drilling Company H20 WELL SVC 1-800-772-4901
(Signed) (Licensed Driller/Engineer)

Address 582 W Hayden Ave Hayden Lake Id 83835

Contractor's Registration No. H20WSI101DW Date 01/19/00

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 457-6600. The TDD number is (360) 457-6606.
Well Report Change Form

Instructions: Record any changes made to the well report record on this form. Append this form to the well report image and file with the original well report.

Please print legibly and use ink pen only. Fields marked with an asterisks (*) are required. Processing this form may be delayed if fields marked with an asterisk are not filled in completely.

* This Well Report has been changed on: 03 09 2009

Not in Notice of Intent System (NITS) Notice of Intent System (NITS) Log ID# 74959

Regional Office: CRO ERO NWRO SWRO

Well Type: Water Well Resource Protection Well

Notice of Intent Number: W121477 Unique Ecology Well ID Tag Number: ACW-6660

Original Property Owner Name: City of Pullman

Well Site Street Address: KVA City: County: Whitman Zip:

Well Location

<table>
<thead>
<tr>
<th>Tax parcel number</th>
<th>¼ - ¼ (within 40 acres)</th>
<th>¼ (within 40 acres)</th>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>EWM</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE SE</td>
<td></td>
<td></td>
<td>01</td>
<td>16</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

Latitude Degrees Latitude Time Horizontal Collection Method

Longitude Degrees Longitude Time

Type of Work

New Well Reconditioned Deepened

Well Report Received Date: 02/12/00 Well Completed Date: 01/13/00

Well Diameter (inches): 16 Well Depth (feet): 460 Other:

Driller License Number: 1472 Trainee License Number:

Other (specify):

* Person Requesting Change: John Covert

* Reason For Change: Change to correct Range

* Tracker Signature:

* Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
PALOUSE COUNTRY ACRES WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 1592916  Elev (ft): 2635 ±10  Depth (ft): 600  Quad: Viola

Latitude: 46.752420°  Longitude: -117.098270°  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 26, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
21 Chukkar Road, Pullman, Wash.; on southwest side of Orville Boyd Road

Location Method:
Location is for well, on west side of well house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 14, 2018, new gravel road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>5 – 70</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>70 – 215</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>¹Clay, green, and basalt</td>
<td>215 – 240</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>240 – 290</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, black and red</td>
<td>290 – 375</td>
</tr>
<tr>
<td>Basalt</td>
<td>375 – 438</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>438 – 495</td>
</tr>
<tr>
<td>Basalt</td>
<td>495 – 566</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>566 – 580</td>
</tr>
</tbody>
</table>
1Driller recorded as green basalt; interpreted as basalt and clay

Comments:

Whitman County Tax Parcel 200004515264890 (as reported by driller) is a retired tax parcel, SE PT SE S OF RD, owner was Palouse Country Estates LLC; 18 CRESCENT KEY, BELLEVUE WA; 22.0 acres. Four lots listed below are likely the new parcels:

Whitman County Tax Parcel 200004515264891 for Lot 1, 6.69 acres, at 22 Chukkar Road;
Whitman County Tax Parcel 200004515264892 for Lot 2, 5.02 acres, at 192 Chukkar Road;
Whitman County Tax Parcel 200004515264893 for Lot 3, 22 acres, at 141 Chukkar Road;
Whitman County Tax Parcel 200004515264894 for Lot 4, 2.73 acres, at 21 Chukkar Road, now owned by BOYD, BRETT/CHRISTINE; 10/16/17: grantor was PALOUSE COUNTRY ACRES LLC to BOYD, BRETT/CHRISTINE; 12/8/2017: building permit issued for NEW HOME: 2168SF MAIN 484SF ATTACHED GARAGE 399SF ATTACHED PORCH.

Well is a group well.

References Cited:
WATER WELL REPORT

PROPOSED USE: □ Domestic □ Industrial □ Municipal
□ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: Owner’s number of well (if more than one) □
□ New well □ Reconditioned Method: □ Dug □ Bored □ Driven
□ Deepened □ Cable □ Rotary □ Jettied

DIMENSIONS: Diameter of well □ 10 inches, drilled □ 16 ft.
Depth of completed well □ 40 ft.

CONSTRUCTION DETAILS
Casing □ Yes □ No
□ Welded □ Bevel □ Butt □ Flanged
□ Diam. from □ ft. to □ ft.
□ Diam. from □ ft. to □ ft.

Installed: □ Lined □ Coated □ Plastic □ Other
□ Diam. from □ ft. to □ ft.
□ Diam. from □ ft. to □ ft.

Perforations: □ Yes □ No
□ Saw Cut □ Foil □ Other
Size of perf □ in. by □ in. and no. of perf □ from □ to □

Screens: □ Yes □ No □ K-Pac Location
Manufacturer's Name □
□ Diameter □ Slot size □ ft. to □ ft.
□ Diameter □ Slot size □ ft. to □ ft.

Gravel/Filter packed: □ Yes □ No
□ Size of gravel/sand □
Materials placed from □ ft. to □ ft.

Surface Seal: □ Yes □ No □ To what depth □ ft.
Material used in seal □
□ Depth of strata □
Did any strata contain unusable water? □ Yes □ No
Method of sealing strata off □

PUMP: Manufacturer's Name □
□ Type □ H.P.

WATER LEVELS: Land-surface elevation above mean sea level □ ft.
Static level □ ft. below top of well □ Date □
Artesian pressure □ lbs. per square inch □
Artesian water is controlled by □ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
□ Yes □ No If yes, by whom?
Yield: □ gal./min. with □ ft. drawdown after □ hrs.
Yield: □ gal./min. with □ ft. drawdown after □ hrs.
Yield: □ gal./min. with □ ft. drawdown after □ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time □ Water Level □ Time □ Water Level □ Time □ Water Level □
□ □ □ □ □ □ □

Date of test □

Balser test □ gal./min. with □ ft. drawdown after □ hrs.
Artest □ gal./min. with stem set at □ ft. for □ hrs.
Artesian flow □ g.p.m. □ Date □

Temperature of water □ Was a chemical analysis made? □ Yes □ No

CURRENT
Notice of Intent No. □
Unique Ecology Well ID Tag No. □
Water Right Permit No. □
Property Owner Name □
Well Street Address □
City □
County □
Location □
Section □
Town □
Range □
E 1/2 N 1/4 S 1/2 W 1/2
(s, t, r Still REQUIRED)
Enroll □

Lat/Long
□ Lat Min/Sec □
□ Long Min/Sec □

Tax parcel No. (Required) □

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (Use additional sheets if necessary.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>dirt</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>brown clay</td>
<td>5</td>
<td>70</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>70</td>
<td>215</td>
</tr>
<tr>
<td>green bentonite</td>
<td>215</td>
<td>240</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>240</td>
<td>290</td>
</tr>
<tr>
<td>white bentonite</td>
<td>290</td>
<td>315</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>315</td>
<td>428</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>428</td>
<td>495</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>495</td>
<td>560</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>560</td>
<td>580</td>
</tr>
<tr>
<td>red black bentonite</td>
<td>580</td>
<td>100</td>
</tr>
</tbody>
</table>

*water @ 0.570*

RECEIVED
OCT 27, 2013
Department of Ecology
Eastern Regional Office

Start Date □ Completed Date □

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller □ Engineer □ Trainee Name (Print) □
Driller/Engineer/Trainee Signature □

Drilling Company □
Address □
City, State, Zip □
Contractor's Registration No. □

PALOUSE PRODUCERS WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 12, 2016

Well Log ID: 171323   Elev (ft): 2525 ±10   Depth (ft): 338   7.5’   Quad: Moscow West

Latitude: 46.733142   Longitude: -117.047020   decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 5, T. 14 N, R. 46 E

Well Address and (or) Other Location Information:
7605 WA 270, Pullman, Wash., The McGregor Company, on south side of highway; white well house is east of Wilson Siding sign, and west of large building; approximately 2,000 ft west of the state line.

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map; Moscow West quadrangle well 17 of Bush and others (1998). Site visit (April 12, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td>0</td>
</tr>
<tr>
<td>Top soil</td>
<td></td>
</tr>
<tr>
<td>Latah Formation(?) or Quaternary sediments(?)</td>
<td>5</td>
</tr>
<tr>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>14</td>
</tr>
<tr>
<td>Basalt</td>
<td>18</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>161</td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, gray</td>
<td>161</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>181</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td>190</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>190</td>
</tr>
<tr>
<td>Basalt, scoria, with vesicle fillings</td>
<td>195</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>248</td>
</tr>
</tbody>
</table>

1311
Comments:

The driller’s description of the Grande Ronde unit suggests the basalts from 190 to 338 ft in depth are part of a toe, the end of a flow, or at least a portion of a flow made of overlapping tongues. The elevation of the Grande Ronde suggests it is also near its end, because it is above the uppermost Grande Ronde encountered at the Hawkins Companies Wells (1 and 2) 2,000 ft to the northeast. The assignment of the Grande Ronde to the Meyer Ridge Member is tentative based upon correlation to the DOE Pullman Observation and Test Well where basalt chemistry was used by Conrey and Wolff (2010) to identify the basalt unit as Meyer Ridge.

Whitman County Tax Parcel 200004614059010, PALOUSE PRODUCERS SUBN LOT 12, owner now is MCGREGOR CO., 1.14 acres.
References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: PALOUSE PRODUCERS INC
Address: 104-7 Pullman, WA 99163

LOCATION OF WELL: County: WHITMAN
Township: 12 N, Range 17 E, Sec 4

(3) PROPOSED USE: Domestic ☐ Industrial ☒ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
New well ☐ Method: Dug ☐ Bored ☐ Driven ☐
Reconditioned ☐ Depth: Diam. from to ft.

(5) DIMENSIONS: Diameter of well: 10,844 inches.
Drilled: 338 ft. Depth of completed well: 338 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 100 ft. Diam. from to ft.
Threaded ☐ Welded ☐

Perforations: Yes ☐ No ☒
Type of perforator used: 
Size of perforations: in. by in.

Screens: Yes ☐ No ☒
Manufacturer's Name:
Type:
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☒ To what depth: 195 ft.
Material used in seal: CEMENT
Did any strata contain unusable water? Yes ☐ No ☒
Type of water: 
Depth of strata:
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type:

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 2600 ft.
Static level: 18 2 ft. below top of well Date:
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes, by whom?
Yield: gal/min. with ft. drawdown after hrs.

AIR TESTING
150 gal/min. from 300 ft.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Soil</td>
<td>0'</td>
<td>5'</td>
</tr>
<tr>
<td>Sand &amp; Water</td>
<td>5'</td>
<td>14'</td>
</tr>
<tr>
<td>Fractured Rock - Basalt</td>
<td>14'</td>
<td>18'</td>
</tr>
<tr>
<td>Hard Blue Basalt</td>
<td>18'</td>
<td>16'</td>
</tr>
<tr>
<td>Grey Sand</td>
<td>16'</td>
<td>19'</td>
</tr>
<tr>
<td>Fractured Rock - Basalt</td>
<td>19'</td>
<td>19'</td>
</tr>
<tr>
<td>Blue Basalt</td>
<td>19'</td>
<td>21'</td>
</tr>
<tr>
<td>Light Blue Scoria, Greenish</td>
<td>21'</td>
<td>23'</td>
</tr>
<tr>
<td>Mineral deposits</td>
<td>23'</td>
<td>28'</td>
</tr>
<tr>
<td>Blue Scoria, w/ blue mineral</td>
<td>28'</td>
<td>28'</td>
</tr>
<tr>
<td>Medium Hard Blue Basalt</td>
<td>28'</td>
<td>25'</td>
</tr>
<tr>
<td>Blue Basalt, Yellow Scoria</td>
<td>25'</td>
<td>28'</td>
</tr>
<tr>
<td>Mineral deposits</td>
<td>28'</td>
<td>28'</td>
</tr>
<tr>
<td>Soft &amp; Hard Ledges, Blue +</td>
<td>28'</td>
<td>338'</td>
</tr>
<tr>
<td>Green Scoria</td>
<td>338'</td>
<td></td>
</tr>
</tbody>
</table>

RECEIVED

[Signature]

SPokane Regional Office

Work started: 11-28-76 Completed: 1-12-77

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: De Troy Drilling
(Type or print)
Address: 1030 15th St. Clarkston, WA

[Signature] (Well Driller)

License No.: 099 Date: 11-5-80

(USE ADDITIONAL SHEETS IF NECESSARY)
JACK PARKES WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

Well Log ID: NA   Elev (ft): 2662   Depth (ft): 170   7.5’ Quad: Moscow East

Latitude: 46.748008°   Longitude: -116.978058°   decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 4, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1275 Youmans Lane, Moscow, Idaho; on west side of lane

Location Method:
Location is for well (latitude, longitude and elevation from Fairley and others, 2006, HCP_wells shapefile); Latah County Assessor; Google Earth imagery; topographic map; driller recorded last name as "Parks"

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 85</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>85 – 90</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>90 – 93</td>
</tr>
<tr>
<td>Clay and wood</td>
<td>93 – 95</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>95 – 100</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>100 – 114</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>114 – 122</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>122 – 170</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP39N05W046160, owner is PARKES, JAMES A; 0.69 AC TAX #4041 W 1/2 SWSW; 0.34 AC TAX #4781 W 1/2 SWSW, 4 39 5.

References Cited:
REPORT OF WELL DRILLER
State of Idaho

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER: Jack Paski
Address: Meadow Idaho
87-68-N-5

Owner's Permit No.: 87-68-N-5
NATURE OF WORK (check): Replacement well [ ]
New well [ ] Deepened [ ] Abandoned [ ]

Water is to be used for: Domestic [X] Other [ ]

METHOD OF CONSTRUCTION: Rotary [ ] Cable X

CASING SCHEDULE: Threaded [ ] Welded [X]
8 "Diam. from 1 ft. to 11/4 ft.
"Diam. from 1 ft. to 11/4 ft.
"Diam. from 1 ft. to 11/4 ft.
"Diam. from 1 ft. to 11/4 ft.
Thickness of casing: 2.50 Material: Steel [X] concrete [ ] wood [ ] other [ ]

(explain)

PERFORATED? Yes [X] No [ ] Type of perforator used:

Size of perforations: [ ] " by [ ] " per foot of well
perforations from [ ] ft. to [ ] ft.
perforations from [ ] ft. to [ ] ft.
perforations from [ ] ft. to [ ] ft.

WAS SCREEN INSTALLED? Yes [X] No [ ]

Manufacturer's name [ ]
Type [ ] Slot size [ ] Set from [ ] ft. to [ ] ft.
Diam. Slot size [ ] Set from [ ] ft. to [ ] ft.

CONSTRUCTION: Well gravel packed? Yes [ ]
No [ ] size of gravel: [ ] Gravel placed from [ ] ft. to [ ] ft.
Surface seal provided? Yes [X] No [ ] To what depth? [ ] ft.
Material used in seal: [ ]

Did any strata contain unusable water? Yes [X] No [ ]

No. [X] Type of water:

Depth of strata [ ] ft. Method of sealing strata off:

Surface casing used? Yes [X] No [ ]
Cemented in place? Yes [X] No [ ]

Locate well in section

Sec. [ ]

LOCATION OF WELL: County: Latah
SW 1/4, SW 1/4, Sec. 4, T. 39 N., R. 5 W.

Use other side for additional remarks

Signed by: [ ]
License No.: 13 Date: 9-7-68

USGS 1317
### SWEDE PARRISH WELL

[Dwight 'Swee' Parrish]

Geologic Interpretation of Water Well Driller's Log  
By John H. Bush, January 19, 2018

<table>
<thead>
<tr>
<th>Well Log ID: NA</th>
<th>Elev (ft): 2530 ±10</th>
<th>Depth (ft): 220</th>
<th>7.5’ Quad: Palouse</th>
</tr>
</thead>
</table>

Latitude: 46.902724°  
Longitude: -117.086563°  
decimal degrees (WGS84)

**Well Address and (or) Other Location Information:**
State Route 27, Palouse, Wash., on south side of highway

**Location Method:**
Location is for house; Well 15 of Bush and others (2005 [2006]) was plotted in field west of driveway and north of house; Google Earth imagery; topographic map; last name misspelled "Parish" in both Ralston (1996) and Bush and others (2005 [2006]); well log from Ralston (1996).

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Gravel</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td></td>
<td>196</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>219</td>
</tr>
</tbody>
</table>

1318
Comments:
Whitman County Tax Parcel not determined


References Cited:


APPENDIX A

Logs of wells near Palouse

**Washington**

15/45 2 sw/ne  
Zakarison  
DTW = ??  Q = 6 gpm
0 - 2 soil  
2 -106 clay  
106 -130 basalt

16/45 1 ne/sw  
Swede Parish  
DTW = ??  Q = 20 gpm
0 - 2 soil  
2 - 52 clay  
52 - 61 cobbles  
61 - 85 basalt  
85 -196 basalt  
196 -219 sand  
219 -220 clay

16/45 1 se/se  
Reggie Parson  
DTW = 47' Q = 20 gpm
0 - 2 soil  
2 - 34 clay  
34 - 79 basalt  
79 - 84 basalt, clay, soft  
84 -101 basalt, fractured  
101 -103 basalt

16/45 1 nw/nw  
Jim Dunning  
DTW = ?? Q = 16 gpm
0 - 2 soil  
2 - 31 clay  
31 - 38 basalt, soft  
38 -140 basalt  
140 -145 basalt, broken  
145 -176 clay  
176 -205 clay, sandy  
205 -240 sand, fine, black - water

16/45 1 sw/sw  
A. Flansburg  
DTW = 157' Q = 15 gpm
0 - 51 clay  
51 - 55 broken rock  
55 -213 basalt  
213 -233 sand, clay, water

16/45 2 nw/nw  
J. Leendersten  
DTW = 97' Q = 20 gpm
0 - 2 soil  
2 - 6 clay  
6 -165 basalt  
165 -174 basalt, weathered  
174 -186 clay  
186 -208 sand and clay  
208 -230 sand, fine
## REGGIE PARSONS WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 9, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>157919</th>
<th>Elev (ft):</th>
<th>2545 ±10</th>
<th>Depth (ft):</th>
<th>103</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Palouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.902064°</td>
<td>Longitude:</td>
<td>-117.081799°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|   | ¼, NW ¼, SE ¼, Sec. 1, T. 16 N, R. 45 E |

**Well Address and (or) Other Location Information:**
202 Koenig Road, Palouse, Wash.; at end of road, south of State Route 27

**Location Method:**
Assumed location is for house at 202 Koenig Road; Whitman County Assessor; Google Earth imagery; topographic map; Nuwber.com (2018). Driller misspelled last name as "Parson" and likely recorded incorrect ¼-¼ Section (as there were no residences in the SE¼, SE¼, Sec. 1 prior to 6/30/2015 imagery).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 34</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>34 – 79</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>79 – 84</td>
</tr>
<tr>
<td>Basalt</td>
<td>84 – 103</td>
</tr>
</tbody>
</table>

1321
Comments:

Whitman County Tax Parcel 826800000000013, PALOUSE S1/2 1-16-45, 13 ACRES, owner is PARSONS, REGGIE B; 1½ story residence built in 1925.

[Reggie Parsons owns another residential property parcel in Palouse (807950000000103, PALOUSE N1/2 1-16-45.)]

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Reggie PARSON
Address: 204 155th Pl SE, 2A

LOCATION OF WELL: County: Whitman

STREET ADDRESS OF WELL: (or nearest address):

PROPOSED USE: Domestic [ ] Irrigation [ ] DeWater [ ] Industrial [ ] Municipal [ ] Other [ ]

TYPE OF WORK: Owner's number of well (if more than one):
- Abandoned [ ]
- New well [ ]
- Deepened [ ]
- Reconditioned [ ]
- Method: Dug [ ] Bored [ ] Driven [ ] Rotary [ ] Jetted [ ]

DIMENSIONS:
- Diameter of well: 8.6 inches.
- Drilled: 103 feet. Depth of completed well: 103 ft.

CONSTRUCTION DETAILS:
- Casing installed: 8 ft. Diam. from 1 ft. to 40 ft.
- Welded [ ]
- Liner installed: 8 in. Diam. from 1 ft. to 40 ft.
- Threaded [ ]
- Perforations: Yes [ ] No [ ]
- Type of perforator used:
- Size of perforations:
  - perforations from 1 in. to 2 in.
  - perforations from 2 in. to 3 in.
  - perforations from 3 in. to 4 in.
  - perforations from 4 in. to 5 in.

Screens: Yes [ ] No [ ]
- Manufacturer's Name:
- Type:
- Model No.
- Diam. from:
  - Slot size:
  - from:
  - to:
- Diam. from:
  - Slot size:
  - from:
  - to:
- Gravel packed:
- Size of gravel:
- Gravel placed from:
  - to:
- Surface seal:
- Material used in seal:
- Did any strata contain unusable water?: Yes [ ] No [ ]
- Depth of strata:

PUMP: Manufacturer's Name:
- Type:
- H.P.

WATER LEVELS:
- Land-surface elevation above mean sea level: 47 ft.
- Static level: 47 ft. below top of well.
- Date: 2-25-97
- Artesian pressure: [ ] in. Hg.
- Artesian water is controlled by:
  - (Cap, valve, etc.)

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made?: Yes [ ] No [ ]
  - If yes, by whom?
  - Yield: gal./min.
  - ft. drawdown after:
  - hrs.
  - Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test:
- Ballast test:
  - gal./min.
  - ft. drawdown after:
  - hrs.
- Airest:
  - gal./min.
  - ft. drawdown after:
  - hrs.
- Artificial flow:
  - g.p.m.

Well constructor certification:
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson & Wright Drilling
Address: 2248 Burrell
Lewiston, Idaho 83501

License No.: 0523
Type or Print:

(Signed) [ ]
Contractor's Registration No.: 10-135-MI
Date: 2-27-98
1323

(USE ADDITIONAL SHEETS IF NECESSARY)
## Well Log ID: 175635

**Elev (ft):** 2440 ±10

**Depth (ft):** 230

**Quad:** Albion

**Latitude:** 46.814559°

**Longitude:** -117.180496° decimal degrees (WGS84)

**Well Address and (or) Other Location Information:**

3702 Palouse-Albion Road, Pullman, Wash.; on south side of road

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden</strong></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 14</td>
</tr>
<tr>
<td><strong>Wanapum Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>14 – 111</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>111 – 127</td>
</tr>
<tr>
<td><strong>Grande Ronde Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>127 – 199</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>199 – 204</td>
</tr>
<tr>
<td><strong>Grande Ronde Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>204 – 219</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>219 – 224</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515053669, 3702 PALOUSE-ALBION RD, SW1/4 PT N1/2 OF N1/2 NW PARVIN SHRT PLT 1, owners now are BARRINGTON, GEORGE/SUZANN; 6.9 acres.

References Cited:
**WATER WELL REPORT**

**State of Washington**

**OWNER:** Jim & Karen Parvin

**Address:** R1, Poy, 88, Pullman, Wa 99163

**LOCATION OF WELL:** Whitman

**STREET ADDRESS OF WELL:** NW 1/4 SW 1/4 Sec 05 T15 N, R 16 E, WM

**PROPOSED USE:** Domestic, Irrigation, Test Well, Other

**TYPE OF WORK:** Owner's number of well (more than one)

- Abandoned
- New well
- Reconditioned
- Deepened
- Driven
- Cabled
- Dug
- Bored

**DIMENSIONS:** Diameter of well 8 inches.

**CONSTRUCTION DETAILS:**

- Casing Installed:
  - Diam from 6 ft. to 21 ft.
  - Diam from 10 ft. to 230 ft.

- Liner installed:

- Threaded

- Size of perforations 0.6 in. by 1 in.

- 60 perforations from 190 ft. to 230 ft.

- Screens:
  - Yes ✔ No □
  - Manufacturer's Name

- Gravel packed:
  - Yes ✔ No □

- Surface seal:
  - Depth: 21 ft.

- Material used in seal

- Did any strata contain unusable water? Yes □ No ✔

- Type of water?

- Depth of strata

- Method of sealing strata off

**PUMP:**

- Manufacturer's Name

- Type

- H.P.

**WATER LEVELS:**

- Land-surface elevation above mean sea level 170 ft.

- Stat. level 170 ft. below top of well Date 4/22/98

- Artesian pressure lbs. per square inch Date

- Artesian water is controlled by

**WELL TESTS:**

- Drawdown is amount water level is lowered below static level

- Was a pump test made? Yes ✔ No □

- Yield: gal./min. with ft. drawdown after hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

- Water Level Time Water Level Time Water Level

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Bore test: gal./min. with ft. drawdown after hrs.

- Artes test: gal./min. with stem set at ft. for hrs.

- Temperature: 1326 Was a chemical analysis made? Yes ✔ No □

**RECEIVED**

**MAY 04 1998**

**DEPARTMENT OF ECOLOGY**

**EASTERN REGIONAL OFFICE**

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** McPherson & Wright Drilling

**ADDRESS:** 724 Puvell, Lewiston, Id 83501

**LICENSE NO:** 0513

**CONTRACTOR'S REGISTRATION NO:** 195628

**WELL DRAILER**

**Date:** 4/28/98

**WELL CONSTRUCTOR**

**ECY 050-1-20 (993) - 1**
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 1, 2016

Well Log ID: 1109928  Elev (ft): 2570 ±10  Depth (ft): 283  Quad: Palouse

Latitude: 46.897147  Longitude: -117.075269  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 1, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
891 Palouse Cove Road, Palouse, Wash., on west side of road; well is at front right (southeast) corner of garage by driveway.

Location Method:
Location is for general area of well; Whitman County Assessor; Google Earth imagery (house and garage were built post imagery); topographic map. Site visit (November 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>Clay, brown</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td></td>
<td>Sand</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 826800000000019, 891 PALOUSE COVE RD, PALOUSE, PALOUSE S1/2 1-16-45 BAL /APPROX 7.7 AC/ SUB STATION; owners are PAUL, WILLIAM/BERTHA; NEW HOME: MAIN 1744SF 744 ATTACHED GARAGE 378SF BOUNUS RM, permit dated 11/2/2015.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

- Construction
- Decommission

ORIGINAL INSTALLATION

Notice of Intent Number:

PROPOSED USE: □ Domestic □ Industrial □ Municipal □ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: Owner's number of well (if more than one)

- New well
- Renovated well
- Deepened
- Liner installed
- Casing installed
- Depth of completed well

CONSTRUCTION DETAILS

- Casing
- Liner: Yelled
- Threaded
- Dia. from
- Dia. from
- Perforation: • Yes • No
- Type of perforator used
- Size of well
- Liner size from
- Liner size from
- Surface Seal: • Yes • No
- To what depth?
- Material used in seal
- Bentonite hole plug
- Did any strata contain unstable water?
- Yes • No
- Type of well
- Depth of strata
- Method of sealing strata off
- PUMP: Manufacturer's Name

WATER LEVELS: Land-surface elevation above mean sea level __ ft.

Static level __ ft. below top of well Date 11-12-15

Artesian pressure __ lbs. per square inch Date __

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

- Was a pump test made?
- Yes • No
- If yes, by whom?

Yield: gal/min. with __ ft. drawdown after __ hrs.

Yield: gal/min. with __ ft. drawdown after __ hrs.

Yield: gal/min. with __ ft. drawdown after __ hrs.

Recovery date (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test __

Bailer test: gal/min. with __ ft. drawdown after __ hrs.

Airtest: gal/min. with stem set at __ for __ hrs.

Artesian flow __ g.p.m. Date __

Temperature of water __°F Was a chemical analysis made?

- Yes
- No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller □ Engineer □ Trainee Name (Print) Brett Ulrich

Driller/Engineer/Trainee Signature

Driller or trainee license No. 26119

If trainee: Driller's license No.

Driller's Signature

CURRENT

Notice of Intent No. WE 22576

Unique Ecology Well ID Tag No. BIU 103

Water Right Permit No.

Property Owner Name Bill Paul

Well Street Address 891 Palouse Cove Rd

City Palouse

Whitman County

Location Sec 1/4-14

WWM □ (s, t, r still REQUIRED)

Tax Parcel No. (Required) 826800000000019

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL

FROM TO

Brown clay

Red block \\

Sand

263 283

RECEIVED

DEC 07 2013

Department of Ecology

Eastern Washington Office

Start Date 11/11/15 Completed Date 11/12/15

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

DARRELL E. PAUL WELL 2
[DRILLED IN 1994]

Well Log ID: NA Elev (ft): 2684 Depth (ft): 235 7.5’ Quad: Robinson Lake

Latitude: 46.754000° Longitude: -116.973363° decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 4, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
2350 Trail Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 163, well sample 5); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 — 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>3 — 72</td>
</tr>
<tr>
<td>Sand</td>
<td>72 — 86</td>
</tr>
<tr>
<td>Clay</td>
<td>86 — 142</td>
</tr>
<tr>
<td>Sand, wood</td>
<td>142 — 149</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>149 — 176</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>176 — 235</td>
</tr>
</tbody>
</table>

1330
Comments:

Latah County Tax Parcel RP39N05W044403, owner is PAUL, DARRELL E; 2350 TRAIL RD; 4.74 AC TAX #5010 SENW; 4 39 5.

Depth to water was 53 m (175 ft) (Candel, 2016, table 1, well 5).

References Cited:


Candel, Jasper; Brooks, Erin; Sanchez-Murillo, Ricardo; Grader, George; and Dijksma, Roel, 2016, Identifying groundwater recharge connections in the Moscow (USA) sub-basin using isotopic tracers and a soil moisture routing model: Hydrogeology Journal, vol. 24, p. 1739–1751. (Also available at https://dx.doi.org/10.1007/s10040-016-1431-x.)
1. DRILLING PERMIT NO. 87.94.W.14-000

2. OWNER:
Name: Harrell & Paul
Address: 1223 American Falls Rd.
City: Moscow
State: ID
Zip: 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. PROPOSED USE:
- Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐
- Thermal ☐ Injection ☐ Other ☐

5. TYPE OF WORK:
- New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment ☐

6. DRILL METHOD:
- Mud Rotary ☐ Air Rotary ☐ Cable ☐ Other ☐

7. SEALING PROCEDURES
<table>
<thead>
<tr>
<th>Material</th>
<th>Seal Filter Pack</th>
<th>Amount</th>
<th>Method</th>
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</thead>
<tbody>
<tr>
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<td>0</td>
<td>40</td>
<td>Plastic</td>
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</tbody>
</table>

8. CASING/LINER:
<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Guage</th>
<th>Casting</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>170</td>
<td>235</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. PERFORATIONS/SCREENS
- Perforations ☐ Method
- Screens ☐ Type ☐ Material

10. WELL TESTS:
- Yield gal./min.
- Drawdown
- Pumping Depth
- Time

11. STATIC WATER LEVEL:
- Temperature of water
- Was a water analysis done? Yes ☐ No ☐
- By whom?
- Water Quality (odor, etc.):
- Bottom Hole Temperature

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

13. DRILLER'S CERTIFICATION
- We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Uhlerbott Drilling
Firm No: 105

Date: Started May 13, 94 Completed May 16, 94

(Signed once if Firm Official & Operator)
**Bill Paulson Well**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 16, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 163624</th>
<th>Elev (ft): 2590 ±10</th>
<th>Depth (ft): 405</th>
<th>Quad: Moscow West</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Latitude: 46.719355</th>
<th>Longitude: -117.096226</th>
<th>decimal degrees (WGS84)</th>
</tr>
</thead>
</table>

**Well Address and (or) Other Location Information:**
1102 Sunshine Road, Pullman, Wash., south side, south of Sunshine Creek and Burlington Northern railroad tracks.

**Location Method:**
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; Well 6 of Bush and others (1998). Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft) From — To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 — 2</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 — 49</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>49 — 199</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>199 — 205</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>205 — 218</td>
</tr>
<tr>
<td>Basalt</td>
<td>218 — 330</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>330 — 338</td>
</tr>
</tbody>
</table>
Comments:

Identification of Grande Ronde Basalt units is based upon correlations to DOE Pullman Observation and Test Well and Washington State University wells where Conrey and Wolff (2010) identified stratigraphic units.

Whitman County Tax Parcel 200004514013900, 1102 SUNSHINE RD, SW1/4 PT SW1/4 S OF RR, now owned by SEBOLD, RODNEY/KELLY; 2.0 acres; 1½ story residence built in 1896; grantors PAULSON, BILL/CONNIE on 10/01/07.
References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

OWNER: Bill Paulson
Address: 410 63rd Ave Sw, Pullman, WA 99163

LOCATION OF WELL: Whyman

STREET ADDRESS OF WELL: 410 63rd Ave Sw

PROPOSED USE: Domestic

TYPE OF WORK: Abandoned

DIMENSIONS: Diameter of well 84.6 inches, Drilled 405 feet, Depth of completed well 405 ft.

CONSTRUCTION DETAILS:
- Casing installed: 8 ft. Diam. from 1 ft. to 54 ft.
- Liner installed: 6 ft. Diam. from 15 ft. to 245 ft.
- Gravel packed: Yes
- Surface seal: Yes
- Material used in seal: Cement
- Did any strata contain unusable water?: Yes
- Type of water: Groundwater

PUMP: Manufacturer's Name
Type: H.P.

WATER LEVELS:
- Static level: 257 ft. below top of well Date: 11-20-41
- Artesian pressure: lbs. per square inch Date: 11-20-41
- Artesian water is controlled by:

WELL TESTS:
- Drawdown in a normal water level is lowered below static level
- Was a pump test made?: Yes
- Yield:
- Recovery time (time taken to return to initial level) (water level measured from well top to water level)

WELL CONSTRUCTOR CERTIFICATION:
I, McPherson & Wright Drilling, 83501 Lewiston, Idaho, accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson & Wright Drilling
License No: 0523
Address: Lewiston, Idaho 83501
Contractor: (SIGNED)
Jerry Peterson Well 2
[Drilled in 2006]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 20, 2016

Well Log ID: 617070    Elev (ft): 2259    Depth (ft): 105    7.5’

Quad: Albion

Latitude: 46.77443    Longitude: -117.23789    decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 23, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
152 Pat Old Road, Pullman, Wash., the well plots near east edge of road, about 200 ft south of driveway (in line with south side of house).

Location Method:
Approximate latitude, longitude, and elevation from Moxley (2012, p. 73); Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unnamed interbed</td>
<td></td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td></td>
<td>35</td>
<td>44</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td>44</td>
<td>55</td>
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<td>Basalt and clay, brown</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
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<td></td>
<td></td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
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<td></td>
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</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls(?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
<td>55</td>
<td>86</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td></td>
<td>86</td>
<td>95</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
<td>95</td>
<td>105</td>
</tr>
</tbody>
</table>
Comments:

The interpretations for the well log are based on comparisons to the Jerry Peterson Well 1 well log (78 ft deep, drilled in 1988), surrounding wells, outcrops, and cross sections by Moxley (2012).

Whitman County Tax Parcel 20000415232490, 152 OLD PAT RD, NW1/4 PT SE1/4 E OF RDS, owners are PETERSON, JERRY W/DIANE L; 2.0 acres; 1 story residence built in 1989.

References Cited:

**WATER WELL REPORT**

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

**Construction/Decommission** *(“x” in circle)*
- Construction
- Decommission ORIGINAL INSTALLATION

**Notice of Intent Number**

**PROPOSED USE:**
- Domestic [X]
- Industrial [ ]
- Municipal [ ]
- DeWater [ ]
- Irrigation [ ]
- Test Well [ ]
- Other [ ]

**TYPE OF WORK:**
- Owner’s number of well (if more than one) [ ]
- New well [X]
- Reconditioned [ ]
- Method: [ ]
- Dr. [ ]
- Bored [ ]
- Driven [ ]
- Slow Drilled [ ]
- Drilled [X]
- Cable [ ]
- Rotary [ ]
- Jetted [ ]

**DIMENSIONS:**
- Diameter of well [ ] inches, drilled 105 ft.
- Depth of completed well [ ] ft.

**CONSTRUCTION DETAILS**

- Casing [X] Welded [ ]
- Diam. from [ ] ft. to [ ] ft.
- Installed: [X] Liner installed [ ]
- Diam. from [ ] ft. to [ ] ft.

**Perforations:**
- Yes [X]
- No [ ]

- Type of perforator used [SAW]

- SIZE of perf. [ ] in. by [ ] in. and no. of perf. [ ] from [ ] ft. to [ ] ft.

**Screens:**
- Yes [X]
- No [ ]
- K-Pac [ ]

**Manufacturer’s Name**

- Type [ ]
- Model No. [ ]

- Diam. slot size [ ] from [ ] ft. to [ ] ft.
- Diam. slot size [ ] from [ ] ft. to [ ] ft.

**Gravel/Filter packed:**
- Yes [X]
- No [ ]
- Size of gravel/sand [ ]

**Materials placed from [ ] ft. to [ ] ft.**

**Surface Seal:**
- Yes [X]
- No [ ]
- To what depth: [ ] ft.

**Material used in seal**

- BENTONITE

**Did any strata contain unusable water?**
- Yes [X]
- No [ ]

**Type of water?**

- Depth of strata [ ]

**Method of sealing strata off**

**PUMP:**
- Manufacturer’s Name [ ]

- Type [ ]
- H.P. [ ]

**WATER LEVELS:**
- Land-surface elevation above mean sea level [ ] ft.

- Static level [ ] ft. below top of well Date [ ]
- Artesian pressure [ ] lbs. per square inch Date [ ]

- Artesian water is controlled by [ ]

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level

- Was a pump test made? [X]
- Yes [X]
- No [ ]
- If yes, by whom? [ ]

- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Date of test [ ]

- Bailer test: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.

- Airstest: [ ] gal./min. with stem set at [ ] for [ ] hrs.

- Artisan flow: [ ] g.p.m. Date [ ]

- Temperature of water [ ] Was a chemical analysis made? [X]
- Yes [X]
- No [ ]

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller [X]
- Engineer [ ]
- Trainee [ ]

- Name (first): TED WRIGHT
- Driller/Engineer/Trainee Signature [ ]

- Driller or trainee License No. [ ]

- IF TRAINEE: Driller’s License No. [ ]
- Driller’s Signature [ ]

**CURRENT**

- Notice of Intent No. W219551

<table>
<thead>
<tr>
<th>Unique Ecology Well ID Tag No.</th>
<th>AHR724</th>
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- Water Right Permit No. [ ]

<table>
<thead>
<tr>
<th>Property Owner Name</th>
<th>JERRY PETERSON</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Well Street Address</th>
<th>152 PAT OLD ROAD</th>
</tr>
</thead>
</table>

- City [ ]
- County [ ]

- Location [NW1/4-1/4 NE1/4 Sec 23 Twn 15S R 44 EWM or WWM] [ ]

- Lat/Lon: [ ] Lat Deg [ ] Lat Min/Sec [ ]
- Long Deg [ ] Long Min/Sec [ ]

- Tax Parcel No. (Required) [2-0000-15-23-2480]

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
</table>

- CLAY YELLOW BROWN STIFF [ ]
- BASALT STRONG BLACK [ ]
- BASALT BLACK & CLAY BROWN [ ]
- BASALT STRONG BLACK [ ]
- BASALT WEATHERED WEAK [ ]
- BASALT STRONG BLACK [ ]

**SEP 11 2008**

- DEPARTMENT OF ECOLOGY
- EASTERN REGIONAL OFFICE

**Drilling Company:** MCPHERSON & WRIGHT DRILLING

- Address: 2246 BURRELL

- City, State, Zip: LEWISTON, ID, 83501

- Contractor’s Registration No. MCPHWD135N1 Date 8/22/09

**Start Date 10/09/06** **Completed Date 10/10/06**

---

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Jerry Peterson  
**Address:** 106 H Albion, Hwy 902

**LOCATION OF WELL:**  
**County:** Whitman  
**Sec. 28, T 15 N, R 44 E W.M.**

**STREET ADDRESS OF WELL** (or nearest address):

**PROPOSED USE:**  
- Domestic
- Irrigation
- Industrial
- Municipal
- DeWater

**TYPE OF WORK:**  
- Abandoned
- New well
- Deepened
- Reconditioned
- Method: Dug
- Rotory
- Bored
- Driven
- Jetted

**DIMENSIONS:**  
- Diameter of well: 8 inches
- Depth of completed well: 78 ft

**CONSTRUCTION DETAILS:**
- Casing installed: Yes
- Diam. from 1 ft to 24 ft
- Welded
- Liner installed: 2 ft to 29 ft
- Threaded
- Diam. from 2 ft to 29 ft
- Perforations: Yes
- Type of perforator used
- Size of perforations: in.
- Perforations from 1 ft to 29 ft
- Perforations from 2 ft to 29 ft
- Perforations from 3 ft to 29 ft
- Screens: Yes
- Manufacturer's Name
- Model No.
- Diameter: in.
- Slot size: ft.
- Diam.: in.
- Slot size: ft.
- Gravel packed: Yes
- Size of gravel
- Gravel placed from 1 ft to 29 ft
- Gravel base: Yes
- To what depth: 26 ft
- Material used in seal
- Did any strata contain unusable water? No
- Depth of strata

**PUMP:**
- Manufacturer's Name
- Type

**WATER LEVELS:**
- Land-surface elevation above mean sea level 34 ft
- Date: 12-2-85
- Artesian pressure 3 lbs. per square inch
- Date
- Artesian water is controlled by (Cap valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- If yes, by whom?
- Yield: gal./min.
- ft. drawn down after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time:  
  - Water Level: 20 GPM

**WELL CONSTRUCTOR CERTIFICATION:**

I tested the well for construction and/or acceptance for this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:**  
**Address:**  
**License No.:** 0523  
**Contractor's Registration No.:**

**Date:**  
**Date:**  

**USE ADDITIONAL SHEETS IF NECESSARY**
STEVE PETTITT WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: 510956  Elev (ft): 2240 ±10  Depth (ft): 250  Quad: Colfax South

Latitude: 46.795687°  Longitude: -117.259256°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
4451 Albion–Parvin Road, Pullman, Wash.; on west side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 15</td>
</tr>
<tr>
<td>Cobble</td>
<td>15 – 23</td>
</tr>
<tr>
<td>Cambrian–Precambrian</td>
<td></td>
</tr>
<tr>
<td>Quartzite, weathered</td>
<td>23 – 131</td>
</tr>
<tr>
<td>Quartzite, fractured</td>
<td>131 – 208</td>
</tr>
<tr>
<td>Quartzite</td>
<td>208 – 250</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004415103400, 4451 ALBION-PARVIN RD, SW PT SW 1/4 & SE 1/4, owner is PETTITT, STEVEN R; 46.0 acres; 1½ story residence built in 1900.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Construction
- Decommission
- ORIGINAL INSTALLATION
- Notice of Intent Number

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
- DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)
- New well [ ] Reconditioned [ ] Method: [ ] Dug [ ] Bored [ ] Driven
- Deepened [ ] Cable [ ] Rotary [ ] Jetted

DIMENSIONS: Diameter of well: [ ] inches, drilled: [ ] ft.
- Depth of completed well: [ ] ft.

CONSTRUCTION DETAILS
- Casing: [ ] Welded [ ] Diameter: [ ] ft.
- Diam. from [ ] ft. to [ ] ft.
- Installed: [ ] Liner installed [ ] Diameter: [ ] ft.
- Diam. from [ ] ft. to [ ] ft.
- [ ] Threaded [ ] [ ] Diam. From [ ] ft. to [ ] ft.

Perforations: [ ] Yes [ ] No
- Type of perforator used: SAW

SIZE of perfs 1/8 in. by 4 in. and no. of perfs 22 from 210 ft. to 250 ft.

Screens: [ ] Yes [ ] No
- K-Pac Location

Manufacturer’s Name: [ ]
- Model No.
- Diameter Slot Size from [ ] ft. to [ ] ft.
- Diameter Slot Size from [ ] ft. to [ ] ft.

Gravel/Filter packed: [ ] Yes [ ] No
- Size of gravel/sand [ ]
- Materials placed from [ ] ft. to [ ] ft.

Surface Seal: [ ] Yes [ ] No
- To what depth? [ ] ft.

Material used in seal: BENTONITE

Did any strata contain unstable water? [ ] Yes [ ] No
- Type of water: [ ]
- Depth of strata [ ]

Method of sealing strata off [ ]

PUMP: Manufacturer’s Name N/A
- H.P.

WATER LEVELS: Land-surface elevation above mean sea level [ ] ft.
- Static level [ ] ft. below top of well Date 12/11/07.
- Artesian pressure [ ] lbs. per square inch Date [ ]
- Artesian water is controlled by [ ] (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
- Was a pump test made? [ ] Yes [ ] No
- If yes, by whom? [ ]
- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level
- [ ] [ ] [ ] [ ] [ ] [ ]

Bailer test [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
- Airtest [ ] gal./min. with stem set at [ ] ft. for 1.5 hrs.
- Artesian flow [ ] g.p.m. Date [ ]
- Temperature of water [ ] Was a chemical analysis made? [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainee Name (Print) BRETT UHLINKATT
- Driller/Engineer/Trainee Signature

Driller or trainee License No. 2697
- IF TRAINEE: Driller’s License No:
- Driller’s Signature:

CURRENT
- Notice of Intent No. W 244018
- Unique Ecology Well ID Tag No. AHF 614
- Water Right Permit No. [ ]
- Property Owner Name STEVE PETTIT
- Well Street Address 4451 ALBION - PAROIN RD
- City PULLMAN
- County WHITMAN
- Location SW1/4-1/4 SW1/4 Sec 10 Twin N 44 EWM [ ]
- SWM [ ]
- (s, t, r Still REQUIRED)
- Lat/Long Lat Deg [ ] Long Min/Sec [ ]
- Long Deg [ ] Long Min/Sec [ ]
- Tax Parcel No. (Required) 2-0000-44-15-10-3400

CONSTRUCTION OR DECOMMISSION PROCEDURE
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>RIVER ROCK</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>SOFT GRANITE</td>
<td>23</td>
<td>131</td>
</tr>
<tr>
<td>FRACTURED GRANITE</td>
<td>131</td>
<td>208</td>
</tr>
<tr>
<td>MED HARD GRANITE</td>
<td>208</td>
<td>250</td>
</tr>
</tbody>
</table>

RECEIVED
- JAN 07 2007
- DEPARTMENT OF ECOLOGY
- WELL DRILLING UNIT

RECEIVED
- JAN 07 2008
- DEPARTMENT OF ECOLOGY
- EASTERN REGION

Start Date 12-06-07 Completed Date 12-11-07

Drilling Company TWO U DRILLING, LLC
- Address PO BOX 104
- City, State, Zip COTTONWOOD, ID 83522,
- Contractor’s Registration No. RAYUHLPO770A Date 12-12-07

Ecology is an Equal Opportunity Employer
JEFF AND LESLEY PHELPS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: 308436  Elev (ft): 2259  Depth (ft): 155  7.5’ Quad: Albion

Latitude: 46.78093  Longitude: -117.24854  decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 15, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
811 Pullman–Albion Road, Pullman, Wash.; on west side of road; west of railroad tracks

Location Method:
Latitude, longitude, and elevation from Moxley (2012, p. 73, well DW-10); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
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</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>15</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>34</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, white</td>
<td>96</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004415154890, 811 PULLMAN-ALBION RD, SE 1/4 PT S 1/2 W OF RR
PHELPS SHORT PLAT #1, owners are PHELPS, JEFFREY/LESLEY; 12.2 acres.

Mr. Jeff Phelps is the son of Dr. Harold and Nancy Phelps (Moscow-Pullman Daily News, 2008) of 3491
Albion Road (just to the west of the Jeff Phelps property).

References Cited:

Moxley, Nathan, 2012, Stable isotope analysis of surface water and precipitation in the Palouse Basin—
WATER WELL REPORT
STATE OF WASHINGTON

1346

(1) OWNER: Name JEFF & LESLEY PHELPS
Address PO BOX 137 SOUTH 310 D STREET, ALBION, WA 99102

W91540

UNIQUE WELL I.D. #: ABY 500

Water Right Permit No.

(2a) STREET ADDRESS OF WELL (or nearest address) 300 PULLMAN ALBION ROAD, PULLMAN WA 99163

(3) PROPOSED USE:
- Domestic
- Industrial
- Municipal
- Irrigation
- Test Well
- Other
- DeWater

(4) TYPE OF WORK:
- Owner's number of well (if more than one)
- Method:
- New Well
- Deepened
- Dug
- Bored
- Reconditioned
- Cable
- Driven
- Decommission
- Rotary
- Jetted

(5) DIMENSIONS:
- Diameter of well 6 inches
- Depth of completed well 155 ft

(6) CONSTRUCTION DETAILS:
- Casing Installed:
- 8 in. Diam. from +1 ft. to 40 ft.
- 6 in. Diam. from +15 ft. to 155 ft.
- Perforations:
- SAW 75 perforations from 105 ft. to 155 ft.
-Screens:
- No
- K-Pac Location

(7) PUMP:
- Manufacturer's Name H.P.

(8) WATER LEVELS:
- Static level 43 ft. below top of well Date 4/12/2000
- Artesian pressure lbs. per square inch Date
- Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
- Yield 50 gal./min. with 70 ft. of water
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.
- SOIL
- CLAY BROWN
- BASALT BROKEN GRAY
- BASALT SOFT BLACK
- SAND WHITE

WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name TED WRIGHT
(Licensed Driller/Engineer)
License No. 0532

Trainee Name
License No.

Drilling Company MCPHERSON & WRIGHT DRILLING
(Signed) T.D.
(Licensed Driller/Engineer)
License No. 0532

Address 2246 BURRELL, LEWISTON ID, 83501

Contractor's Registration No. MCPHEWD135N1
Date 12/16/00

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.
DON PINARD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 12, 2018

Well Log ID: D0061906    Elev (ft): 2670 ±10    Depth (ft): 180    Quad: Viola

Latitude: 46.781667    Longitude: -117.001733    decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1028 J.L. Naylor Lane, Moscow, Idaho; on east side of lane

Location Method:
Location is for well, using driller’s GPS coordinates; Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 6</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>*Quartzite cobbles and sand</td>
<td>6 – 84</td>
</tr>
<tr>
<td>Clay, white</td>
<td>84 – 101</td>
</tr>
<tr>
<td>*Quartzite cobbles, and sand, white</td>
<td>101 – 110</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>110 – 157</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>157 – 163</td>
</tr>
<tr>
<td>Basalt</td>
<td>163 – 180</td>
</tr>
</tbody>
</table>

*George Grader (personal commun., April 12, 2018) reported quartzite cobbles in a 35-ft-deep pit in this area which driller reported as quartzite.
Comments:

Latah County Tax Parcel RP40N05W293809, owner is PINARD, DON; 1028 J.L. NAYLOR LN; 2.53 AC TAX #6083 SWNW 29 40 5.

References Cited:
1. WELL TAG NO. D 0061906
   Drilling Permit No. 875187
   Water right or injection well #: ___________

2. OWNER
   Name: DON PINARD
   Address: 1101 PALOUSE ALBION RD.
   City: PALOUSE
   State: WA
   Zip: 99161

3. WELL LOCATION:
   Twp.: 40 N  
   Rge.: 5 E  
   Sec.: 29 N/W 
   Gov't Lot: 1/4
   County: LATAH
   Lat.: N46° 46.900'  
   Long.: W117° 00.104'  
   Address of Well Site: 1/4 MI WEST ON ESTES RD.
   City: MOSCOW

4. USE:
   Domestic: ☐  
   Municipal: ☐  
   Monitor: ☐  
   Irrigation: ☐  
   Thermal: ☐  
   Injection: ☐  
   Other: ☐

5. TYPE OF WORK check all that apply (Replacement etc.)
   New Well: ☐  
   Replacement well: ☐  
   Modify existing well: ☐  
   Abandonment: ☐  
   Other: ☐

6. DRILL METHOD:
   Air Rotary: ☐  
   Med Rotary: ☐  
   Cable: ☐  
   Other: ☐

7. SEALING PROCEDURES
   Seal material: BENTONITE
   From (ft): 0  
   To (ft): 112  
   Quantity (lbs or ft²): 34  
   Placement method: DRY

8. CASING/LINER:
   Diameter (nominal) (in): 8"  
   From (ft): +1  
   To (ft): 112  
   Gauge/Schedule: 250  
   Material: STEEL
   Casing: ☐  
   Liner: ☐  
   Threaded: ☐  
   Welded: ☐

   Diameter (nominal) (in): 6"  
   From (ft): 30  
   To (ft): 180  
   Gauge/Schedule: 200  
   Material: PVC

   Was drive shoe used?: ☐ Y ☐ N
   Shoe Depth(s): 180'

9. PERFORATIONS/SCREENS:
   Perforations: ☒ Y ☐ N
   Method: SAW
   Manufactured screen: ☐ Y ☐ N
   Type: ___________
   Method of installation: ___________

10. FILTER PACK:
    Filter Material: ___________
    From (ft): ___________
    To (ft): ___________
    Quantity (lbs or ft²): ___________
    Placement method: ___________

11. FLOWING ARTESIAN:
    Flowing Artesian?: ☐ Y ☐ N
    Artesian Pressure (PSIG): ___________
    Describe control device: ___________

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft): 157'  
    Static water level (ft): 87'  
    Water temp. (°F): 54  
    Bottom hole temp. (°F): ___________
    Describe access port: WELL CAP

    Well test:
    Drawdown (ft): ___________
    Discharge or yield (gpm): ___________
    Test duration (minutes): ___________
    Pump: ☐  
    Bailer: ☐  
    Air: ☐  
    Flowing artesian: ___________

    Water Quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:
    Bore
    Dia. (in): 12  
    From (ft): 0  
    To (ft): 6  
    Remarks, lithology or description of repairs or abandonment, water temp.: SOIL
    Water: Y ☐ N

    Dia. (in): 12  
    From (ft): 6  
    To (ft): 84  
    Remarks, lithology or description of repairs or abandonment, water temp.: QUARTZITE & SAND TAN
    Water: Y ☐ N

    Dia. (in): 12  
    From (ft): 84  
    To (ft): 101  
    Remarks, lithology or description of repairs or abandonment, water temp.: CLAY WHITE
    Water: Y ☐ N

    Dia. (in): 12  
    From (ft): 101  
    To (ft): 110  
    Remarks, lithology or description of repairs or abandonment, water temp.: QUARTZITE WHITE
    Water: Y ☐ N

    Dia. (in): 8  
    From (ft): 110  
    To (ft): 157  
    Remarks, lithology or description of repairs or abandonment, water temp.: BASALT HARD
    Water: Y ☐ N

    Dia. (in): 8  
    From (ft): 157  
    To (ft): 163  
    Remarks, lithology or description of repairs or abandonment, water temp.: BASALT VASICULAR
    Water: Y ☐ N

    Dia. (in): 8  
    From (ft): 163  
    To (ft): 180  
    Remarks, lithology or description of repairs or abandonment, water temp.: BASALT HARD
    Water: Y ☐ N

14. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    MCPHERSON & WRIGHT
    DRILLING
    Co. No.: 0376
    Date: 9/12/14

    *Signature of Principal Driller and rig operator are required.

Form provided by Forms On-A-Disk: (214) 349-8429 - www.FormsOnADisk.com
POE ASPHALT WELL 1

[DRILLED IN 1990]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: 171640    Elev (ft): 2490 ±10    Depth (ft): 191    Quad: Pullman

Latitude: 46.719954    Longitude: -117.150022    decimal degrees (WGS84)

¾, SW ¼, SE ¾, Sec. 4, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
4101 WA 270, Pullman, Wash., Wheatland RV Storage, on south side of highway; well is in back of parking lot against hillside and protected by large concrete barrier blocks

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery, topographic map. Site visit (April 19, 2016) and were told that Mr. Carbon owned the quarry prior to Mr. Poe.

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>0 – 8</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>8 – 40</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>40 – 69</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>69 – 140</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>140 – 153</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>153 – 182</td>
</tr>
</tbody>
</table>
Comments:

There likely are two wells on the property: Poe Asphalt well 1, and Carl Carbon well (drilled in 1985, to a depth of 155 ft.

Whitman County, 3 tax parcels, of which owner is now WHEATLAND EXPRESS, one of which is where the well actually is located: Tax Parcel 200004514044900, SE 1/4 PT S 1/2 OF SW 1/4; Tax Parcel 200004514044379, 4101 SR 270, SE W 500' OF SW COR SW1/4; and Tax Parcel 200004514043590, SW1/4 PT SE1/4.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Poe ASPHALT
Address: 2012 Moscow Pullman Hwy

LOCATION OF WELL: Whitman

PROPOSED USE: Domestic

TYPE OF WORK: New well

DIMENSIONS: Diameter of well 8" inches

CONSTRUCTION DETAILS:
- Casing Installed: 8'
- Welded: 6'
- Liner installed: 0'
- Perforations: Yes
-Screens: Yes

PUMP: Manufacturer's Name

WATER LEVELS:
- Static level 152 ft.
- Artesian pressure 8-28-90

WELL TESTS:
- Drawdown is amount water level is lowered below static level

WELL CONSTRUCTOR CERTIFICATION:
I, [Name], [License No.], accept responsibility for construction of this well,

Name: McPherson & Wright Drilling
Address: Lewiston, Idaho 83501

Contractor's Registration No. [Number]

Date: [Date]

(Signed) [Signature]

(USE ADDITIONAL SHEETS IF NECESSARY)
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**OWNER:** Name: Carl Carbon Jr.  
Address: P.O. Box 7300, Spokane, WA 99207

**LOCATION OF WELL:** County: WHITMAN  
Lot #, Section: 14, Sec. 4  
T. 14 N., R. 45E.W.M.

**PROPOSED USE:** Domestic ☑  Industrial ☐  Municipal ☐  Irrigation ☐  Test Well ☐  Other ☐

**TYPE OF WORK:** Owner's number of well (if more than one)...  
New well ☑  Method: Dug ☐  Bored ☐  Deepened ☐  Cable ☐  Driven ☐  Reconditioned ☐  Rotary ☐  Jetted ☐

**DIMENSIONS:** Diameter of well... 6 inches.  
Drilled... 180 ft.  
Depth of completed well... 155 ft.

**CONSTRUCTION DETAILS:**

- **Casing installed:** Dia. from... 61 ft. to... 19 ft.
- **Threaded:** Dia. from... 61 ft. to... 19 ft.
- **Welded:** Dia. from... 61 ft. to... 19 ft.

- **Perforations:** Yes ☑  No ☐
  
- **SIZE of perforations:** In. by... 2 in. by... 2 in.
  
- **Screening from:** Dia. from... 61 ft. to... 19 ft.
- **Screening from:** Dia. from... 61 ft. to... 19 ft.
- **Screening from:** Dia. from... 61 ft. to... 19 ft.

- **Gravel packed:** Yes ☑  No ☐
  
- **Size of gravel:**... 8 in.
  
- **Gravel placed from:** Dia. from... 61 ft. to... 19 ft.
  
- **Surface seal:** Yes ☑  No ☐
  
- **Material used in seal:** bentonite
  
- **To what depth?** 19 ft.

**PUMP:**

- **Manufacturer's Name:**
- **Type:**

**WATER LEVELS:**

- **Land-surface elevation:** 40 ft. below top of well
- **Date:** 8/28/85
- **Artesian pressure:**... lbs. per square inch
- **Artesian water is controlled by:** (Cap, valve, etc.)

**WELL TESTS:**

- **Drawdown is amount water level is lowered below static level.**
- **Was a pump test made?** Yes ☑  No ☐
- **If yes, by whom?**
- **Yield:** 8-10 gal/min. with ft. drawdown after hrs.
- **ESTIMATED AERIAL FT.**

**Recovery data (time taken as zero when pump turned off):** (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Date of test:** 9/12/85

**Bail test:** gal/min. with ft. drawdown after hrs.

**Artesian flow:**... g.p.m.  
**Date:**

**Temperature of water:**...  
**Was a chemical analysis made?** Yes ☑  No ☐

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

**NAME:** PONDEROSA DRILLING & DEVELOPMENT INC.  
**Person, firm, or corporation:**

**Type or print:**

**Address:** E. 6010 Broadway, Spokane, WA 99212

[Signature] James M. Doyle  
(Well driller)

**License No. 1287**  
**Date:** 8/28/85

1353

(USE ADDITIONAL SHEETS IF NECESSARY)
POE ASPHALT PAVING WELL 3

[DRILLED IN 2001]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: 308821   Elev (ft): 2530 ±10   Depth (ft): 303   7.5’   Quad: Moscow West

Latitude: 46.725957°   Longitude: -117.113708°   decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 2, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
5991 State Route 270, Pullman, Wash.; on south side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Candel, 2014, p. 166, well sample D); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill</td>
<td></td>
<td>0 — 2</td>
</tr>
<tr>
<td>Gravel</td>
<td>2 — 6</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>6 — 8</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt</td>
<td>8 — 219</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>Clay, green</td>
<td>219 — 225</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt</td>
<td>225 — 303</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514023690, N OF LINE SW1/4 N1/2 PT 14.70 AC, POE ASPHALT PAVING, INC.

References Cited:

State of Washington  Water Well Report
Washington Water Right Permit No 91386

(1) Owner  Poe Asphalt Paving Inc  Address  PO Box 784  Pullman

(2) Location of Well  County  WHITMAN  Street Address of Well

(3) Proposed Use  DOMESTIC

(4) Type of Work  NEW WELL  Owner's number of well (if more than one)

(5) Dimensions

<table>
<thead>
<tr>
<th>Diameter of well</th>
<th>6 inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilled</td>
<td>300 feet</td>
</tr>
<tr>
<td>Depth of completed well</td>
<td>300</td>
</tr>
</tbody>
</table>

(6) Construction Details

<table>
<thead>
<tr>
<th>Casing Installed</th>
<th>Diameter</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welded</td>
<td>6</td>
<td>43</td>
<td>20</td>
</tr>
<tr>
<td>PVC</td>
<td>4</td>
<td>-5</td>
<td>300</td>
</tr>
</tbody>
</table>

Perforations

<table>
<thead>
<tr>
<th>Type of Perforator Used</th>
<th>Screens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill saw</td>
<td></td>
</tr>
</tbody>
</table>

Screen Type

K-Pac Location

<table>
<thead>
<tr>
<th>Diam</th>
<th>Slot</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8x6</td>
<td>-260</td>
<td>-300</td>
<td></td>
</tr>
</tbody>
</table>

Gravel/Filter packed

Size of gravel/sand

Material placed from ft to ft

Surface seal used

To what depth ft

Did any strata contain unusable water?

Type of water

Depth of strata

Method of sealing strata off

(7) Pump

Pump Manufacturer

Pump Type  HP

(8) Water Levels

Land-surface elevation above mean sea level ft

Static level  240  Date

Artesian Pressure

Artesian water is controlled by

(9) Well Tests

Drawdown is amount water level is lowered below static

Was a pump Test performed?

Yield  Drawdown  Pumping Level  Hours

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Level</th>
<th>Time</th>
<th>Level</th>
<th>Time</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Boiler Test gal per min drawdown after

Artesian gallon 25 gal per min

Artesian flow gal/min

Chemical test

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION

Formation  Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Remarks</th>
<th>Lithology, Water Quality, Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>Basalt gravel fill</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Basalt gravel</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>Clayish soil</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>130</td>
<td>Basalt gray hard</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>138</td>
<td>Basalt w/clay broken</td>
<td></td>
</tr>
<tr>
<td>138</td>
<td>215</td>
<td>Basalt gray hard</td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>219</td>
<td>Basalt light gray soft</td>
<td></td>
</tr>
<tr>
<td>219</td>
<td>225</td>
<td>Clay green hard</td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>285</td>
<td>Basalt gray medium hard</td>
<td></td>
</tr>
<tr>
<td>285</td>
<td>290</td>
<td>Basalt broken w/H2O apx 25 gpm</td>
<td></td>
</tr>
<tr>
<td>290</td>
<td>303</td>
<td>Basalt hard</td>
<td></td>
</tr>
</tbody>
</table>

Received DEPARTMENT OF ECOLOGY EASTERN REGIONAL OFFICE

Start Date  3/3/01  Completed  3/9/01

Well Construction Certification

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Type or Print Name  Louie Hammer  License No 1472

Trainee Name  License No

Drilling Company  H20 Well Service, Inc.

(signed) (Licensed Driller/Engineer)

Address  582 W Hayden Ave, Hayden Lake, ID 83835

Contractor's Registration No  920WES1101D  Date

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
RAY POGUE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 14, 2017; November 9, 2017

Well Log ID: 175634  Elev (ft): 2610 ±10 ft  Depth (ft): 280  Quad: Viola

Latitude: 46.791841  Longitude: -117.078251  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 13, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
5382 Whelan Road, Pullman, Wash., on north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 3</td>
</tr>
<tr>
<td>Saddle Mountains Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>3 – 87</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>87 – 107</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>107 – 203</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Basalt and clay, soft</td>
<td>203 – 255</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetoestratigraphic unit</td>
<td></td>
</tr>
</tbody>
</table>

1357
Sentinel Bluffs Member

<table>
<thead>
<tr>
<th>Material</th>
<th>Depth from Basalt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>255 – 271</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>271 – 272</td>
</tr>
<tr>
<td>Basalt</td>
<td>272 – 280</td>
</tr>
</tbody>
</table>

Comments:

Whitman County Tax Parcel 200004515131190, 5382 WHELAN RD, NE POGUE WHELAN RD SP; owner is POGUE, RAY; 5.76 acres; 1½ story residence built in 1940.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

**WATER RESOURCES PROGRAM**

**DEPARTMENT OF ECOLOGY**

**UNIQUE WELL I.D. #: AB 473**

**FILE ORIGINAL AND FIRST COPY WITH**

**DEPARTMENT OF ECOLOGY**

**SECOND COPY — OWNER'S COPY**

**THIRD COPY — DRILLER'S COPY**

---

**OWNER:**

Name: RAY D. DOUG

Address: 5856 WILLOW RD., PALMIA, WA 99063

**LOCATION OF WELL:**

County: WHITMAN

**STREET ADDRESS OF WELL (or nearest address):**

SW 1/4 SW 1/4 Sec. 15 T. 15 N. R. 46 E. WM.

**PROPOSED USE:**

- Domestic ☑
- Irrigation ☑
- Industrial ☐
- Municipal ☐
- Drinking Water ☐
- Other ☐

**TYPE OF WORK:**

- Owner's number of well (if more than one)
  - Abandoned ☐
  - New well ☑
  - Conditioned ☐
  - Reconditioned ☐
- Method: Drilled ☑
- Cable Driven ☐
- Jetted ☐
- Bored ☐

**DIMENSIONS:**

- Diameter of well: 8 ft.
- Depth of completed well: 286 ft.

**CONSTRUCTION DETAILS:**

- Casing Installed: 8 ft. Diam.
- Liner Installed: 8 ft. Diam.
- Perforations: Yes ☑ No ☐
  - Type of perforator used
    - Size of perforations
      - Perforations from ft. to ft.
      - Perforations from ft. to ft.
      - Perforations from ft. to ft.
- Screens: Yes ☑ No ☐
  - Manufacturer's Name
  - Type
  - Diam. Slot size
  - Diam. Slot size
- Gravel packed: Yes ☑ No ☐
- Gravel placed from ft. to ft.
- Surface seal: Yes ☑ No ☐
  - Depth of strata
  - Material used in seal
  - Did any strata contain unusable water? Yes ☐ No ☑
  - Type of water
  - Depth of strata
  - Method of sealing strata off

**PUMP:**

- Manufacturer's Name
- Type

**WATER LEVELS:**

- Land-surface elevation above mean sea level: 84 ft.
- Static level: 84 ft. below top of well
- Artesian pressure: 68 psig
- Artesian water is controlled by
  - Capac. valve, etc.

**WELL TESTS:**

- Drawdown test: Amount water level is lowered below static level
  - Was a pump test made? Yes ☑ No ☐
  - If yes, by whom?
  - Yield: gal./min. with ft. drawn after hrs.
  - Recovery data (time taken as zero when pump turned off) (water level measured from well to water level)
    - Time: Water Level
    - Time: Water Level
    - Time: Water Level
  - Date of test
  - Boiler test: gal./min. with ft. drawn after hrs.
  - Air test: gal./min. with stem set at ft. for hrs.
  - Artesian flow: g.p.m.
  - Artesian temperature of water: °F
  - Was a chemical analysis made? Yes ☑ No ☐

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:**  WILSON, M[ELISSA J.]

**ADDRESS:**  2124 BURLINGTON RD., ID 83601

**LICENSE NO.:**  0033

**CONTRACTOR:**

**Date:**  04/05/98

**USE ADDITIONAL SHEETS IF NECESSARY**

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-8006.
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 1, 2018

Well Log ID: **D0003054**  Elev (ft): **2840 ±10**  Depth (ft): **500**  Quad: **Robinson Lake**

Latitude: **46.781697°**  Longitude: **-116.969043°**  decimal degrees (WGS84)

**Well Address and (or) Other Location Information:**
1051 Idlers Rest Road, Moscow, Idaho; on west side of road

**Location Method:**
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, silt and sand</td>
<td>0          – 98</td>
</tr>
<tr>
<td>*Clay, silt and sand</td>
<td>98         – 165</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite, black and white</td>
<td>165        – 500</td>
</tr>
</tbody>
</table>

*Could be weathered granite*
Comments:

Latah County Tax Parcel RP40N05W281518, owner now is BARBUTO, ISABEL G; 1051 IDLERS REST RD; 30 acres; SWNE, 28 40 5.

Gregory Arthur Pole used to live at 1051 Idlers Rest, Moscow, Idaho (Cubib.com, 2018).

References Cited:

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water Temp.:

Bottom hole temp.:

Water Quality test or comments:

Depth first Water Encountered:

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Bore Diz.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-9</td>
<td>918</td>
<td>988</td>
<td>Decomposed granite</td>
</tr>
<tr>
<td>44</td>
<td>1.5</td>
<td>0.25</td>
<td>Clay, silt, sand</td>
</tr>
<tr>
<td>105</td>
<td>1.1</td>
<td>0.5</td>
<td>Mud, black, silt, sand</td>
</tr>
<tr>
<td>352</td>
<td>352</td>
<td>352</td>
<td>Black with white</td>
</tr>
<tr>
<td>352</td>
<td>352</td>
<td>352</td>
<td>Black with white</td>
</tr>
<tr>
<td>352</td>
<td>352</td>
<td>352</td>
<td>Black with white</td>
</tr>
</tbody>
</table>

Was drive shoe used?  Y  N
Shoe Depth(s):

Was drive shoe seal tested?  Y  N
How?

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;-4</td>
<td>988</td>
<td>918</td>
<td>25%</td>
<td>PVC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;-8</td>
<td>888</td>
<td>800</td>
<td>100%</td>
<td>PVC</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Headpipe:

Length of Tailpipe:

9. PERFORATIONS/SCREENS

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th></th>
</tr>
</thead>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

Depth flow encountered: 28 ft. Describe access port or control devices:

13. DRILLER'S CERTIFICATION

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Wulbrandt Drilling  Firm No: 1235

Firm Official: Wulbrandt  Date: Oct. 14, 97

Supervisor or Operator: Wulbrandt  Date: Oct. 14, 97

(Sign once if Firm Official & Operator)
LESLYN POLK WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 10, 2018


Latitude: 46.770432°  Longitude: -117.001787°  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 31, T. N__, R. W

**Well Address and (or) Other Location Information:**
3103 Mix Road, Moscow, Idaho; on west side of road

**Location Method:**
Location is for old well cover under trees, at northwest corner of driveway; Latah County Assessor; Google Earth imagery; topographic map; driller incorrectly reported "Hwy 95, 4 mi So. of Moscow" instead of ~ 1.5 mi north of Moscow. Drove by and noticed well cover on March 20, 2018, but did not stop.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill*</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 176</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>176 – 324</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>324 – 328</td>
</tr>
<tr>
<td>Basalt</td>
<td>328 – 330</td>
</tr>
</tbody>
</table>

*Includes loess
Comments:
Latah County Tax Parcel RP40N05W310061, owner is POLK, LESLYN ROGERS; 3103 MIX RD, 39.82 AC NENE; 39.63 AC NWNE; 7.0 AC SWNE; 10.1 AC SENE; 18 AC NENW; 8.37 AC NENW &NWNE & SWNE VAC RR, 31 40 5.

References Cited:
1. DRILLING PERMIT NO. 87-44-N-23-000
Other IDWR No.

2. OWNER: LESLYN FALK
Name
Address 1865 1 MONTGOMERY DR.
City VELLA PARK State OR Zip 97707

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. PROPOSED USE:
□ Domestic □ Municipal □ Monitor □ Irrigation
□ Thermal □ Injection □ Other

5. TYPE OF WORK:
□ New Well □ Modify or Repair □ Replacement □ Abandonment

6. DRILL METHOD:
□ Mud Rotary □ Air Rotary □ Cable □ Other

7. SEALING PROCEDURES

8. CASING/LINER:

9. PERFORATIONS/SCREENS
□ Perforations □ Screens
Method Type Material

10. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Depth</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td></td>
<td>300</td>
<td>160</td>
</tr>
</tbody>
</table>

Temperature of water____ Was a water analysis done? Yes □ No □
By whom? ____________________________
Water Quality (odor, etc.) ____________________________
Bottom Hole Temperature ____________________________

11. STATIC WATER LEVEL:

(q ft. below surface Depth artesian flow found)
Artesian pressure ____ lb. Describe access port
Describe Controlling Devices:

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

13. DRILLER'S CERTIFICATION
I certify that all minimum well construction standards were complied with at the time the rig was removed.

McPherson & Wright Drilling
2246 Burrell
Lewiston, Idaho 83501
(208) 743-7295

Date: Started 6-14-94 Completed 6-19-94

FORWARD WHITE COPY TO: WATER RESOURCES
1365
DAVE PORT WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: 617158  Elev (ft): 2520 ±10  Depth (ft): 80  Quad: Moscow West

Latitude: 46.665269°  Longitude: -117.120639°  decimal degrees (WGS84)

| ¼, NE ¼, SE ¼, Sec. 27, T. 14 N, R. 45 E |

Well Address and (or) Other Location Information:
4382 Johnson Road, Pullman, Wash.; on northeast side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; WA DOE online database lists incorrect owner and PLS; driller recorded incorrect section subdivisions; site visit March 30, 2018 — well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 17</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>17 – 54</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>54 – 67</td>
</tr>
<tr>
<td>Basalt</td>
<td>67 – 80</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514274190, 4382 JOHNSON RD, SE 1/4 PT NE 1/4 PRCL A, owner is PORT, DAVID C; 7.08 acres; 1 story residence built in 1971.

References Cited:
WATER WELL REPORT

Construction/Decommission (\( \times \) in circle)

Proposed Use: Domestic [ ] Industrial [ ] Municipal [ ]
DeWater [ ] Irrigation [ ] Test Well [ ] Other [ ]

Type of Work: Owner's number of well (if more than one) [ ]
New well [ ] Reconditioned [ ] Method: [ ] Drill [ ] Bored [ ] Driven [ ]
Deepened [ ] Cable [ ] Rotary [ ] Jetted [ ]

Dimensions: Diameter of well 8 inches, drilled to 80 ft.
Depth of completed well 80 ft.

Construction Details
Casing: [ ] Welded 8\( ^{\prime} \) Diam. from +1 ft. to 30 ft.
Installed: [ ] Liner installed 8\( ^{\prime} \) Diam. from 10 ft. to 80 ft.
[ ] Threaded [ ] Diam. From ft. to ft.

Perforations: [ ] Yes [ ] No
Type of perforator used [ ] SAW
Size of perfor not 1/8 in. by 12 in. and no. of perfor 60 from 10 ft. to 80 ft

Screen: [ ] Yes [ ] No [ ] K-Pac Location [ ]
Manufacturer's Name [ ]
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel Filter pack: [ ] Yes [ ] No Size of gravel/sand [ ]
Materials placed from ft. to ft.
Surface Seal: [ ] Yes [ ] No To what depth? 20 ft.
Material used in seal [ ] BENTONITE
Did any strata contain usable water? [ ] Yes [ ] No
Type of water? [ ] Depth of strata [ ]
Method of sealing strata off [ ]

PUMP: Manufacturer's Name [ ]
Type [ ]

Water Levels: Land-surface elevation above mean sea level ______ ft.
Static level ______ ft. below top of well Date 5/22/08
Artesian pressure ______ lbs. per square inch Date [ ]
Artesian water is controlled by ______ (cap, valve, etc.)

Well Test: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [ ] No If yes, by whom? ______
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal/min. with ______ ft. drawdown after ______ hrs.
Recovery date (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
______ ______ ______ ______ ______ ______ ______
Date of test ______
Bailer test ______ gal/min. with ______ ft. drawdown after ______ hrs.
Arttest ______ gal/min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date ______
Temperature of water 54 Was a chemical analysis made? [ ] Yes [ ] No

Well Construction Certification: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller [ ] Engineer [ ] Trainee [ ] Name (min.) TED WRIGHT
Driller/Engineer/Trainee Signature [ ]
Driller or trainee License No. [ ]

Start Date 5/22/08 Completed Date 5/22/08

Drilling Company: MCPHERSON & WRIGHT DRILLING
Address: 2246 BURRELL
City, State, Zip LEWISTON, ID, 83501
Contractor's Registration No. MCPH01135N1 Date 8/15/09

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
GENI PRZEKWS WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 9, 2016

Well Log ID: 383001  Elev (ft): 2610 ±10  Depth (ft): 270  Quad: Pullman

Latitude: 46.727964  Longitude: -117.214319  decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 1, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
1303 Old Wawawai Road, Pullman, Wash., house is at end of lane that extends north off road (near center of section)

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS subdivisions incorrect, last name and street misspelled on driller’s report. Site visit (April 12, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 40</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>40 – 70</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>70 – 90</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>90 – 250</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand(?)</td>
<td>250 – 270</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004414012905, 1303 WAWAWAI RD, NW 5.02 AC, owners are now FULFS, DAVID/MARTI; grantor was PRZEKWAS, GENEVIEVE, on 06/01/05; NEW 1900SF HOME ADD. KITCHEN REMODEL BATH REMODEL GARAGE REMODEL, 4/11/2014.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission** (*x* in circle)
- Construction
- Decommission

- ORIGINAL CONSTRUCTION Notice

**PROPOSED USE:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**TYPE OF WORK:**
- New Well
- Reconditioned Method: Dug
- Bored
- Driven
- Deepened
- Cable
- Rotary
- Jetted

**DIMENSIONS:**
- Diameter of well: [ ] inches, drilled: [ ] ft.
- Depth of completed well: [ ] ft.

**CONSTRUCTION DETAILS**
- Casing: [ ] Welded
- Liner installed: [ ]

- Diam.: from [ ] ft. to [ ] ft.
- Diam.: from [ ] ft. to [ ] ft.
- Diam.: from [ ] ft. to [ ] ft.

- Perforations: [ ] Yes  [ ] No
- Type of perforator used: [ ] Saw Cut

- SIZE of perf. [ ] in. by [ ] in. and no. of perf. [ ] from [ ] ft. to [ ] ft.

- Screens: [ ] Yes  [ ] No
- K-Pac Location: [ ]

- Manufacturer's Name: [ ]
- Model No.: [ ]
- Diam.: [ ] ft. to [ ] ft.
- Diam.: [ ] ft. to [ ] ft.

- Gravel/Filter packed: [ ] Yes  [ ] No
- Size of gravel/sand: [ ] ft.

- Materials placed from [ ] ft. to [ ] ft.

- Surface Seal: [ ] Yes  [ ] No
- To what depth? [ ] ft.

- Materials used in seal: [ ]

- Did any strata contain usable water? [ ] Yes  [ ] No
- Depth of strata: [ ]

- Type of water? [ ]

- Method of sealing strata off [ ]

- PUMP:
  - Manufacturer's Name: [ ]
  - Type: [ ]
  - H.P.: [ ]

- WATER LEVELS:
  - Land-surface elevation above mean sea level: [ ] ft.
  - Static level: [ ] ft. below top of well Date: [ ]
  - Artesian pressure: [ ] lbs. per square inch Date: [ ]
  - Artesian water is controlled by [ ]

- WELL TESTS:
  - Drawdown is amount water level is lowered below static level.
  - Was a pump test made? [ ] Yes  [ ] No
  - If yes, by whom? [ ]

  - Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
  - Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
  - Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.

  - Recovery data (time taken as zero when pump turned off): water level measured from
    well top to water level

  - Time: [ ] Water Level: [ ]

  - Date of test: [ ]

  - Bailer test: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
  - Airstest: [ ] gal./min. with stem set at [ ] ft. for [ ] hrs.

- Artesian flow: [ ] g.p.m. Date: [ ]

- Temperature of water [ ] Was a chemical analysis made? [ ] Yes  [ ] No

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller: [ ]
- Engineer: [ ]
- Trainee Name (Print): [ ]

- Signature and License no.: [ ]

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Clay</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>[ ] Mud</td>
<td>40</td>
<td>70</td>
</tr>
<tr>
<td>[ ] Brown Clay</td>
<td>70</td>
<td>90</td>
</tr>
<tr>
<td>[ ] Red Rock</td>
<td>90</td>
<td>250</td>
</tr>
<tr>
<td>[ ] Course Sandstone</td>
<td>250</td>
<td>220</td>
</tr>
</tbody>
</table>

**RECEIVED**

- JUL 1, 2004

**DEPARTMENT OF ECOLOGY**

- WELL DRILLING UNIT

- RECEIVED

- JUL 2, 2005

**ECOLOGY**

- IS AN EQUAL OPPORTUNITY EMPLOYER

**DRILLING COMPANY**

- Whiteaker Drilling

- Address: [ ]

- City, State, Zip: [ ]

**CONTRACTOR’S REGISTRATION NO.**

- Date: [ ]

- Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: 164553
Elev (ft): 2344.22
Depth (ft): 231
Quad: Pullman

Latitude: 46.735720
Longitude: -117.176342
decimal degrees (WGS84)

SE ¼, SW ¼, SW ¼, Sec. 32, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
710 NW Ritchie Street, Pullman, Wash., on northeast side of street; at north corner of intersection with N Grand Avenue (WA 27); “Lot 12, Block 4 of Lawrence and Holdbrook's Addition, Pullman” per driller's report (where Holbrook is misspelled).

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Pullman city wells 2, 4 and 7 all are on this north corner; Whitman County Assessor; Google Earth imagery; topographic map.

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, alternating soft and hard (as noted from a cable tool method of drilling)</td>
<td>3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, gray</td>
<td>69</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>73</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>80</td>
</tr>
</tbody>
</table>
Basalt, alternating soft and hard

R2 magnetostratigraphic unit
Meyer Ridge Member

<table>
<thead>
<tr>
<th>Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, soft, red in basal 11 ft</td>
<td>170</td>
<td>226</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>226</td>
<td>231</td>
</tr>
</tbody>
</table>

Comments:

*Note: Parcel number reflects Block 4, Lot 12 (which was noted on driller’s report).

There are three or four wells in this area: Pullman city wells 2, 4 (drilled in 1956 to a depth of 954 ft), and 7 (drilled in 2001 to a depth of 720 ft); and a Pullman city well (drilled April 27, 1946, to a depth of 167 ft) "Between Lots 4&7, Blk. 49" in SW¼, SW¼, SW¼, sec. 32, that yielded 1,000 gpm, per driller’s report (exact location unknown, but most likely within 1,000 ft to the west).

Whitman County Tax Parcel 110550004120001*, 710 RITCHIE ST, LAWRENCE & HOLBROOK; owner is PULLMAN, CITY OF.

References Cited:
STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG #2
No. Appl. 26
Date March 12, 1946
Cert. 134-A
Record by Driller's record

Location: State of WASHINGTON
County Whitman
Area
Lot 12, Block 4 of Lawrence & Holdbrook's Addition, Pullman

R. J. Strasser
Owner City of Pullman
Address 8110 S.E. Sunset Lane, Portland 6, Wn
Method of Drilling
Date March 19, 46

Land surface, datum 32 ft. above
below

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top soil</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Broken gray rock</td>
<td></td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Soft black rock</td>
<td></td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td></td>
<td>8</td>
<td>27</td>
</tr>
<tr>
<td>Fairly hard black rock</td>
<td></td>
<td>4</td>
<td>31</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td></td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>Soft black rock</td>
<td></td>
<td>6</td>
<td>41</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td></td>
<td>4</td>
<td>45</td>
</tr>
<tr>
<td>Soft black rock</td>
<td></td>
<td>4</td>
<td>49</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td></td>
<td>2</td>
<td>51</td>
</tr>
<tr>
<td>Soft black rock</td>
<td></td>
<td>2</td>
<td>53</td>
</tr>
<tr>
<td>Soft blue rock</td>
<td></td>
<td>15</td>
<td>68</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td></td>
<td>1</td>
<td>69</td>
</tr>
<tr>
<td>Grey sand-stone</td>
<td></td>
<td>4</td>
<td>73</td>
</tr>
<tr>
<td>Soft grey rock</td>
<td></td>
<td>7</td>
<td>80</td>
</tr>
<tr>
<td>Hard black rock</td>
<td></td>
<td>16</td>
<td>96</td>
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</table>

Turn up (over)
## WELL LOG—Continued

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard rock (gray) seams</td>
<td>13</td>
<td>109</td>
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<tr>
<td>Soft gray rock</td>
<td>15</td>
<td>124</td>
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<tr>
<td>Hard grey rock</td>
<td>4</td>
<td>128</td>
</tr>
<tr>
<td>Soft black rock</td>
<td>1</td>
<td>129</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td>3</td>
<td>132</td>
</tr>
<tr>
<td>Grey rock, crevices</td>
<td>14</td>
<td>146</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td>5</td>
<td>151</td>
</tr>
<tr>
<td>Very hard grey rock</td>
<td>19</td>
<td>170</td>
</tr>
<tr>
<td>Soft black rock (water rock)</td>
<td>6</td>
<td>176</td>
</tr>
<tr>
<td>Soft brown rock</td>
<td>11</td>
<td>187</td>
</tr>
<tr>
<td>Soft black rock</td>
<td>12</td>
<td>206</td>
</tr>
<tr>
<td>Soft brown rock</td>
<td>6</td>
<td>212</td>
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<tr>
<td>Soft black rock</td>
<td>3</td>
<td>215</td>
</tr>
<tr>
<td>Soft red rock</td>
<td>11</td>
<td>226</td>
</tr>
<tr>
<td>Hard grey rock</td>
<td>5</td>
<td>231</td>
</tr>
</tbody>
</table>

**Pump test:**
- **Dim:** 231' x 15''
- **SNL:** 0''
- **DD**: 600 g.p.m. dd. is 33'
- **800 g.p.m. dd. is 43'**
- **Casing:** 16'' from 0 to 24'3''
WELL LOG

No. April 27, 1946
Cert. 611-A

Record by R. J. Strasser

Location: State of Washington
County Whitman

Driller's Record

Map

Between Lots 187, Blk. 49, 1/4 Sec. 23, T. 15 N., R. 24 E.

Drilling Co. R. J. Strasser

Address 6110 S.E. Sunset Lane, Portland, Ore.

Method of Drilling

Owner City of Pullman

Address Pullman, Wash.

Land surface, datum 15.12 ft. above

<table>
<thead>
<tr>
<th>CORRELATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill</td>
<td></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Gray silt</td>
<td></td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Yellow decomposed rock</td>
<td></td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Hard gray rock</td>
<td></td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Yellow rock not very hard</td>
<td></td>
<td>25</td>
<td>49</td>
</tr>
<tr>
<td>Yellow rock harder</td>
<td></td>
<td>14</td>
<td>63</td>
</tr>
<tr>
<td>Gray rock not very hard</td>
<td></td>
<td>16</td>
<td>79</td>
</tr>
<tr>
<td>Gray rock harder</td>
<td></td>
<td>13</td>
<td>92</td>
</tr>
<tr>
<td>Gray rock not so hard</td>
<td></td>
<td>6</td>
<td>98</td>
</tr>
<tr>
<td>Soft green rock</td>
<td></td>
<td>8</td>
<td>106</td>
</tr>
<tr>
<td>Fairly hard black rock</td>
<td></td>
<td>6</td>
<td>112</td>
</tr>
<tr>
<td>Hard gray rock</td>
<td></td>
<td>10</td>
<td>122</td>
</tr>
<tr>
<td>Soft black rock</td>
<td></td>
<td>29</td>
<td>151</td>
</tr>
<tr>
<td>Soft red rock</td>
<td></td>
<td>8</td>
<td>159</td>
</tr>
<tr>
<td>Gray rock crevices, water</td>
<td></td>
<td>3</td>
<td>162</td>
</tr>
<tr>
<td>Soft red rock</td>
<td></td>
<td>5</td>
<td>167</td>
</tr>
</tbody>
</table>

Turn up (over)

Sheet 1 of 3 sheets
### WELL LOG—Continued

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth forward</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pump Test:**
- **Dia:** 167" x 15"
- **SML:** 9'
- **DB:** 62'
- **Yield:** 1000 g.p.m.
- **Casing:** 16" dia. O.D. from 0 to 40'

**Perforations:**
- **None**
PULLMAN CITY WELL 3

[DRILLED IN 1962]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: 164558  Elev (ft): 2339.64  Depth (ft): 167  7.5’
Quad: Pullman

Latitude: 46.732076  Longitude: -117.18053 decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 5, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
304 NW State Street, Pullman, Wash., on southeast side of street; northeast of railroad tracks, southwest of NW Whitman Street, and northwest of N Grand Avenue (WA 27).

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Fill</td>
<td>0 — 7</td>
</tr>
<tr>
<td>Silt</td>
<td>7 — 16</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt(?) , yellow</td>
<td>16 — 22</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>22 — 24</td>
</tr>
<tr>
<td>Basalt(?) , yellow</td>
<td>24 — 49</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>49 — 92</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>92 — 98</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>98 — 106</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>106 – 122</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>122 – 151</td>
</tr>
<tr>
<td>Basalt, soft, red</td>
<td>151 – 159</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>159 – 162</td>
</tr>
<tr>
<td>Basalt, soft, red</td>
<td>162 – 167</td>
</tr>
</tbody>
</table>

**Comments:**

Same address/site as Pullman city well 1 (which was abandoned and plugged on March 3, 1995).

**References Cited:**
STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT

WELL LOG
Well #3
No. A-6118

Date: 8-2-1962

Record by: well driller
Source: driller's record

Location: State of WASHINGTON
County: Whitman

Drilling Co: Dickerson Machinery Co.
Address: Spokane, Wash.

Method of Drilling: Date: June 5, 1962
Owner: City of Pullman, Wash.

Land surface, datum: above

<table>
<thead>
<tr>
<th>Observation</th>
<th>Material</th>
<th>Thickness (ft)</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill</td>
<td></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Gray silt</td>
<td></td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Yellow decomposed rock</td>
<td></td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Hard gray rock</td>
<td></td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Yellow rock not very hard</td>
<td></td>
<td>25</td>
<td>49</td>
</tr>
<tr>
<td>&quot; &quot; harder</td>
<td></td>
<td>14</td>
<td>63</td>
</tr>
<tr>
<td>Gray rock not very hard</td>
<td></td>
<td>16</td>
<td>79</td>
</tr>
<tr>
<td>&quot; &quot; but harder</td>
<td></td>
<td>13</td>
<td>92</td>
</tr>
<tr>
<td>&quot; &quot; not so hard</td>
<td></td>
<td>6</td>
<td>98</td>
</tr>
<tr>
<td>Soft green rock</td>
<td></td>
<td>8</td>
<td>106</td>
</tr>
<tr>
<td>Fairly hard black rock</td>
<td></td>
<td>6</td>
<td>112</td>
</tr>
<tr>
<td>Hard gray rock</td>
<td></td>
<td>10</td>
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</tr>
<tr>
<td>Soft black rock</td>
<td></td>
<td>29</td>
<td>151</td>
</tr>
<tr>
<td>Soft red rock</td>
<td></td>
<td>8</td>
<td>159</td>
</tr>
<tr>
<td>Gray rock crevices, water</td>
<td></td>
<td>3</td>
<td>162</td>
</tr>
<tr>
<td>Soft red rock</td>
<td></td>
<td>5</td>
<td>167</td>
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(over)
WELL LOG—Continued

<table>
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<tr>
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<th>Depth (feet)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PUMP TEST:
Dim. 16"x167'

SWL: 26.5 ft. (6-5-62) Also see C.611-A

DD: 106 ft.

Yield: 1350 g.p.m.

Water Temp. 58°

2 minute recovery

Type & size of Pump: 1400 g.p.m.

Peerless turbine

Type & size of motor or engine: 150 h.p. VHS G.E.

CASTING:
16" diam. steel casing from ground to +40 ft.

PERFORATIONS:
10" Galvanized cone

Pumped 1976 2:2 2/16 000
PULLMAN CITY WELL 5
[DRILLED IN 1969]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 4, 2017


Latitude: 46.713446  Longitude: -117.182445  decimal degrees (WGS84)

¼, SE ¼, NE ¼, Sec. 7, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
Fairmont Road, Pullman, Wash., on southwest side of road; just east of S Grand Avenue (WA 27)

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery; topographic map. Site visit (April 10, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>5 – 77</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green, blue, brown, gray</td>
<td>77 – 108</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
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<tr>
<td>Basalt</td>
<td>108 – 139</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>139 – 172</td>
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<td>Basalt of Stember Creek(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>172 – 190</td>
</tr>
</tbody>
</table>

R2 magnetostratigraphic unit
<table>
<thead>
<tr>
<th>Member</th>
<th>Description</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meyer Ridge Member</td>
<td>Basalt, hard</td>
<td>190</td>
<td>372</td>
</tr>
<tr>
<td>Wapshilla Ridge Member</td>
<td>Basalt, alternating hard and soft</td>
<td>372</td>
<td>568</td>
</tr>
<tr>
<td></td>
<td>Clay, gray</td>
<td>568</td>
<td>570</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
<td>570</td>
<td>599</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sediments of Moscow</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay, green</td>
<td>599</td>
<td>610</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>R2 magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mount Horrible member(?)</td>
<td>Basalt</td>
<td>610</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sediments of Moscow</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt(?) and clay</td>
<td>633</td>
<td>645</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N1 magnetostratigraphic unit</td>
<td>Cold Spring Ridge Member(?)</td>
<td>Basalt</td>
</tr>
</tbody>
</table>

**Comments:**

Driller's log is too generalized, but numerous samples were analyzed, and Conrey and Wolff (2010) made their stratigraphic determinations from those data. Thus, the terms used herein are from their work.

Above, well house for Pullman city well 5.
References Cited:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>172</td>
<td>139</td>
<td>108</td>
<td>92</td>
<td>83</td>
<td>77</td>
<td>72</td>
<td>72</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>120</td>
<td>92</td>
<td>108</td>
<td>139</td>
<td>108</td>
<td>83</td>
<td>77</td>
<td>54</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
<table>
<thead>
<tr>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt - Hard - Black</td>
<td>230</td>
<td>277</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>277</td>
<td>418</td>
</tr>
<tr>
<td>Basalt - Med. Soft - Black</td>
<td>418</td>
<td>465</td>
</tr>
<tr>
<td>Basalt - Med. - Black</td>
<td>465</td>
<td>508</td>
</tr>
<tr>
<td>Basalt - Med. Soft - Black</td>
<td>508</td>
<td>528</td>
</tr>
<tr>
<td>Basalt - Hard - Black</td>
<td>528</td>
<td>530</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>530</td>
<td>538</td>
</tr>
<tr>
<td>Basalt - Med. - Black</td>
<td>538</td>
<td>559</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>559</td>
<td>568</td>
</tr>
<tr>
<td>Clay, - Soft - Gray</td>
<td>568</td>
<td>570</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>570</td>
<td>583</td>
</tr>
<tr>
<td>Basalt - Med. - Black</td>
<td>583</td>
<td>591</td>
</tr>
<tr>
<td>Basalt - Med. Soft - Black</td>
<td>591</td>
<td>599</td>
</tr>
<tr>
<td>Clay, Sticky - Soft - Green</td>
<td>599</td>
<td>610</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>610</td>
<td>612</td>
</tr>
<tr>
<td>Basalt - Med. - Black</td>
<td>612</td>
<td>625</td>
</tr>
<tr>
<td>Rock &amp; Clay - Soft - Black</td>
<td>625</td>
<td>645</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>645</td>
<td>675</td>
</tr>
<tr>
<td>Basalt - Med. Soft - Black</td>
<td>675</td>
<td>682</td>
</tr>
<tr>
<td>Basalt - Med. - Black</td>
<td>682</td>
<td>698</td>
</tr>
<tr>
<td>Basalt - Med. Hard - Black</td>
<td>698</td>
<td>712</td>
</tr>
</tbody>
</table>

Casing: 18" from 0 to 200',
16" from 200' to 532',
12" from 532' to 672',

Pump: Peerless Pump, H.U.S.F. 1.15, 250 HP

Well Test: 1799 gpm, 175' DD, 5 Hr.
2285 gpm, 190' DD, ½ HR. (5-22-69)

Temp H.O. - 52°F

Recovery Date
0 min. - 175', 0 min. - 196'
2 min. - 148', 20 Sec. - 148'

Surface 530' o. - 200' Cement.
PULLMAN CITY WELL 6

[DRILLED IN 1968]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, June 26, 2016


Latitude: 46.747528  Longitude: -117.172981  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 32, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
NW Larry Street, Pullman, Wash., on north side of street; well house is located at northwest corner of intersection of NW Larry Street with N Grand Avenue (WA 27).

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery, topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>0 – 59</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>59 – 91</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>91 – 162</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Undifferentiated(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>162 – 518</td>
</tr>
</tbody>
</table>
Comments:

No chemistry is available for the rocks in this well, so stratigraphic units were assigned based on comparisons to surrounding wells.

References Cited:
### STATE OF WASHINGTON
#### DEPARTMENT OF CONSERVATION
##### DIVISION OF WATER RESOURCES

**WELL LOG**

**Record by:** Driller  
**Source:** Drillers record  
**Location:** State of WASHINGTON  
**County:** Whitman  
**Area:**  
**Map:** NE 1/4 NW 1/4 sec. 32, T.15 N., R.45 E.  
**Diagram of Section**  
**Drilling Co.:** Charles Jungmann Drilling Co.  
**Address:** 115 Rees Ave., W.W., Nash  
**Method of Drilling:** New...well...radio...  
**Date:** October 3, 1968  
**Owner:** City of Pullman  
**Address:** City Hall  
**Laud surface, datum:** ft. above  
**SWL:** 132'  
**Date:** June 12, 1968  
**Dims.:** 18-12 X 51  

<table>
<thead>
<tr>
<th>Corelation</th>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Municipal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt Black</td>
<td>0</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Clay, green</td>
<td>59</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Basalt, broken</td>
<td>91</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td>Basalt, grey</td>
<td>134</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>Basalt, black</td>
<td>162</td>
<td>318</td>
</tr>
<tr>
<td></td>
<td>Basalt, Brown</td>
<td>318</td>
<td>326</td>
</tr>
<tr>
<td></td>
<td>Basalt, Black</td>
<td>326</td>
<td>518</td>
</tr>
<tr>
<td></td>
<td>casing 30&quot; from 0-8'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18&quot; from +2-235'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface sealed with casing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cement 235'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Turn up**  
**City of Pullman WELL #6**
Yield: 1500 gpm with 15' DD after 5 hrs.

Slow final recovery

Date: June 12, 1968

Temp: 59°

Pump:
Pullman City Well 7

[Drilled in 2001]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 4, 2017

Well Log ID: 314459     Elev (ft): 2345.28     Depth (ft): 720     Quad: Pullman

Latitude: 46.735818     Longitude: -117.17649     decimal degrees (WGS84)

SE ¼, SW ¼, SW ¼, Sec. 32, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
710 NW Ritchie Street, Pullman, Wash., on northeast side of street; at north corner of intersection with N Grand Avenue (WA 27); northernmost well house

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Pullman city wells 2, 4 and 7 all are on this north corner. Whitman County Assessor; Google Earth imagery; topographic map; Pullman quadrangle Well 13 of Bush and Garwood (2005 [206]). Site visit (August 25, 2015)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>Soil and rubble</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td></td>
<td>Basalt, coarse-grained, occasional plagioclase and olivine phenocrysts</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td></td>
<td>Claystone, grayish-black to greenish-black</td>
</tr>
<tr>
<td></td>
<td>Sand, gray to white, coarse-grained, subangular to subrounded quartz (96 percent) with subrounded basalt (4 percent)</td>
</tr>
<tr>
<td></td>
<td>Claystone, olive-gray, trace of muscovite</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>NZ magnetostratigraphic unit</td>
</tr>
<tr>
<td></td>
<td>Sentinel Bluffs Member</td>
</tr>
</tbody>
</table>
**Basalt of Spokane Falls**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, fine-grained, finely vesicular to 100 ft, additional vesicular zones in places</td>
<td>87 – 170</td>
</tr>
<tr>
<td>Basalt, small white and yellow vesicle fillings, surfaces coated with bluish-black oxide coatings</td>
<td>170 – 185</td>
</tr>
</tbody>
</table>

**R2 magnetostratigraphic unit**

**Meyer Ridge Member**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, gray-brown, large vesicles</td>
<td>185 – 208</td>
</tr>
<tr>
<td>Basalt, fine-grained</td>
<td>208 – 277</td>
</tr>
<tr>
<td>Basalt, large and small vesicles, rare 1–2 mm long plagioclase laths and very rare 4–5 mm long plagioclase phenocrysts</td>
<td>277 – 305</td>
</tr>
<tr>
<td>Basalt, coarse-grained, occasional 4–5 mm long lath-shaped phenocrysts</td>
<td>305 – 343</td>
</tr>
</tbody>
</table>

**Grouse Creek member**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, coarse-grained, large and small vesicles, bluish-gray manganese oxides</td>
<td>343 – 357</td>
</tr>
</tbody>
</table>

**Wapshilla Ridge Member**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, generally fine-grained, few micro phenocrysts of plagioclase in places</td>
<td>357 – 406</td>
</tr>
<tr>
<td>Basalt, red-brown to red-gray, very fine-grained, large and small vesicles</td>
<td>406 – 418</td>
</tr>
<tr>
<td>Basalt, very fine-grained, very rare plagioclase microphenocrysts</td>
<td>418 – 461</td>
</tr>
<tr>
<td>Basalt, fine-grained, large and small vesicles, white and black quartz vesicle fillings and coatings</td>
<td>461 – 495</td>
</tr>
<tr>
<td>Basalt, fine-grained, zones of large and small vesicles, vesicle fillings in places</td>
<td>495 – 577</td>
</tr>
</tbody>
</table>

**Latah Formation**

**Sediments of Moscow**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siltstone with 25 percent coarse, angular quartz grains; a fining upward unit with basalt granules and pebbles at base</td>
<td>577 – 589</td>
</tr>
</tbody>
</table>

**Grande Ronde Basalt**

**R2 magnetostratigraphic unit**

**Mount Horrible member(?)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, very fine-grained, large and small vesicles</td>
<td>589 – 640</td>
</tr>
<tr>
<td>Basalt, fine-grained, plagioclase phenocrysts in places</td>
<td>640 – 657</td>
</tr>
</tbody>
</table>

**Sediments of Moscow**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claystone, dark greenish-gray</td>
<td>657 – 665</td>
</tr>
<tr>
<td>Sand, very coarse, 25 percent quartz, 75 percent basalt, subangular</td>
<td>665 – 672</td>
</tr>
<tr>
<td>Claystone, olive-gray, with silt and muscovite</td>
<td>672 – 680</td>
</tr>
</tbody>
</table>

**Grande Ronde Basalt**

**N1 magnetostratigraphic unit**

**Cold Spring Ridge Member(?)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, large and small vesicles</td>
<td>680 – 720</td>
</tr>
</tbody>
</table>
Comments:

Stratigraphic determinations are from Conrey and Wolff (2010).

There are three or four wells in this area: Pullman city well 2 (drilled in March 12, 1946, to a depth of 231 ft), well 4 (drilled in 1956 to a depth of 954 ft), and well 7; and a Pullman city well (drilled April 27, 1946, to a depth of 167 ft) "Between Lots 4&7, Blk. 49" in SW¼, SW¼, SW¼, sec. 32, that yielded 1,000 gpm, per driller’s report (exact location unknown, but most likely within 1,000 ft to the west).

Whitman County Tax Parcel 110550004120001, 710 RITCHIE ST, LAWRENCE & HOLBROOK; owner is PULLMAN, CITY OF.

References Cited:


**WATER WELL REPORT**

**STATE OF WASHINGTON**

**Notice of Intent:**

**UNIQUE WELL I.D:** AFB 046

**Owner:** CITY OF PULLMAN

**Address:** 8325 Paradise St, Pullman WA 99163

---

### LOCATION OF WELL

- County: WHITMAN
- Section: 32
- Township: 15N
- Range: 32W
- NE 1/4 SW 1/4 Sec 32, T15N R32 W

### STREET ADDRESS OF WELL

- NE corner of intersection of Ritchie & Grand Av

### TAX PARCEL NO.

- None

---

### PROPOSED USE

- New Well
- Method
- Test Well
- Municipal
- Irrigation
- Other

### TYPE OF WORK

- Owner's number of well (if more than one): 7
- New Well
- Reconditioned
- Deepened
- Wired
- Decommission
- Reorganisation
- Borehole
- Cable
- Rotary
- Jetted

### DIMENSIONS

- Diameter of well: 14" 16" 18" inches
- Depth of completed well: 718'

### CONSTRUCTION DETAILS

- Casing installed:
  - Welded: 20'
  - Threaded: 14'
- Perforations:
  - Yes
- FACTORY
- Size of perforations:
  - 4,500
  - 1/16
- 44,800 perforations from 300 ft to 718 ft

### SCREENS

- Manufacturers Name
- Type
- Wire
- Slot size
- Model No. Diam
- 10
- Slot size
- 40
- Diam
- 351.75

- Gravel/Filter packed:
  - Yes
- No
- Size of gravel/sand

### Surface seal:

- Yes
- No
- Portland cement
- Material placed from

### PUMP

- Manufacturer's Name
- Type
- H P

### WATER LEVELS

- Land surface elevation above mean sea level
  - Static level: 97
  - Artesian pressure: 10 lbs per square inch
  - Date: 3-16-01

### WELL TESTS

- Drawdown is amount water level is lowered below static level
- Was a pump test made?
- Yes
- No
  - If yes, by whom
  - Yield [gallons per minute (gpm)] with [feet] drawdown after [hours]
  - Time
  - Water Level
  - Time
  - Water Level
  - Time
  - Water Level

- Date or test
- Bailer test
- Artesian test
- Artesian flow
- Temperature of water
- Was a chemical analysis made?
  - Yes
  - No

---

**RECEIVED**

**JUL 05 2001**

**DEPARTMENT OF CONCERN UNIT 24**

---

**RECEIVED**

**JUL 05 2001**

**DEPARTMENT OF CONCERN UNIT 24**

---

**WELL CONSTRUCTION CERTIFICATION**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- **Type or Print Name:** CWY McCON
- **License No.:** 2222
- **(Licensed Driller/Engineer)**

- **Trainee Name:**
- **License No.:**

- **Drilling Company:**
- **License No.:**
- **Address:**
  - 9940 SW TETON, TUALATIN OR 97062

- **Contractor's Registration No.:**
- **Date:** 4-10-01

---

**ECY 639-1-20 (1199)**

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
<table>
<thead>
<tr>
<th>INTERVAL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'-15'</td>
<td>Soil/Rubble</td>
</tr>
<tr>
<td>15'-47'</td>
<td>Basalt, medium grey, coarse-grained, olivine and occasional plagioclase phenocrysts</td>
</tr>
<tr>
<td>47'-70'</td>
<td>Claystone, greyish black to greenish black, waxy</td>
</tr>
<tr>
<td>70'-72'</td>
<td>Sand, light grey to white, very coarse-grained subangular to subrounded quartz grains (96%) with subrounded basalt fragments (45%).</td>
</tr>
<tr>
<td>72'-87'</td>
<td>Claystone, olive grey, trace muscovite</td>
</tr>
<tr>
<td>87'-170'</td>
<td>Basalt, medium dark grey, fine-grained, small vesicles to 100', additional vesicular zones in places</td>
</tr>
<tr>
<td>170'-185'</td>
<td>Basalt, medium dark grey, numerous small vesicles filled with white and yellow clays, most surfaces coated with bluish-black manganese oxide coatings, 185' interpreted as the base of the flow</td>
</tr>
<tr>
<td>185'-208'</td>
<td>Basalt, greyish brown, large vesicles (scoria)</td>
</tr>
<tr>
<td>208'-277'</td>
<td>Basalt, medium dark grey, fine-grained</td>
</tr>
<tr>
<td>277'-305'</td>
<td>Basalt, medium dark grey, large (scoria) and small vesicles, rare 1-2mm plagioclase lathed shaped microphenocrysts, very rare 4-5mm plagioclase phenocrysts, pyrite common</td>
</tr>
<tr>
<td>305'-343'</td>
<td>Basalt, medium dark grey, coarse-grained, occasional 4-5mm lath-shaped plagioclase phenocrysts</td>
</tr>
<tr>
<td>343'-357'</td>
<td>Basalt, medium dark grey, coarse-grained, large (scoria) and fine vesicles, vesicles coated with blueish grey manganese oxides</td>
</tr>
<tr>
<td>357'-406'</td>
<td>Basalt, medium dark grey, generally fine-grained, few microphenocrysts of plagioclase in places</td>
</tr>
<tr>
<td>406'-418'</td>
<td>Basalt, reddish brown to reddish grey, very fined-grained, large (scoria) and small vesicles</td>
</tr>
</tbody>
</table>
418'-461' Basalt, black, very fine-grained, very rare plagioclase microphenocrysts

461'-495' Basalt, medium dark grey, fine-grained, large (scoria) and small vesicles, white and black cryptocrystalline quartz vesicle fillings and coatings

495'-544' Basalt, medium grey, fine-grained, becomes slightly coarser at 540'

544'-550' Basalt, medium dark grey, large (scoria) and small vesicles

550'-555' Basalt, medium dark grey, very fine-grained, rare plagioclase Microphenocrysts

555'-560' Basalt, medium dark grey, large vesicles (scoria)

560'-577' Basalt, greyish black to black, fine-grained, small vesicles common with white clay fillings, approximately 1% evenly distributed plagioclase microphenocrysts

577'-589' Siltstone, light grey, sandy, approximately 25% very coarse, angular quartz, fining up unit with basalt granules and pebbles at base

589'-595' Basalt, medium dark grey, very fine-grained., large (scoria) and fine vesicles

595'-630' Basalt, greyish black, fine to very-fined grained, large vesicles in places, small vesicles common

630'-640' Basalt, medium dark grey, large (scoria) and small vesicles, 

640'-657' Basalt, medium dark grey, fine-grained, plagioclase microphenocrysts in places

657'-665' Claystone, dark greenish grey

665'-672' Sand, grey, very coarse-grained, 25% quartz and 75% basalt, subangular

672'-680' Claystone, olive grey, silty and micaceous

680'-720' Basalt, medium grey, large (scoria) and small vesicles
GEOLOGICAL REPORT

PULLMAN CITY WELL NO. SEVEN

BY

JOHN H. BUSH, DEAN L. GARWOOD, WILLIAM L. OAKLEY III & TED W. ERDMAN

LATAH INSTITUTE OF GEOLOGICAL STUDIES
May, 2001
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INTRODUCTION

Pullman Well #7 (PW7) was completed in December of 2000. The well is located (Fig. 1) near downtown Pullman, Washington, and was completed to a total depth of 720 feet. Lithologic, stratigraphic, and geochemical units were determined and compared to four other wells in the Pullman area. Samples were collected at the drill site approximately every five feet, later dried and examined in the lab using a binocular microscope. Twenty-eight samples of basalt were carefully collected for major oxide and trace element chemistry using XRF techniques at the Washington State University GeoAnalytical Lab. A written lithologic log (Table 1, Appendix), a graphic lithologic log (Plate 1), and a table of the rock geochemistry results (Tables 2 and 3, Appendix) were completed for Golder Associates Inc.

In conjunction with the contract work for Golder, additional unfunded research was done intermittently as time permitted over a one-year period. This research included geologic fieldwork, literature review, construction of regional geologic work sheets, and studies of selected wells. That information was used to assist in the correlation of lithologic and chemical sequences to other wells, and to place the well in a regional geologic context.

Results show that lithological and chemical correlations between wells in the Pullman-Moscow Basin (PMB) can be made when good samples are collected and analyzed for major oxides and trace elements. Several stratigraphic and geochemical sequences were identified in PW7 and correlated to other wells in the Pullman area. The results closely agree with those reported for the Pullman Test Well by Brown (1976) who extended his correlations into eastern Moscow. Overall, the studies indicate that the basalts within the Pullman-Moscow Basin (PMB) are considerably more variable and folded than previously modeled. The basin is believed to consist of a complex mosaic of interbeds and basalt flows. The thickness of basalt flows and interbeds are variable in response to subsidence and folding during emplacement. Post basalt folding further complicates the subsurface stratigraphy. Overall, the basin is probably divided into several small basins defined by structural elements. Subsidence over an irregular pre-basalt surface helped create the complexity.

Preliminary mapping (1:24,000 and larger) at specific locations outside the PMB documents that the basalts west and southwest of the basin exhibit a higher degree of folding than previously reported. Examination of regional and local stream patterns show that major drainages on the Palouse slope west of Pullman are controlled by the northwest trend and plunges of these folds. These folds along with a number of other northwest features may also cause the northwest groundwater flow.

Stratigraphic correlations, regional bedrock relations, and geomorphic studies where used to place the well in a specific geological setting. PW7 is interpreted to be located on the far western edge of a subsidence area that has its center between Moscow and Pullman. Westward from the well, the basal Wanapum basalt rises upward in what is interpreted to be the limb of a northwesterly plunging anticline. Precisely, the well is interpreted to be located near the "flexure point" between two folds.

It is recommended that 1:24,000 geologic maps of Whitman County be constructed along with geologic cross-sections to enable ground-water modelers to better understand their results.
LITHOLOGY, CHEMISTRY AND STRATIGRAPHIC UNITS

The upper fifteen feet of PW7 consists of unconsolidated soil, rubble, and alluvial sediments. The next 72 feet (15 to 87 ft.) of basalt and sediment belong to the Wanapum Formation. The remaining 618 feet (87 to 720 ft.) of basalt and sediments belong to the Grande Ronde Formation. Both formations are part of the Columbia River Basalt Group (Plate 1). The stratigraphic terminology follows that of Swanson and others (1979) as used in Reidel and Hooper (1989).

The Wanapum Formation has been divided into several members in southeastern Washington (Swanson and others, 1979). In PW7 one flow of the Priest Rapids Member is represented (15-47 ft). The other members of the Wanapum that are present west of Colfax are missing in the PMB. One chemical analysis (Elev. 2319 ft.) (Table 2, Appendix) verifies that the upper basalt in PW7 is of the Lolo chemical type of the Priest Rapids Member of the Wanapum Formation as defined by Wright and others (1973). This flow underlies the PMB with the exception of the exposed pre-basalt highs (Hooper and Webster, 1982). The sediments beneath the Priest Rapids (47-87 ft) and overlying the Grande Ronde have been referred to as the Vantage horizon (Siems and others, 1974) or the Vantage Member of the Latah Formation (Bush and Provant, 1998). The Vantage is a marker “horizon” that has been correlated over much of the Columbia River Plateau (Siems and others, 1974). It has been sometimes described as part of a basalt unit, a separate member, a member of the Ellensburg Formation, and a member of the Latah Formation depending on location, thickness, and lateral continuity. In every case it is the interbed or horizon between the lowermost Wanapum and uppermost Grande Ronde basalt flow.

In PW7, the Grande Ronde Formation (87 to 720 ft) consists of 10 to 11 individual basalt flows and/or flow units with two interbeds of sand, silt, and clay (Plate 1). Twenty-eight basalt samples from the Grande Ronde were analyzed for major oxide and trace element chemistry (Table 2, Appendix). From those analyses the Grande Ronde was divided into four sequences labeled A-D for purposes of discussion and comparison to surrounding wells. Although all elements and oxides were considered in the correlation process, Ti to Mg oxide ratios were found to be the most useful.

The four subdivisions (A-D) of the Grande Ronde in PW7 are illustrated on Plate 1 and in Table 2 (Appendix). The upper part of this sequence is most likely correlative to the N2 member of that formation, which according to Hooper and Webster (1982) crops out less than 1,500 feet to the west of the well below the Vantage interbed. The lowermost part of PW7 may correlate to the R2 member. Individual flows within the Grande Ronde rarely have distinctive chemical fingerprints, as do flows in the Wanapum Formation. Precise identification of formal members and flow groups within the Grande Ronde generally requires paleomagnetic data, regional stratigraphic comparisons and statistical analysis of the chemical data. Such comparisons were not in the scope of this study and informally labeling the sequences A-D was found to be more useful for local comparisons. Although correlations to regional units were not done, the chemical data was distinctive enough to clearly determine four Grande Ronde chemical groups in PW7 and correlate those units to other wells in the area (Plate Two).
COMPARISONS TO OTHER WELLS

The lithologic and chemical data from PW7 were compared to four other wells: Pullman #5, WSU #6, WSU #7, and the Pullman Test Well (Fig. 1). Major oxide analyses for Pullman #5, WSU #5 and #6, and the Pullman Test well were reported in Brown (1976) and are included in the Appendix. A lithologic log for WSU #7 had been completed earlier (Bush, 1987, unpublished data). The major oxide and trace element chemistry for that well had been made available by Peter Hooper (written communication, 1988). The data from Brown (1976) does not include trace element chemistry and the analytical techniques for the major oxides have since been refined. The samples from WSU #7 were not collected as consistently as they were for PW7.

Although the database from the other wells is not ideal, the chemical "breaks" and subdivisions noted in PW7 are distinctive enough to make confident correlations. Subdivisions A-D of the Grande Ronde are shown on Tables 2-8 in the Appendix and correlations of these subdivisions between wells are illustrated on Plate 2. The Ti to Mg oxide plots for each of the wells are illustrated in Figures 8-12 of the Appendix.

Chemical correlations from basalt samples are generally more reliable than correlations from lithologic logs for well to well comparisons. Most well logs available are not complete enough to determine flow tops and bases. The type of flow delineation illustrated on Plate One for PW7 can only be done when the cuttings are large enough, collected at regular intervals, and examined by an individual familiar with Columbia River basalt features and stratigraphic sequences. The samples from PW7 were excellent. Delineation of flow contacts was possible and several correlations were made to the other wells even though individual flow contacts were not always possible to delineate in Pullman #5 and WSU #6. The geophysical logs for the Pullman Test well (Brown, 1976) depicted individual flow boundaries and were used to help with the correlation process. However, the chemical boundaries are distinct and consistent from well to well and with all the data some preliminary conclusions were drawn.

Comparisons of lithologic logs examined show considerably more variations between wells over short distances than is typical of Columbia River basalt flows. Flows thicken and thin, interbeds do not often correlate between wells, and flow by flow sequences are rarely consistent. For example numerous such variations are present between PW7 and WSU #7 which are less than a mile apart. Correlations of the A-D sequences indicate thickening and thinning over short distances (Plate 2). The chemical groupings and correlations presented herein closely compare to those previously reported by Brown (1976). Most significant are the thickening of A, B, and C from the Pullman area eastward to the Pullman Test Well.

The thickening and thinning of chemical subdivisions and the variations in interbed position and flow sequences are interpreted to have been caused by folding, differential subsidence and complex emplacement patterns within PMB. The next section will discuss this conclusion in more detail.
SUBSIDENCE AND FOLDING WITHIN THE PULLMAN-MOSCOW BASIN

Brown (1976) previously correlated the Wanapum and three chemical sequences within the Grande Ronde from eastern Moscow through the Pullman Test well into Pullman. He concluded that his correlations indicate apparent subsidence in the central part of the PMB between Moscow and Pullman for the upper part of the Grande Ronde. Geophysical data (Klein and others, 1987) illustrated by Lum and others (1990) indicate thicker basalts north-northeast of Pullman, which also suggests the presence of a subsidence area between Pullman and Moscow. The pattern of these thicker basalts noted by Lum and others (1990) suggest a north to northwest component of the PMB.

The flows discussed by Brown (1976) are related primarily to the N2 and R2 members of the Grande Ronde and thus, the subsidence he documents would have had to been during and/or after "upper Grande Ronde time". Detailed mapping at 1:24,000 on the Lewiston Orchards North quadrangle (Garwood and Bush, in preparation) and the Lapwai quadrangle (Bush and Garwood, in preparation) 17 miles southwest of Pullman verify that differential subsidence during the same time interval was occurring nearby. They document thinning of R2 flows over developing anticlinal areas that in places were high enough to become barriers to N2 flows. The same mapping also shows thinning of Priest Rapids flows across anticlinal structures. Numerous previous workers have documented basining during the emplacement of the Columbia River Basalts (Bush and others, 1972; Swanson and Wright, 1973; Siems and others, 1973; and Siems and others, 1974).

Close examination of correlations made by Brown (1976) and Heinemann (1994) illustrate that "warps" or uneven surfaces for the uppermost Grande Ronde and Wanapum between eastern Moscow and Pullman are common. Changes in thickness, elevations, and irregularities in the Wanapum can be explained by pre-Wanapum and post-Wanapum erosion. However, evidence of erosion during the emplacement of the upper Grande Ronde has not been described. Careful examination of the Grande Ronde flows along the Snake River canyon south and southwest of Pullman and to the southeast in the Lewiston Hill area substantiates the lack of erosion between flows and flow units during the same time frame.

The nature of the interbeds in Pullman also suggests differential basining during basalt emplacement. The interbeds encountered in many of the wells in the Pullman area are interpreted as evidence of deposition in low areas. Silica rich sediments eroded from near-by pre-basalt rocks dominate most interbeds. Columbia River basalt interbeds often represent deposition in deformation areas. These types of interbeds were named deformational interbeds by Bond (1963). The interbeds in the Pullman area are interpreted to represent deposition in minor "warps" and not in erosional channels. Collectively there is considerable evidence for folding during and after the emplacement of the upper Grande Ronde flows. The chemical results and correlations to other wells presented herein help verify that conclusion for the Pullman area.
The Priest Rapids basalt in the PMB often makes rapid changes in thickness and has an uneven surface at its base. Though erosion can explain some of these features, it is interpreted to be due in part to emplacement over developing anticlinal and synclinal areas. The Priest Rapids thins between Moscow and Pullman. This thinning is interpreted as westward thinning against a developing anticlinal high at the western edge of Pullman. Topographic highs, stream patterns similar to those in folded areas, and a rising Grande Ronde surface west of Pullman help verify this interpretation.

It is believed that the PMB was a very complex area during basalt extrusion due to the interaction of pre-basalt highs, developing NW trending folds and extensive subsidence to the west in the Pasco area during and after basalt extrusion. Lin (1967) previously documented major changes between Moscow and Pullman in the subsurface. Bush and Ralston (1997) have noted that areas marginal to the eastern edge of the Plateau are a complex mosaic of basalt flows and interbedded sediments. Understanding the three-dimensional aspects of the subsurface is however complicated by the lack of exposures, poor or non-existent well logs, rare rock chemical data, and the concentration of data along an east-west line between Moscow and Pullman. This line produces oblique views of any feature that is not oriented north-south.

The folds within the plateau of eastern Washington are commonly northwest trending and plunging, asymmetrical, low-amplitude, long wavelength features with wide synclinal areas separated by narrow anticlines and monoclinal ridges. Such folds are particularly difficult to locate and verify in the subsurface. Foxworthy and Washburn (1963) first suggested that the Palouse area may be underlain by shallow plunging folds. The folds in the PMB may not have the same configuration as on the Palouse slope due to the nearby influence of basement rocks; but we agree with Brown (1976) that many of the variations noted in the Pullman area can be explained by simple anticlinal and synclinal features. This line of reasoning coupled with the understanding that folding was probably going on during extrusion also suggest that subsurface pattern of basalt flows in the PMB is very complex. Below is a list of our conclusions. Included are some conclusions or trends that were not discussed within this report even though they detract from the continuity of the paper. All of our conclusions were included to help in an effort to help future workers.

A) The evidence is very strong for the presence of a synclinal warp in the upper Grande Ronde between Moscow and Pullman.

B) Correlations by Brown (1976), Heinemann (1994), and Provant (1995) indicate a downwarp in eastern Moscow. The downwarp could be from differential compaction of the Latah sediments in that area (Lum and others, 1990). The western edge of this downwarp is near the Idaho-Washington border which happens to mark the western extent of the sediments of Bovill which overlie the basalts in Moscow (Bush and others, 1998; Bush and Provant, 1998). An asymmetrical anticlinal and/or a monoclinal flexure in that area would help to explain the deposition and distribution of those sediments.

C) Elevation data at the base of the Wanapum 3,000 feet west of the Pullman Well # 7 shows that the top of the Grande Ronde rises approximately 80 feet in that distance.
D) Thinning of the Priest Rapids over Pullman adds to the evidence that an anticlinal high exists at the western edge of the town.

E) Topographic features and stream patterns in the Pullman area support the presence of an anticline west of Pullman.

F) PW7 is interpreted to be located at the western edge of a large synclinal feature with internal warps near the eastern flank of a northwest trending and plunging anticline.

G) Thickening and thinning trends of the Wanapum basalts do not always follow the same trends noted in the Grande Ronde (Brown, 1976).

H) In places, correlations show small “warps” within the larger synclinal areas.

I) Overall relations suggest that the PMB has a northwest component towards Palouse and Colfax as well as an east-west component.

J) Data examined clearly shows the subsurface to be more complex than previously thought.

K) Many of the complexities of the PMB are interpreted to be due to differential basining near the influence of pre-basalt basement rocks with rugged topographic relief.

L) Wanapum surfaces tend to rise towards basement highs such as Kamiak Butte suggesting differential basining after emplacement around those areas.

SOME REGIONAL COMPARISONS AND COMMENTS

PALOUSE

Three samples were analyzed from the new Palouse City Well (Figure Two) for this project. (Table 9 Appendix). They were collected from the uppermost basalts of the Grande Ronde. These analyses are similar to those from sequence A in PW7. The Palouse well however, has a much thicker interbed (Vantage Member, 207 ft), between the Grande Ronde and Wanapum than does PW7. Field work in the vicinity of Palouse shows that the Priest Rapids consists of two flows that together exceed two hundred feet in thickness (Duncan, 1998). Geomorphic evidence (Bush and others, 1998, Duncan, 1998) suggests a northwest trending flexure with a southwest dip east of the city. The Palouse well is interpreted to be located in a northwest plunging syncline. The thick Priest Rapids and Vantage members and the northwest trend of the Palouse River support this conclusion.

PALOUSE SLOPE

The basalts on the Palouse slope west of the PMB dip in general towards the Pasco Basin. In the area between Colfax and the Snake River west of Pullman the overall dip is to the northwest.
Figure 2 – Palouse well location map.
There has been considerable discussion about the existence of a groundwater flow barrier between Pullman and the Snake River. Brown (1976) and Barker (1979) both discussed a potential barrier or barriers to groundwater flow southwest of Pullman, but Lum and others (1990) concluded that the barrier could not be identified. Review of the literature shows that there are several potential geological barriers in the subsurface of which, one or several could be acting as a barrier or barriers to groundwater flow.

In addition to the overall northwest dip of the basalts Heinemann (1994) and unpublished structural contour maps by Eddy Teasdale, (2000) show that the Grande Ronde surface dips to the west-northwest west of Pullman. The northwest dip of basalt units and the Grande Ronde surface may in part produce a barrier. Within the overall northwest dip are numerous northwest plunging folds that have wide synclinal areas and narrow anticlinal ridges (Figure 3).

Presently there are only reconnaissance maps at a scale of 1:250,000 available for the Palouse slope (Swanson and others, 1980). Swanson and others (1980) illustrate some folds, but because of the nature of the folds and the scale of their mapping many folds were not detected. Mapping at a scale of 1:24,000 near Granite Dam (Figure 4) illustrates how the Snake River is controlled by a northwest trending syncline between an anticline on both the south and north side of the river. Figure five is a photograph illustrating the approximate location of the axial traces for these folds near Granite Dam. Figure six illustrates how erosion in the syncline produces the illusion that the basalts are horizontal and not folded. Swanson and others (1980) had previously mapped the southern most anticline.

Over the last year several working maps of the Palouse Slope southwest and west of Pullman were compiled that focused on stream patterns. The primary streams show strong northwest control and overall patterns are indicative of an early stage of erosion over folded rocks. The structural control of stream development has been well documented throughout much of the Columbia River Plateau (Baker and others, 1989). In central Washington, most trunk streams flow along synclines—migrating their way from syncline to syncline, going around the plunging noses of anticlines and in places crossing features at structural saddles (Baker and others, 1989). The loess is thick on the Palouse slope which covers many of the bedrock structural features, but the stream patterns are interpreted to have been caused in the same fashion described by Baker and others, (1989). Reconnaissance fieldwork and examination of well data in specific areas between Pullman and Granite Dam substantiates the presence of numerous folds with shallow northwest plunging trends. These folds along with the overall dip of the basalts are causing the northwest flow of surface water. The interpretation herein is that it is these same folds may be the primary causes of northwest subsurface flow.

Review of the literature reveals numerous other possible barriers. In fact, there are so many potential geologic barriers that southwest flow of groundwater would seem unlikely. Below is a summary list of potential barriers including features not discussed herein.

A) Geomorphic evidence indicates a number of northwest trending structures between Pullman and the Snake River, which were interpreted herein as folds.
Figure 3 – Location of major anticlines and synclines in Moscow – Pullman area.
Figure 4 – Approximate axial trace locations of 3 folds near Almota.
Figure 5 – Panoramic photograph looking southeast from the Almota grade towards Lower Granite Dam.
Figure 6 – Schematic illustration showing erosion of synclinal features.
Figure 7 – Panel diagram of Roza flows, southeastern Washington.
B) Fieldwork shows that the northwest trending Uniontown syncline illustrated by Swanson and others (1980) on their reconnaissance map does exist.

C) The area west of Pullman is a “hinge line” area over which pinching and thinning of Wanapum and Grande Ronde flows occurred (Swanson and Wright, 1976). For example, Figure seven illustrates the pinching of the Roza Member west of Pullman along a northwest trend in a restored diagrammatic panel diagram. The Roza and older units pinch over an area west of Pullman that must have been uplifted relative to basining before the emplacement of Wanapum flows creating a large subsurface anticline or monocline with a steeper westward to northwestward dipping limb.

D) The “hinge line” discussed above must also be present within the Grande Ronde west of Pullman in order to accommodate the continued thickening of flows westward into the Pasco Basin. These kinds of features have been long suspected and interpreted from numerous isopach and structural contour maps (Siems and others, 1973; Swanson and others, 1980).

E) Northwest trending folds are present along parts of the Snake River southwest of Pullman. Preliminary work shows that the Snake River at Lower Granite Dam is bound by anticlinal features. Similar relations are believed to occur all along the Snake between Lewiston and Lower Granite Dam.

(F) Basalt dikes are known to follow a northwest trend west of Pullman (Swanson and others, 1975; Swanson and others, 1980). The presence of these dikes in the subsurface west of Pullman is is very likely.

(G) There is considerable geomorphic, structural, and stratigraphic evidence that Colfax and Palouse are geologically connected in the subsurface to the PMB.

(H) Overall the basalts are tilted gently to the northwest and then west towards the Pasco basin. However, within that regional dip are a number of dip changes to accommodate the northwest folds.

(I) The folds on the Palouse slope typically are asymmetrical with narrow anticlinal ridges and wide synclinal “near” flat areas with internal warps.

(J) The narrow anticlinal ridges have axial planes that dip back towards (to the Northeast) the PMB.

(K) Narrow anticlinal features within the Columbia River Basalts are highly fractured and in places faulted. In fact, breccias in anticlinal areas are often more abundant than in fault areas. These anticlinal crests can be porous, but are also commonly filled with secondary clay, zeolites, and other mineral fillings that often produce barriers to ground water flow.
SUMMARY

Below is a list of the most important results and conclusions.

(1) The nature of the samples from PW7 enabled excellent flow boundary determinations and reliable rock chemical data.

(2) The Grande Ronde in PW7 can be subdivided into four chemical sequences.

(3) A correlation of lithologic and geochemical sequences to local wells was possible. The results are similar to those reported by Brown (1976).

(4) PW7 is interpreted to be located on the western edge of a subsidence area located between Moscow and Pullman close to a northwest plunging anticline west of Pullman.

(5) Subsurface lithologic, stratigraphic, and geochemical correlations between wells indicate considerable variability interpreted to have been caused by continued deformation during and after basalt emplacement.

(6) A review of the literature indicates several potential northwest-striking features that could create subsurface groundwater barriers between the PMB and the Snake River.

(7) The basalts in and surrounding the PMB are more folded than previously reported.

(8) The PMB is a complex mosaic of sediments, thinning and thickening basalt flows and structural features.

(9) The complexity of the PMB was created by a combination of subsidence and folding during basalt emplacement, its location near the edge of the Columbia River Plateau, the presence of a number of irregular basement highs and post Wanapum subsidence.

RECOMMENDATIONS

The geologic maps of Whitman County are primarily at a reconnaissance scale of 1:250,000. Compiled maps are available at 1:100,000 but a considerable portion of these maps were compiled from information on the 1:250,000 maps. Detailed groundwater modeling for local areas using regional small scale maps as a geologic base leaves too many unknowns. It is recommended that a program be started to construct 1:24,000 maps based on field data and well logs for Whitman County. These maps must include cross-sections to help interpret the subsurface conditions.

Northwest trends are so common that the possible separation of the subsurface into northwest sections of different groundwater zones needs to be considered by ground-water modelers.
REFERENCES CITED


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Swanson, D.L. and T.L. Wright, 1973, Extent, source, and structure of the Roza Member of the Yakima Basalt in southeast Washington; Geological Society of America, Abs. with programs, v.5, no. 3, p. 113-114.


APPENDIX
Figure 8 – MgO vs. TiO$_2$ plot for Pullman well #7.
Figure 9 – MgO vs. TiO₂ plot for Pullman well #5.
Figure 10 – MgO vs. TiO₂ plot for WSU well #6.
Figure 11 – MgO vs. TiO₂ plot for WSU well #7.
Figure 12 – MgO vs. TiO₂ plot for the Pullman Test Well.
# TABLE 1 - LITHOLOGIC LOG OF PULLMAN MUNICIPAL WELL #7

John Bush and Ted Erdman 1/1/01

<table>
<thead>
<tr>
<th>INTERVAL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'-15'</td>
<td>Soil/Rubble</td>
</tr>
<tr>
<td>15'-47'</td>
<td>Basalt, medium gray, coarse-grained, olivine and occasional plagioclase phenocrysts.</td>
</tr>
<tr>
<td>47'-70'</td>
<td>Claystone, grayish black to greenish black, waxy.</td>
</tr>
<tr>
<td>70'-72'</td>
<td>Sand, light gray to white, very coarse-grained sub-angular to sub-rounded quartz grains (96%) with sub-rounded basalt fragments (45%).</td>
</tr>
<tr>
<td>72'-87'</td>
<td>Claystone, olive gray, trace muscovite.</td>
</tr>
<tr>
<td>87'-170'</td>
<td>Basalt, medium dark gray, fine-grained, small vesicles to 100', additional vesicular zones in places.</td>
</tr>
<tr>
<td>170'-185'</td>
<td>Basalt, medium dark gray, numerous small vesicles filled with white and yellow clays, most surfaces coated with bluish-black manganese oxide coatings, 185' interpreted as the base of the flow.</td>
</tr>
<tr>
<td>185'-208'</td>
<td>Basalt, grayish brown, large vesicles (scoria).</td>
</tr>
<tr>
<td>208'-277'</td>
<td>Basalt, medium dark gray, fine-grained.</td>
</tr>
<tr>
<td>277'-305'</td>
<td>Basalt, medium dark gray, large (scoria) and small vesicles, rare 1-2mm plagioclase lath shaped microphenocrysts, very rare 4-5mm plagioclase phenocrysts, pyrite common.</td>
</tr>
<tr>
<td>305'-343'</td>
<td>Basalt, medium dark gray, coarse-grained, occasional 4-5mm lath-shaped plagioclase phenocrysts.</td>
</tr>
<tr>
<td>343'-357'</td>
<td>Basalt, medium dark gray, coarse-grained, large (scoria) and fine vesicles, vesicles coated with bluish gray manganese oxides.</td>
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<td>357'-406'</td>
<td>Basalt, medium dark gray, generally fine-grained, few microphenocrysts of plagioclase in places.</td>
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<td>406'-418'</td>
<td>Basalt, reddish brown to reddish gray, very fined-grained, large (scoria) and small vesicles.</td>
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418'-461'  Basalt, black, very fine-grained, very rare plagioclase microphenocrysts.

461'-495'  Basalt, medium dark gray, fine-grained, large (scoria) and small vesicles, white and black cryptocrystalline quartz vesicle fillings and coatings.

495'-544'  Basalt, medium gray, fine-grained, becomes slightly coarser at 540'.

544'-550'  Basalt, medium dark gray, large (scoria) and small vesicles.

550'-555'  Basalt, medium dark gray, very fine-grained, rare plagioclase microphenocrysts.

555'-560'  Basalt, medium dark gray, large vesicles (scoria).

560'-577'  Basalt, grayish black to black, fine-grained, small vesicles common with white clay fillings, approximately 1% evenly distributed plagioclase microphenocrysts.

577'-589'  Siltstone, light gray, sandy, approximately 25% very coarse, angular quartz, fining up unit with basalt granules and pebbles at base.

589'-595'  Basalt, medium dark gray, very fine-grained., large (scoria) and fine vesicles.

595'-630'  Basalt, grayish black, fine to very-fined grained, large vesicles in places, small vesicles common.

630'-640'  Basalt, medium dark gray, large (scoria) and small vesicles.

640'-657'  Basalt, medium dark gray, fine-grained, plagioclase microphenocrysts in places.

657'-665'  Claystone, dark greenish gray.

665'-672'  Sand, gray, very coarse-grained, 25% quartz and 75% basalt, sub-angular.

672'-680'  Claystone, olive gray, silty and micaceous.

680'-720'  Basalt, medium gray, large (scoria) and small vesicles.
### Table 2 - Major Oxides - Pullman Well #7

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Based on well head elevation of 2534'
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Based on well head elevation of 2414'

Additional analyses from 1080-2210' depth were not included
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Based on well head elevation 2414'

Additional analyses from 1080-2210' depth were not included
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<td>9.85</td>
<td>0.22</td>
<td>9.38</td>
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<td>2.56</td>
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<td>15.05</td>
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<td>0.21</td>
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<td>9.27</td>
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<td>9.33</td>
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<td>2.41</td>
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<td>10.12</td>
<td>0.22</td>
<td>8</td>
<td>4.23</td>
<td>1.41</td>
<td>2.66</td>
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Based on well head elevation of 2475'
### Table 9 - Major Oxides - Palouse #2

<table>
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<th>Chem. group</th>
<th>Elev. (ft)</th>
<th>Depth (ft)</th>
<th>SiO₂</th>
<th>Al₂O₃</th>
<th>TiO₂</th>
<th>FeO</th>
<th>MnO</th>
<th>CaO</th>
<th>MgO</th>
<th>K₂O</th>
<th>Na₂O</th>
<th>P₂O₅</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>2100</td>
<td>405</td>
<td>53.24</td>
<td>14.88</td>
<td>1.697</td>
<td>11.13</td>
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<td>0.90</td>
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<td>2050</td>
<td>455</td>
<td>53.97</td>
<td>15.10</td>
<td>1.750</td>
<td>10.32</td>
<td>0.180</td>
<td>9.90</td>
<td>4.57</td>
<td>1.03</td>
<td>2.89</td>
<td>0.288</td>
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</tbody>
</table>

Based on well head elevation of 2505'
PLATE TWO—CORRELATION OF STRATIGRAPHIC UNITS TO PULLMAN WELL NO. 7, HORIZONTAL DISTANCES NOT TO SCALE.
Pullman City Well 8

[Drilled in 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 4, 2017

Well Log ID: 564735
Elev (ft): 2513
Depth (ft): 797
Quad: Pullman

Latitude: 46.722754
Longitude: -117.176547
decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 5, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
533 SE Derby Street, Pullman, Wash., on south side of street; well house is located at west end of parking lot, east of large water tank.
[Note: Whitman County Assessor lists address as 555 Derby Street.]

Location Method:
Location is for well house; elevation from Holom, Stasney, and Anderson (2008); Whitman County Assessor; Google Earth imagery, topographic map. PLSS subdivision incorrect on driller’s report. Site visit (August 25, 2015)

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden and Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Overburden, loess</td>
<td>0 – 52</td>
</tr>
<tr>
<td>Loess, clay, weathered basalt(?)</td>
<td>52 – 80</td>
</tr>
<tr>
<td>Loess, clay, weathered basalt(?)</td>
<td>52 – 80</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, Fe-stained and weathered, vesicle fillings</td>
<td>80 – 90</td>
</tr>
<tr>
<td>Basalt, coarse-grained, occasional olivine and plagioclase phenocrysts</td>
<td>80 – 90</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green and gray with black and brown micaceous siltstone; sample interval 215–220 ft mostly basalt chips, interpreted as lag sample but could be an invasive flow</td>
<td>212 – 250</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
</tbody>
</table>
### Sentinel Bluffs Member

#### Basalt of Spokane Falls
- Basalt, non-vesicular, thin clay layers (?)  
  250 – 280
- Basalt, non-vesicular  
  280 – 327

### R2 magnetostratigraphic unit

#### Meyer Ridge Member
- Basalt, fractured, vesicular  
  327 – 355
- Basalt, non-vesicular and vesicular  
  355 – 512

#### Wapshilla Ridge Member
- Basalt, vesicular, weathered, vesicle fillings  
  512 – 553
- Basalt, fine-grained, non-vesicular  
  553 – 576
- Basalt, vesicular  
  576 – 586
- Basalt, non-vesicular  
  586 – 654
- Basalt, vesicular  
  654 – 659
- Basalt, non-vesicular  
  659 – 720

### Latah Formation

#### Sediments of Moscow
- Silt and clay, brownish-gray  
  720 – 724
- Sandstone, greenish-gray, fine-grained, silty  
  724 – 726
- Siltstone, tan and reddish, clayey  
  726 – 731
- Sandstone, greenish, gray, fine-grained, silty  
  731 – 744

### Grande Ronde Basalt

#### N1 magnetostratigraphic unit

#### Cold Spring Ridge Member(?)
- Basalt, fractured, non-vesicular  
  744 – 752

### Latah Formation

#### Sediments of Moscow
- Gravel, coarse, mostly subrounded vesicular and non-vesicular basalt pebbles, in sand cemented matrix, trace quartzite gravels  
  752 – 770
- Gravel, up to cobble size in places, mostly subrounded basalt, with occasional quartzite with fine sand matrix  
  770 – 784
- Sandstone, medium-grained, some gravels and cobbles of basalt  
  784 – 797

### Comments:

1. Conrey and Wolff (2010) further subdivided this sequence.

2. Three samples of the basalt gravels were analyzed for chemistry from the 755-, 775-, and 795-ft intervals. The chemistry suggests the pebbles are from the Cold Spring Ridge Member which correlations to other wells show flows of that member occur above and below the gravel beds.

Stratigraphic interpretations from Conrey and Wolff (2010), Bush (2008), and Stephen P. Reidel (written commun., November 14, 2016). Lithologic log summarized from Bush (2008), Holom and others (2008), and driller’s report. Not all data are in agreement. Thus the log is an interpretational summary. The
geophysical downhole logs provided by Holom and others (2008) were helpful. The driller's log and the lithology log by Bush (2008) were confusing in places.

Whitman County Tax Parcel 11150000403000, 555 DERBY ST PULLMAN, MC KENZIES 3RD ADD; owner is PULLMAN, CITY OF.

References Cited:

Bush, John, 2008, Geologic report on Pullman well no. 8, Appendix B for Holom, Derek; Stasney, Bryony; and Anderson, Robert, Draft report—Pullman well no. 8, drilling and testing results, City of Pullman, Washington: Redmond, Wash., Golder Associates Inc. draft report submitted to City of Pullman, 33 p.


Holom, Derek; Stasney, Bryony; and Anderson, Robert, 2008, Draft report—Pullman well no. 8, drilling and testing results, City of Pullman, Washington: Redmond, Wash., Golder Associates Inc. draft report submitted to City of Pullman, [84] p.
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Construction
- Decommission

ORIGINAL INSTALLATION Notice of Intent Number WE06926

PROPOSED USE: □ Domestic □ Industrial □ Municipal
□ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: □ Reconditioned □ Dug □ Bored □ Driven
□ Deepened □ Liner installed □ Cable □ Rotary
□ Perforated: □ Yes □ No
□ Diameter of well 20 inches, drilled 790 ft.
□ Depth of completed well 790 ft.

CONSTRUCTION DETAILS
□ Casing: □ Welded 24" Diam. from 0 ft. to 100 ft.
□ Installed: □ Liner installed 24" Diam. from 100 ft. to 200 ft.
□ Perforated - □ Diameter of well 20" from 200 ft. to 790 ft.
□ Screen: □ Yes □ No □ K-Pac Location
□ Manufacturer's Name: John
□ Type: Louve Model No.
□ Diam. Slot size 50 from ft. to ft.
□ Grade/Filter packed: □ Yes □ No
□ Surface Seal: □ Yes □ No □ To what depth? 250 ft.
□ Material used in seal: Cement
□ Did any strata contain unusable water? □ Yes □ No
□ Type of water? □ N/A
□ Method of sealing strata off

PUMP: Manufacturer's Name
□ Type: _______________ H.P.

WATER LEVELS: Land-surface elevation above mean sea level 5 ft.
Static level 252 ft. below top of well Date 10/28/07
Anesian pressure ___ lbs. per square inch Date __________
Anesian water is controlled by __________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? □ Yes □ No If yes, by whom? Donald Williams

Yield: 1800 gal/min. with 15 hr. drawdown after 24 hrs.
Yield: gal/min. with hr. drawdown after hrs.
Recovery data (time taken in zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level
1:00 269.1 1:20 269.1 1:51 269.06
1:10 269.0 1:30 269.1 2:00 269.06
1:15 269.1 1:40 269.1 2:10 269.0

Date of test 10/29/07
Bailor test gal/min. with hr. drawdown after hrs.
Air test gal/min. with stem set at ft. for hrs.
Anesian flow g.p.m. Date
Temperature of water __________ Was a chemical analysis made? □ Yes □ No

WELL CONSTRUCTION CERTIFICATION: I, the undersigned, do hereby certify that the well was constructed in accordance with all applicable codes, standards, and regulations, and that the well was constructed in a safe and workmanlike manner.

Driller □ Engineer □ Trainee Name (first) Rodney Ederer
Driller/Engineer/Trainee Signature ____________________________
Driller or trainee License No. 663
IF TRAINEE: Driller’s License No.
Driller’s Signature: ____________________________

EICY 050-1-20 (Rev 4/07)

CURRENT
Notice of Intent No. WE06926
Department of Ecology
Unique Ecology Well ID Tag No. RAN 158
Water Right Permit No.

Property Owner Name City of Pullman
Well Street Address 533 SE Derby St.
City Pullman County Whitman
Location SW1/4 Sec 1 Twn 1 N R 45E (s, t, r Still REQUIRED)

Lat/Long Lat Deg ___ Lat Min/Sec ___
Long Deg ___ Long Min/Sec ___
Tax Parcel No. (Required) 11150 00 04 03 000

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL FROM TO
Clay Brown 0 10
Clay Gray 10 80
Clay & Rock Brown & Gray 80 85
Rock Brown & Gray 85 90
Rock Gray Hard 90 210
Rock & Clay Gray 210 220
Rock Clay & Gray 220 240
Rock & Clay Gray 240 245
Rock Clay & Gray 245 250
Rock Gray 250 252
Rock & Clay Gray 252 278
Rock Black 278 280
Rock Hard Black - - - 280 285
Rock Vascular Black 327 355
Rock Black Hard 355 405
Basalt Dark Gray Broken 405 420
Basalt Dark Gray Hard 420 438
Basalt Gray & Green Some Pier 438 441
Basalt Dark Gray Vascular 441 449
Basalt Dark Gray Hard 449 455
Basalt Gray & Green Some Pier 455 464
Basalt Dark Gray Hard 464 502
Basalt Broken 502 516
Basalt Flow Top Vascular Bia 516 520
Basalt Broken 520 555
Basalt Flow Top Vascular 555 568
Basalt Broken 568 580
Flow Top Badly Broken Gray 580 610
Basalt Broken Gray 610 654
Flow Top Badly Broken Gray 654 720

Start Date 07/03/07 Completed Date 11/15/07

Drilling Company Boart Longyear Company
Address 19700 SW Teton Ave
City, State, Zip Tualatin, OR, 97062
Contractor’s Registration No. BOARTLC055PZ Date 12/2007

EcoL is an Equal Opportunity Employer
WATER WELL REPORT
Original & 1" copy - Ecology, 2" copy - owner, 3" copy - driller

Construction/Decommission ("x" in circle)
□ Construction
□ Decommission

ORIGINAL INSTALLATION
Notice of Intent Number WE06926

PROPOSED USE: □ Domestic □ Industrial □ Municipal
□ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK: Owner's number of well (if more than one)
□ New well □ Reconditioned Method: □ Deg □ Bored □ Driven
□ Deepened □ Cable □ Rotary □ Jotted

DIMENSIONS: Diameter of well ___ inches, drilled ___ ft.
Depth of completed well ___ ft.

CONSTRUCTION DETAILS
Casing: □ Welded ___ Diam. from ___ ft. to ___ ft.
□ Liner installed ___ Diam. from ___ ft. to ___ ft.
□ Threaded ___ Diam. From ___ ft. to ___ ft.

Perforations: □ Yes □ No
Type of perforator used

SIZE of perfor in. by in. and no. of perfor from ___ ft. to ___ ft.

Screens: □ Yes □ No □ K-Pac Location

Manufacturer's Name

Type: ___ Model No.
Diam. ___ Slot size ___ from ___ ft. to ___ ft.
Diam. ___ Slot size ___ from ___ ft. to ___ ft.

Gravel/Filter packed: □ Yes □ No Size of gravel/hand
Materials placed from ___ ft. to ___ ft.

Surface Seal: □ Yes □ No To what depth? ___ ft.

Material used in seal

Did any strata contain unusable water? □ Yes □ No
Type of water: ___ Depth of strata ___ ft.

Method of sealing strata off

PUMP: Manufacturer's Name

Type: ___ H.P.

WATER LEVELS: Land-surface elevation above mean sea level ___ ft.
Static level ___ ft. below top of well Date ___
Artisan pressure ___ lbs. per square inch Date ___
Artisan water is controlled by ___ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? □ Yes □ No if yes, by whom?
Yield: ___ gal/min. with ___ ft. drawdown after ___ hrs.
Yield: ___ gal/min. with ___ ft. drawdown after ___ hrs.
Yield: ___ gal/min. with ___ ft. drawdown after ___ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well

top to water level)
Time Water Level Time Water Level Time Water Level

Date of test ___

Bail test: ___ gal/min. with ___ ft. drawdown after ___ hrs.
Air test: ___ gal/min. with steam set at ___ ft. for ___ hrs.

Artesian flow ___ p.m. Date ___

Temperature of water ___ Was a chemical analysis made? □ Yes □ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well
construction standards. Materials used and the information reported above are true to my best knowledge and belief.

□ Driller □ Engineer □ Trainee Name (print) Rodgney Erler
Driller/Engineer/Trainee Signature

Driller or trainee License No. 663

IF TRAINEE: Driller's License No:
Driller's Signature:

ECY 050-1-20 (Rev 4/07)

CURRENT

Notice of Intent No. WE06926

Unique Ecology Well ID Tag No. BAN 158

Water Right Permit No.

Property Owner Name City of Pullman

Well Street Address 533 SE Derby St.

City Pullman County Whitman

Location SW1/4 NW1/4 Sec 5 Twn 14N R 15E

(s, t, r still required) EWM □

Lat/Long Lat Deg ___ Lat Min/Sec ___
Long Deg ___ Long Min/Sec ___

Tax Parcel No. (Required)

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and
nature of the material in each stratum penetrated, with at least one entry for each change
of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO
Basalt & Clay Gray 720 723
Basalt Broken Gray 723 726
Clay & Sand Cemented Gray Bro 726 740
Sands Cemented & Clay Gray 740 744
Basalt Gray Broken Some Vasic 744 746
Basalt Broken Gray 746 754
Gravel Some Cemented Mix Colo 754 785
Gravel, Large Sand, Mix Color 785 797

-----------------------------
Blank Liner 290 327
Leuvered Screen 327 367
Blank Liner 367 407
Leuvered Screen 407 487
Blank Liner 487 517
Leuvered Screen 517 537
Blank Liner 537 557
Leuvered Screen 557 577
Blank Liner 577 582
Leuvered Screen 582 712
Blank Liner 712 752
Leuvered Screen 752 792
5 FT Sump 792 797

-----------------------------

DEC 11 2006

Drilling Company Boat Longyear Company
Address 19700 SW Teton Avenue
City, State, Zip Tualatin OR, 97062
Contractor's Registration No. BOARTLCOS55Z Date 12/2007

Ecology is an Equal Opportunity Employer
MATCHLINE FIGURE 3A

NOTES:
1. TOTAL DEPTH OF BOREHOLE = 793 FT BGS
2. TOTAL DEPTH OF 16-INCH DIAMETER WELL LINER = 794 FT
3. LOUVERED CASING IS 5/16 INCH THICK STEEL WITH 3-INCH LINING SLOTS, 2 1/2 INCH WIDE, 120 SLOTS PER FOOT
4. BLANK CASING IS 3/8 INCH THICK STEEL.
INTRODUCTION

Pullman Well No. 8 was established in Pullman, Washington (Figure 1) during the fall of 2007. The well is located east of the intersection of Spring and Derby streets, near a city reservoir tank (¼ S.W., ¼ S.W., S. 5, T. 14. N., R. 45 E.). The surface elevation at the well head is approximately 2513 feet. The hole was drilled by Boart Longyear Company, Geo-Tech Division of Tualatin, Oregon under contract to the city of Pullman. Part-time drilling oversight was provided by Golder Associates Inc. A report (Holom and others, 2008) on the well contains a detailed lithologic log. The following report on regional geologic aspects was submitted to Golder, the city of Pullman, and the Palouse Basin Aquifer Committee and focuses on the comparison of basalt units in Well No. 8 to basalt sequences encountered at nearby wells in Pullman and in Moscow, Idaho.

The city of Pullman is located a few miles west of an eastern border of the Columbia River flood-basalt province that consists of interlayered Miocene basalt and sediment of the Columbia River Basalt Group (CRBG). This group has been subdivided into numerous members, sequences, and flows (Figure 2). The CRBG exceeds 2200 feet in thickness at WSU Well No. 7 and 793 feet of the upper part of this sequence was penetrated at Pullman Well No. 8.

Samples collected every five feet were washed, examined, and sorted. Selected samples of basalt were processed for major oxide and trace element chemistry (Table 1) using x-ray diffraction (XRF) techniques at the Washington State University GeoAnalytical laboratory. The purpose of the analyses was to differentiate the basalt
Figure 1. Location Map for Pullman and WSU wells.
flows in Well No. 8 and compare them to the basalt in surrounding wells. Existing chemical data and drill logs from Pullman wells 5 and 7, WSU wells 6 and 7, the Pullman Test and Observation well, UI Well No 3 and the Moscow monitoring wells (Tables 2-15) were used for well to well correlations. Although sequence chemistry was not done for WSU No. 8; the well is illustrated in figure 5, because it is one of the most recent deep wells drilled in the Pullman area.

Sequence subdivision of CRBG basalt and the determination of the stratigraphic position of individual flows by chemical analyses has been standard geologic practice since the early 1970’s (Reidel and Hooper, 1989). Brown (1976) showed that chemical sequences from well chips could be correlated from Moscow to Pullman. Chemical data for the area has continued to be collected and additional correlations between wells in the area have been made (Bush and others, 2001; Bush and Garwood, 2003; Bush, 2006).

The ability to fingerprint sequences and individual flows has improved as analytical techniques have become more precise and additional data has come available. Reidel (2005) has recently shown that chemistry can be used for the upper portion of the Grande Ronde to determine whether or not an individual flow was sourced in Spokane, Washington or the Grande Ronde area to the south. These types of determinations should be of great benefit in the reconstruction of the Pullman subsurface.

For this report correlations were done by visual comparison, computer assisted diagrams of oxide ratio’s were not utilized. However, some important preliminary correlations and comparisons were possible and these are presented herein. Additional work could be done with the existing data and it is recommended that a specialist in
Columbia River Basalt stratigraphy review and refine the correlations presented in this report.

**BASALT UNITS**

The CRBG in the Pullman-Moscow area has been subdivided into several sediment and basalt units (Figure 2). In Pullman Well No. 8 the Wanapum Basalt was encountered between 52-212 feet and the Grande Ronde Basalt between 250-793 feet in depth. The Wanapum has been subdivided into several members each of which contains more than one flow.

In Pullman, the Priest Rapids Member is present at all wells and outcrops that have been examined (Hooper and Webster, 1982; Brown, 1976; Bush and others, 2001). The Priest Rapids forms the uppermost part of the Wanapum which thickens westward were it is underlain by the other members. In Colfax, the Wanapum consists of the Priest Rapids and the underlying Roza Member. In the Pullman area the Priest Rapids Member consists of at least two flows or flow units although continuous non-vesicular basalt comprising one flow is most common. Only two small basalt outcrops of the Grande Ronde have been identified in Pullman and all other outcrops are believed to belong to the Priest Rapids Member of the Wanapum Formation.

The Grande Ronde Basalt has been regionally subdivided into four magnetostratigraphic units (Figure 2) and from the bottom up these have been referred to as the R1, N1, R2, and N2. Such a subdivision requires collecting oriented samples from outcrops. Sequence chemistry and measured sections have been used to correlate these magnetic units and further subdivide them into members, sequences and individual flows.
(Reidel and others, 1989). Figure 3 illustrates the subdivision of the upper Grande Ronde which is important for the Pullman area.

The Grande Ronde in nearby WSU Well No. 7 is approximately 1750 feet thick and all four magnetostratigraphic units are present (Bush and Garwood, 2003). At Pullman No. 8 the Grande Ronde consists primarily of N2 and R2 basalt and the well was completed in a gravel unit considered to be near the boundary of the R2 and underlying N1. The approximate boundaries of these units were correlated to Pullman Well No. 7 completed in 2000 (Figure 4). Additional correlations were made to other wells in both Pullman (Figure 5) and Moscow (Figure 6).

Most deep production wells in Pullman were completed near the base of the R2 or the upper part of the N1. A major portion of the R2 at Pullman No. 8 consists of the basalt of Wapshilla Ridge which can be correlated between wells and to Moscow. In Pullman these flows are often very vesicular, vuggy, highly fractured and contain abundant zeolites. Within this sequence one flow may be a marker horizon (Figure 6) that can also be detected in Moscow.

The N2 flows at Pullman No. 8 belong to the Sentinel Bluffs Member. Reidel (2005) subdivides this member into several flows (Figure 3) and notes that some originated from Spokane as well as the Grande Ronde area to the south. In addition, some of these flows mixed just west of Pullman and then flowed further west into the Pasco area. Preliminary comparison of local data to Reidel’s work lead to some important findings.

One conclusion drawn is that the basalt of Stember Creek can be detected in well 8 and correlated to wells in Moscow. However, the flows above and below this basalt in well 8 were not detected in the Moscow wells. This eastward thinning of the N2 flows is
Figure 2. Stratigraphic units of the Columbia River Basalt Group, Palouse Basin, Idaho-Washington.
Figure 3. Subdivision of the upper Grande Ronde Basalt by Reidel (2005).
Figure 4. Stratigraphic correlations between Pullman wells 7 and 8.
Figure 5. Stratigraphic cross-section one - Comparison of Pullman Well No. 8 to other Pullman and WSU wells.
Figure 6. Stratigraphic cross-section two - Comparison of Pullman Well No. 8 to Pullman Test Well and Moscow, Idaho wells.

Correlations were based primarily on visual comparisons of chemical sequences, without ratio diagrams. Also some of the information was from 35 year old chemical data. Correlations should be considered to be a framework for thinking and future refinement. Horizontal not to scale.

- Location of possible marker flow

Correlations by John H. Bush Sept. 2008
one of the causes of an eastward dip of the upper surface of the Grande Ronde into Moscow. The basalt of Stember Creek makes up the uppermost Grande Ronde at UI No. 3, the Moscow monitoring wells and to the north at Palouse, Washington.

A second conclusion about the N2 is that it consists of some flows that sourced in the Grande Ronde area and some flows that sourced in Spokane. They flowed into Pullman with different primary dips and the author believes these dips play a role in controlling regional groundwater movement.

Some specific stratigraphic conclusions were made from this work. The water level at the Pullman test and observation well (Ecology well) is a composite of N1, R2 and N2 Grande Ronde flows. In Moscow, one monitoring well was completed in the Stember Creek Flow which is one of the water sources in Moscow and Pullman. The deepest monitoring well was completed in the very upper part of the Wapshilla Ridge flows which are also sources of major water production in both Moscow and Pullman.

SEDIMENTARY UNITS

Two major sedimentary units (interbeds) of the CRBG were encountered during the drilling of Pullman Well No 8 (Figure 4). The upper sedimentary unit separates the Wanapum from the Grande Ronde Basalt and occurs between 212 and 250 feet. The lower sedimentary layer occurs at the bottom of the well between 720 and 793 feet. Both interbeds contain thin (<10 feet) intervals of basalt which are most likely invasive in origin.

Stratigraphic terminology for interbeds in the GRBG is at times confusing. In this case the units can be informally called “Latah beds” of the Latah Formation. The
uppermost interbed, which separates the Wanapum and Grande Ronde formations, has been traced over long distances and has been named the Vantage Member (Siems and others, 1974). In places, the Vantage is included in the Wanapum Formation.

The Vantage in Well No. 8 consists primarily of green and gray clay interlayered with black and brown siltstone. Correlation to other Pullman wells shows that this unit ranges from <1 to over 70 feet in thickness. In the early development of Pullman this interval was a source of water for the city, but presently it only provides water for some local domestic wells. Water levels from wells in the Vantage are similar to those in the overlying basalt and it is considered to be part of the Wanapum aquifer. In Moscow, this interbed exceeds 250 feet in thickness and is a major source of public and domestic water.

The lowermost interbed in well 8 consists of interbedded siltstone, sandstone, and gravel. Components of the gravel range from granule to cobble in size and are primarily basaltic in composition, although a few pebbles of quartzite and two granitic granules were noted. Most of the components are sub-rounded to rounded, but flat well rounded gravel is rare. Most of the components are very vesicular and contain very angular edges.

Examination of the overlying basalt chemistry indicates that the lowermost interbed is located at the approximate boundary of the N1 and R2 magnetostratigraphic units of the Grande Ronde Formation. Pullman Well No. 7 and WSU No. 8 were completed in the same interbed unit. Although sequence chemistry was not done on WSU No. 8, four samples of the gravel were analyzed and they closely compare to the chemical data (Tables 14 and 15) of gravel collected from Pullman No 8.
COMMENTS ON PALEOGEOEMORPHIC HISTORY

Certain aspects of the Pullman-Moscow geologic history are important to understanding the present groundwater pattern. When a new deep well is drilled and chemical data is collected additional refinement of the geologic history will occur. The location of past major drainages and source areas for individual flows or flow sequences has an influence on later groundwater storage and movement. Following is an outline of events as now understood with modifications made from Well No. 8 data. The events begin with the advent of the first flow at about 17 m.y. ago and ends after the emplacement of the Wanapum approximately 14.5 m.y. ago.

The drainage in crystalline non-volcanic rocks before the first basalt flow entered into Pullman is believed to have been westward from Moscow to Pullman and then further west to Pasco. The first flows of the CRBG sourced out of the Grande Ronde area to the south and southwest of Pullman. These flows blocked and filled the drainages from the Pullman-Moscow area as over 1000 feet of basalt was emplaced into the area before the gravel in well 8 was deposited. There is no evidence that a Snake or Clearwater drainage existed at this time southwest of Pullman. The interpretation is that the west flowing drainages were pushed to the north and northwest.

The gravel in well 8 indicates some sort of stream activity. The abundance of vesicular basalt and the lack of very flat pebbles suggest the stream did not exist for a long period of time. However, the fairly well sorted quartz sand and rare quartzite pebbles do not rule out the presence of a stream large enough to have exited the area towards Colfax. Basalt gravel has been noted at the base of approximately 800 feet of Grande Ronde in Colfax. The stratigraphic position of this gravel unit is unknown, but if
they are connected to the gravels in Pullman a potential groundwater “leak” from Pullman would be possible.

It is clear that some sort of interlayering of flows sourcing from both the north and south of Pullman occurred after the deposition of the gravels. This process of emplacement produced stacked flows with different regional dips which could easily produce groundwater mixing from different source areas.

Several N2 flows pinch out between Moscow and Pullman and they should have many flow end features including considerable fracturing and vesicular zones with eastward dipping contacts. Relative to the timing of the Grande Ronde flows there was an extensive period of time between the emplacement of the last N2 flow and the first Priest Rapids Basalt. A clay rich saprolite developed on top of the Grande Ronde and it is believed that the drainage was to the northwest out of Fourmile gap or north towards Palouse. The thinning of the N2 is the probable eastward dipping upper Grande Ronde surface into Moscow as illustrated in Figure 6.

The Wanapum Basalt continued to block westward flowing drainages and created thick sedimentation in Moscow, where these post Grande Ronde units form a major source of water. The drainage out of the basin at that time was probably to the northwest. It is unclear when drainages returned to discharge west out of Pullman via the South Fork of the Palouse as they do at the present.
SUMMARY

The major findings from examination of the drill chips from Pullman Well No. 8 are as follows:

1) The well was completed in a gravel unit that correlates to the same stratigraphic position in which WSU No. 8 and Pullman No. 7 were completed.

2) The gravel at the bottom of Well No. 8 is near the approximate boundary of the R2 and underlying N2 magnetostratigraphic members of the Grande Ronde.

3) The upper N2 flows in the Pullman area thin eastward and in part are responsible for the eastward dipping upper Grande Ronde surface.

4) The basalt of Wapshilla a subdivision of R2 can be correlated to all local wells including wells in Moscow.

5) Stratigraphic correlations can be made from well 8 to the monitoring wells in Moscow.

6) The chemical data shows that some of the upper Grande Ronde flowed to the area from the south and some from the Spokane area. Comparisons of the chemical data to the literature show that some of these flows mixed just west of Pullman and further work on this aspect is recommended.

7) There was a drainage change from west to the northwest during the emplacement of the basalt sequence; there is the possibility that Colfax and Pullman were directly connected during the deposition of the gravel and sand sequence in Well No. 8.
REFERENCES CITED


Hooper, P.R., and C.D. Webster, 1982, Geology of the Pullman, Moscow West, Colton, and Uniontown 7 ½ minute quadrangles, Washington and Idaho: State of Washington, Department of Natural Resources, Division of Geology and Earth Resources, Geologic Map GM-26, scale 1:62,000, one sheet.


Figure 7. Structural Contour Map of the top of the Grande Ronde Basalt superimposed on a physiographic map of the Palouse Basin (contour interval=50 feet).
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Based on well head elevation 2520'
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| A           | 2265       | 255        | 20 | 64 | 39 | 349 | 513 | 20 | 280 | 177 | 37 | 12.1 | 20 | 41 | 128 | 5 | 26 | 49 | 4 | 26 | 2 |
|             | 2252       | 268        | 15 | 56 | 39 | 334 | 474 | 17 | 285 | 165 | 34 | 11.1 | 20 | 39 | 121 | 6 | 22 | 44 | 4 | 26 | 1 |
|             | 2215       | 305        | 13 | 46 | 37 | 325 | 488 | 24 | 310 | 155 | 32 | 9.9 | 19 | 36 | 114 | 5 | 22 | 41 | 3 | 23 | 2 |
|             | 2160       | 360        | 25 | 83 | 39 | 324 | 464 | 25 | 312 | 144 | 31 | 8.5 | 19 | 58 | 109 | 5 | 22 | 38 | 2 | 22 | 0 |
|             | 2110       | 410        | 28 | 95 | 38 | 329 | 466 | 24 | 313 | 141 | 31 | 9.3 | 18 | 67 | 108 | 4 | 17 | 37 | 3 | 22 | 2 |
|             | 2055       | 465        | 29 | 117 | 39 | 323 | 472 | 26 | 308 | 139 | 30 | 9.2 | 18 | 62 | 105 | 5 | 18 | 36 | 3 | 21 | 1 |
|             | 2005       | 515        | 26 | 91 | 37 | 327 | 504 | 29 | 304 | 147 | 31 | 9.2 | 19 | 55 | 105 | 6 | 18 | 39 | 3 | 22 | 1 |
| B           | 1975       | 545        | 20 | 21 | 35 | 428 | 656 | 35 | 333 | 177 | 36 | 12.4 | 21 | 45 | 125 | 8 | 24 | 53 | 5 | 27 | 2 |
|             | 1945       | 575        | 13 | 10 | 33 | 409 | 725 | 46 | 323 | 199 | 39 | 11.5 | 19 | 33 | 134 | 8 | 30 | 56 | 4 | 32 | 2 |
|             | 1900       | 620        | 12 | 11 | 33 | 409 | 714 | 46 | 321 | 197 | 39 | 12.1 | 21 | 32 | 135 | 9 | 27 | 59 | 5 | 33 | 0 |
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| C           | 1775       | 745        | 6  | 14 | 37 | 361 | 585 | 34 | 327 | 163 | 37 | 9.4 | 20 | 35 | 123 | 6 | 21 | 43 | 4 | 27 | 0 |
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Based on well head elevation 2520'
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Based on well head elevation of 2414'

Additional analyses from 1080-2210' depth were not included
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Table 10 - Major Oxides - Palouse #2

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Based on well head elevation of 2559'
Table 14 - Major Oxides - WSU Well #8

<table>
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<th>Elev. (ft)</th>
<th>Depth (ft)</th>
<th>SiO₂</th>
<th>Al₂O₃</th>
<th>TiO₂</th>
<th>FeO</th>
<th>MnO</th>
<th>CaO</th>
<th>MgO</th>
<th>K₂O</th>
<th>Na₂O</th>
<th>P₂O₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>1845</td>
<td>755</td>
<td>54.39</td>
<td>14.01</td>
<td>2.096</td>
<td>12.28</td>
<td>0.209</td>
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<td>4.13</td>
<td>1.36</td>
<td>3.05</td>
<td>0.372</td>
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<tr>
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<td>763</td>
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<td>0.216</td>
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<td>3.14</td>
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<td>1.46</td>
<td>3.09</td>
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</table>

Based on well head elevation 2600'
<table>
<thead>
<tr>
<th>Elev. (ft)</th>
<th>Depth (ft)</th>
<th>Ni</th>
<th>Cr</th>
<th>Sc</th>
<th>V</th>
<th>Ba</th>
<th>Rb</th>
<th>Sr</th>
<th>Zr</th>
<th>Y</th>
<th>Nb</th>
<th>Ga</th>
<th>Cu</th>
<th>Zn</th>
<th>Pb</th>
<th>La</th>
<th>Ce</th>
<th>Th</th>
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<tbody>
<tr>
<td>1845</td>
<td>755</td>
<td>11</td>
<td>22</td>
<td>39</td>
<td>374</td>
<td>574</td>
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<td>327</td>
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<td>39</td>
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<td>22</td>
<td>30</td>
<td>122</td>
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<td>54</td>
<td>4</td>
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<td>22</td>
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<td>51</td>
<td>2</td>
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<td>1815</td>
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<td>23</td>
<td>35</td>
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<td>528</td>
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<td>321</td>
<td>156</td>
<td>36</td>
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<td>115</td>
<td>11</td>
<td>54</td>
<td>29</td>
<td>2</td>
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</table>

Based on well head elevation 2600'
# Pullman Disposal Well

## Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, August 13, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>171687</th>
<th>Elev (ft):</th>
<th>2311</th>
<th>Depth (ft):</th>
<th>111</th>
<th>Quad:</th>
<th>Pullman</th>
</tr>
</thead>
</table>

Latitude: 46.74595
Longitude: -117.19918

| ¼, SW ¼, NW ¼, Sec. 31 | T. 15 N | R. 45 E |

**Well Address and (or) Other Location Information:**

Hayward Road, Pullman, Wash., at end of lane that extends about 0.2 mi north off road to the former city dump/landfill

**Location Method:**

Approximate latitude, longitude, and elevation from Moxley (2012, p. 73, well CS-10). PLSS subdivisions incorrect and "Disposal" misspelled on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>0</td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td>19</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>24</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>32</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>47</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>78</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>86</td>
</tr>
</tbody>
</table>
Comments:

Hayward Road is the former Old City Dump Road (see Sorenson, 1996).

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Pullman Disposal  Address: Pullman

LOCATION OF WELL: County: GRAYS HARBOR

(3) PROPOSED USE: Domicile ☑ Industrial ☐ Municipal ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ☐


(6) CONSTRUCTION DETAILS:

Casing installed: 8″ Diam. from 1 ft. to 29 ft.

Threaded ☐ Welded ☐

Perforations: Yes ☑ No ☐

Type of perforator used:

SIZE of perforations: in. by in.

perforations from ft. to ft.

Gravel packed: Yes ☑ No ☐

Size of gravel:

Gravel placed from ft. to ft.

Surface seal: Yes ☑ No ☐ To what depth? 29 ft.

Material used in seal:

Did any strata contain unusable water? Yes ☐ No ☐

Type of water: Depth of strata:

Method of sealing strata off:

(7) PUMP:

Manufacturer's Name:

Type:

H.P.:

(8) WATER LEVELS:

Land-surface elevation above mean sea level: ft.

Static level: 55 ft. below top of well Date: 6/3/1988

Artesian pressure lbs. per square inch Date:

Artesian water is controlled by:

(Cap, valve, etc.)

(9) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☑ No ☐ ft. yes. by whom?

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
</table>

Date of test

Well test: 100 ft gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m. Date

Temperature of water

Was a chemical analysis made? Yes ☑ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERBURDEN</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>AEREN BASALT</td>
<td>19</td>
<td>24</td>
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<tr>
<td>BASALT FORM</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>FRACT BASALT</td>
<td>32</td>
<td>47</td>
</tr>
<tr>
<td>BASALT FORM</td>
<td>41</td>
<td>52</td>
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<td>BASALT</td>
<td>52</td>
<td>78</td>
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<tr>
<td>BASALT</td>
<td>78</td>
<td>111</td>
</tr>
</tbody>
</table>


DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Roger Witt

Address: R.I. I. Box 97 Juliaetta, Idaho

[Signed] Roger Witt

License No. 0633 Date: July 5, 1988

(USE ADDITIONAL SHEETS IF NECESSARY)
# PULLMAN GARDEN ACREAGES WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, February 8, 2018

Well Log ID: 1592908  
[Well Tag ID: BIU721]

<table>
<thead>
<tr>
<th>Well Address and (or) Other Location Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>71, 81 or 91 Warren Road, Pullman, Wash.; on north side of Kitzmiller Road, opposite driveway to 1601 Kitzmiller Road;</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Location Method:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location is for well, west of well house; Whitman County Assessor; Google Earth imagery; topographic map; incorrect subsections recorded by driller; site visit March 30, 2018 and verified well tag ID</td>
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</tbody>
</table>

## GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>From 3 – 25</td>
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<tr>
<td>Wanapum Basalt Member</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
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<tr>
<td>Basalt</td>
<td>From 25 – 155</td>
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<tr>
<td>Latah Formation</td>
<td></td>
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<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>From 155 – 175</td>
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<tr>
<td>Grande Ronde Basalt</td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
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<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 175 – 267</td>
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<tr>
<td>R2 magnetostratigraphic unit(?)</td>
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<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft, black and red</td>
<td>From 267 – 330</td>
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<tr>
<td>Basalt</td>
<td>From 330 – 345</td>
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<tr>
<td>Basalt, soft</td>
<td>From 345 – 385</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 385 – 400</td>
</tr>
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</table>
Comments:

Whitman County Tax Parcel 200004515286911, 71 WARREN RD, PT N 1/2 TRACT B PULLMAN GARDEN ACREAGES, LLC KITZMILLER CLUSTER "C"; owner is PULLMAN GARDEN ACREAGES LLC, 18 CRESCENT KEY, BELLEVUE WA; 7.40 acres.

Other possible parcels include:

Whitman County Tax Parcel 200004515286912, 81 WARREN RD, PT N 1/2 TRACT C PULLMAN GARDEN ACREAGES, LLC KITZMILLER CLUSTER "C"; owner is PULLMAN GARDEN ACREAGES LLC, 18 CRESCENT KEY, BELLEVUE WA; 5.05 acres.

Whitman County Tax Parcel 200004515286910, 91 WARREN RD, PT N 1/2 TRACT A PULLMAN GARDEN ACREAGES, LLC KITZMILLER CLUSTER "C"; owners are now MINTEER, TIMOTHY & DORIS, 745 SW MIES ST, PULLMAN; 7.22 acres; 04/25/18: grantor was PULLMAN GARDEN ACREAGES LLC to MINTEER, TIMOTHY & DORIS; 7/27/2018: building permit for NEW HOME 2194SF MAIN FL 1448SF 2ND STORY AND 722SF ATTACHED GARAGE BOBO CONSTRUCTION.
# corrected - Amended
tag name

**CURRENT**

Notice of Intent No. W695507

Unique Ecology Well ID Tag No. Blu '71

Water Right Permit No.

Property Owner Name: Pullman Garden Acreage

Well Street Address: Klamath Rd

City: Pullman

County: Whitman

Location: NW4-1/4 Sec. 26 T26N R45 EWM 2

Or

WWM 0

Lat/Long

Lat Deg 45 Min 31 Sec

Long Deg 118 Min 6 Sec

Tax parcel No. (Required) 20000451592810400

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of material. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL**

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<td>345</td>
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<tr>
<td>385</td>
<td>400</td>
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</table>

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? □ Yes □ No

If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test

Bailer test: gal./min. with ft. drawdown after hrs.

Airest: gal./min. with stem set at 400 ft. for hrs.

Artesian flow: g.p.m. Date

Temperature of water 50°F. Was a chemical analysis made? □ Yes □ No

**RECEIVED**

JUL 26, 2017

Department of Ecology

Eastern Regional Office

Start Date 9-28-16 Completed Date 9-29-16

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

□ Driller □ Engineer □ Trainer Name (Print) Brett Ulynnoff

Driller or Engineer's License No. 2068

Drilling Company: Brett Ulynnoff Drilling

Address: 607 NE 23rd

City, State, Zip: Daltonville, ID 83523

Contractor's Certification (If applicable) 10-353-6

Registration No. Date 10-353-6 11-15-10

**ECY 050-1-20** (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-333-4451.
**Geologic Interpretation of Water Well Driller’s Log**

By John H. Bush, March 16, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>450803</th>
<th>Elev (ft):</th>
<th>2550 ±10</th>
<th>Depth (ft):</th>
<th>380</th>
<th>7.5’</th>
<th>Quad: Moscow West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.747689</td>
<td>Longitude:</td>
<td>-117.099474</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
7100 Airport Complex North, Pullman, Wash., on southeast side of Pullman Airport Road;
Schweitzer Engineering

Location Method:
Location is approximate; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 15</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>15 – 146</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>146 – 157</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>157 – 217</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>217 – 229</td>
</tr>
<tr>
<td>Basalt</td>
<td>229 – 267</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Basalt, red, vesicular</td>
<td>267 – 283</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>283 – 364</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>364 – 371</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>371 – 380</td>
</tr>
</tbody>
</table>

**Comments:**

The identification of the Grande Ronde Basalt units is based on good correlations of thicknesses and elevations to the DOE Pullman Observation and Test Well approximately 1 mi to the southeast.

Whitman County Tax Parcel 815570000000010; 7100 AIRPORT COMPLEX, PULLMAN; PULLMAN-MOSCOW AIRPORT IMP ONLY; owner now is SCHWEITZER ENGINEERING LABORATORIES INC; CONSTRUCT A NEW 2 STORY 1800-SF TERMINAL ADDITION TO HANGER, 9/17/2015.

**References Cited:**
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name

(2) LOCATION OF WELL: County

(3) PROPOSED USE:

(4) TYPE OF WORK:

(5) DIMENSIONS:

(6) CONSTRUCTION DETAILS:

(7) PUMP: Manufacturer's Name

(8) WATER LEVELS:

(9) WELL TESTS:

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

FORMATION: Description by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL FROM TO
CLAY 0 1
BASALT - MED. GRA. 15 14.6
CLAY 14.6 15.7
BASALT - MED. 15.7 21.7
BASALT - WEATH. 21.7 42.9
BAS - MED. 42.9 212
BAS - RED VEINULAR 212 383
BAS - GRA MED HARD 383 364
BAS - GRA HARD 364 371
BAS - GRA HARD 371 380

RECEIVED
FEB 25 2000

DEPARTMENT OF ECOLOGY

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME McPherson, Durrell

Address 2301 W. 15th St.

Contractor's Registration No. 13501

Date 01-04-98

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6005.
Ralph Naylor Farms Well
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 20, 2016

Well Log ID: NA Elev (ft): 2677.35 Depth (ft): 470 7.5’ Quad: Robinson Lake

Latitude: 46.779125 Longitude: -116.982478 decimal degrees (WGS84)

NE ¼, NE ¼, SE ¼, Sec. 29, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
Foothill Road, Moscow, Idaho, on west side of road

Location Method:
Latitude, longitude, and elevation from Badon (2007, p. 129); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, with quartz grains</td>
<td>0</td>
</tr>
<tr>
<td>Clay, with silt, sand, and gravel</td>
<td>20</td>
</tr>
<tr>
<td>Sand, with clay, silt, and gravel, overall very coarse-grained</td>
<td>86</td>
</tr>
<tr>
<td>Clay, white and gray, upper part contains granule- to pebble-conglomerate and granite clasts.</td>
<td>133</td>
</tr>
<tr>
<td>Sand, medium-grained, quartzite pebbles, some clay</td>
<td>158</td>
</tr>
<tr>
<td>Clay, black</td>
<td>188</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>190</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, medium-grained, some clay, and organics</td>
<td>273</td>
</tr>
<tr>
<td>Clay, laminated</td>
<td>289</td>
</tr>
<tr>
<td>Clay, silty, lithified sand (1 ft) at top</td>
<td>295</td>
</tr>
<tr>
<td>Sand, mostly coarse-grained, some clay, muscovite, biotite, iron concretions</td>
<td>307</td>
</tr>
<tr>
<td>Clay</td>
<td>364 – 367</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Gravel, pea- to gravel-sized, granite clasts, coarse sand, organic debris</td>
<td>367 – 376</td>
</tr>
<tr>
<td>Clay, dark, some sand</td>
<td>376 – 386</td>
</tr>
<tr>
<td>Sand and gravel, some clay</td>
<td>386 – 391</td>
</tr>
<tr>
<td>Silt and siltstone, organic-rich, fossil reeds</td>
<td>391 – 412</td>
</tr>
<tr>
<td>Sand, medium to coarse, clay supported</td>
<td>412 – 416</td>
</tr>
<tr>
<td>Gravel, pebbles of granite, quartz, and quartzite, with one 2-ft layer of fine sand</td>
<td>416 – 446</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Idaho Batholith</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Decomposed granite</td>
<td>446 – 470</td>
</tr>
</tbody>
</table>

**Comments:**

The geologic log was summarized from a log interpreted by George Grader (2011, fig. 5). The well was a cored hole and provides the best description of Latah sediments in the area. However, detailed examination was not performed by either John Bush or George Grader. Hand samples of the basalt were examined by John Bush, and they appeared to be from the Lolo flow, but no chemical identification was reported. The flow is near the eastern edge as verified by its thinning to 12 ft in the Adam Reed Well less than 500 ft to the east.

Latah County Tax Parcel RP40N05W291259, owner is NAYLOR, RALPH FARMS LLC.
References Cited:


Figure 5

(Extracted from Grader, 2011)

1488
Naylor backhoe pits dug to 25 ft were witnessed by Nesbit and Grader (field work, 2005) and other
diggings were made available to the public in 2006 by Naylor LLC. They represent mixed kaolinite-rich
clays and sands of depositional origin (i.e., sediments of Bovill, not bedrock basement as represented by
the gray pattern, and also confirmed by the well logs of Hosterman et al. (1960). However, in situ
degraded, weathered ‘Thatuna granodiorite’ is similar to and easily confused with transported sediments
comprising residual deposits of kaolin that contain potassium feldspar and quartz (Bijold et al., 2010 – in
discussion of similar sediments and basement on the flank of the Palouse Range near Bovill Idaho). In situ,
unweathered Thatuna granodiorite is favorable for the occurrence of primary deposits of sodium feldspar,
and quartz and the transported Latah Formation is favorable for the occurrence of transported kaolin and
quartz (Bijold et al., 2010). These authors note that the weathering of granodiorite [by warm, humid
lateritic soil processes in the Tertiary] may exceed 100 ft on ridges and 3ft in valleys in the Helmer-Bovill
area. This supports the hypothesis central to this report that paleovalleys would contain some cleaned
competent bedrock, against which mountain stream gravels and even granite talus would be in contact
with. Both types of sediment occur in rare drillers reports, although there exists an overall fundamental
confusion, or grey area between “weathered bedrock” and transported sediment.

Figure 5
Naylor well log described by P. Nesbit (pers. comm., 2005), interpreted by G. Grader. Shows fluvial fining-
upward cycles, lacustrine, swamp/bog and paleosol environments. Paleochannel cycle bases have coarse
sediment with probable porosity and permeability indicative of laterally and vertically stacked
transmissive facies in the Latah Formation. Large amounts of water were tested/ reported at this now
capped but not abandoned well head.

Figure 6.
Neogene to Quaternary time (after GSA, Geologic Timescale, 2009), modified to show local Moscow
geology, and regional events, processes, and climate change (modified after Bush and Garwood, 2005;

Figure 7
Conceptual cross-section and map of the Moscow area showing superimposed limits of the Latah
Formation and Columbia River basalts as they lap onto the basement to the east. Eastward dip of the
basalts is somewhat over-accentuated (but concept based on J.Bush, pers. com., 2005). Most early cross-
sections show Priest Rapids basalt flows as close to flat, as also suggested by R. Conrey (pers. com., 2011).
Note that measurable basalt flow tops and bottoms can vary locally (over 10s of yards laterally) by at least
30 ft, and should be variable a multiple scales. The sediments of Moscow (Fig 3C) occur below the
sediments of Bovill on the basement and occur as interbeds within basalts. The Vantage Member occurs
as a major interbed below the Wanapum and above the Grande Ronde formations. Inset square = Fairley
et al. (2006) deep well study interval, drilled and cored by rotary rig (enlarged in Figure 8).

(Extracted from Grader, 2011, p. 30)
**JONATHAN RASMUSSEN WELL**

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 13, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>616968</th>
<th>Elev (ft):</th>
<th>2570 ±10</th>
<th>Depth (ft):</th>
<th>255</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.697252</td>
<td>Longitude:</td>
<td>-117.198677</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well Address and (or) Other Location Information:</td>
<td>19991 WA 195, Pullman, Wash., on east side of road, house is at end of long lane/drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. Property straddles the NW¼ and SW¼ of sec. 18. Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 37</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>37 – 65</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>65 – 74</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>74 – 186</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>186 – 204</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>204 – 225</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>225 – 241</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>241 – 255</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514187900, W1/2 PT COPENHAVER SR 195 SHORTPLAT, 19991 SR 195, owner is now RASMUSSEN, SHAWNA; 4.2 acres, 1 story residence built in 2008; grantor was RASMUSSEN, JONATHAN on 07/26/16.

References Cited:
WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle)

- Decommission ORIGINAL INSTALLATION

Notice of Intent Number W219594

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other ☐

TYPE OF WORK: Owner's number of well (if more than one)

- New well ☐ Reconditioned ☐ Method: Deg. ☐ Bored ☐ Driven ☐ Deepened ☐
- Diameter of well 8 inches, d(8) = 255 ft. Depth of completion well 255 ft.

CONSTRUCTION DETAILS

- Casing: Yes ☐ No ☐
- Welded ☐ Diam. from 8 ft. to 43 ft.
- Installed: Yes ☐ No ☐
- Liner installed 6 in. Diam. from 15 ft. to 255 ft.
- Threaded ☐ Diam. from 6 in. to 15 in. ft.

Perforations:

- Yes ☐ No ☐
- Type of perforator used: SAW

SIZE: of perfor 1/4 in. by 12 in. and no. of perfor 60 from 15 ft. to 255 ft.

Gravel Filter packed:

- Yes ☐ No ☐
- Size of gravel-pack material placed from 1 ft. to 9 ft.

Surface Seal: BENTONITE

- Yes ☐ No ☐ To what depth? 43 ft.

Material used in seal:

- YES ☐ NO ☐

Did any strata contain unusable water?

- Yes ☐ No ☐

Type of water:

- Depth of strata

Method of sealing strata:

- OFF

PUMP: Manufacturer's Name:

- Type:

WATER LEVELS: Land surface elevation above mean sea level:

- ft. static level 174 ft. below top of well Date 7/2/08

- Artesian pressure lbs. per square inch Date

Artesian water is controlled by:

- (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made?

- Yes ☐ No ☐ If yes, by whom?

Yield:

- gal./min. with ft. drawdown after hrs.
- gal./min. with ft. drawdown after hrs.
- gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

- gage/min. with ft. drawdown after hrs.

Art test 14 gal./min. with stem set at 250 ft. for hrs.

Artesian flow g.p.m. Date

Temperature of water Was a chemical analysis made?

- Yes ☐ No ☐

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller ☐ Engineer ☐ Trainer ☐ Name (last) TED WRIGHT

Driller/Engineer/Trainer's Signature

Driller or trainer's License No.

If Trainee: Driller's License No.

Driller's Signature

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
ADAM REED WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 2, 2018

Well Log ID: D0067943  Elev (ft): 2690 ±10  Depth (ft): 200  Quad: Robinson Lake

Latitude: 46.77878  Longitude: -116.98035  decimal degrees (WGS84)


<table>
<thead>
<tr>
<th>Well Address and (or) Other Location Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3180 Foothill Road, Moscow, Idaho; east side of road.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location Method:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude and longitude from well driller’s report; Latah County Assessor; Google Earth imagery; topographic map</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Poor description</td>
<td>From 0 — To 14</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay and sand</td>
<td>From 14 — To 20</td>
</tr>
<tr>
<td>Clay</td>
<td>From 20 — To 40</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>From 40 — To 63</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>From 63 — To 75</td>
</tr>
<tr>
<td>Clay, sandy in places</td>
<td>From 75 — To 159</td>
</tr>
<tr>
<td>Wanapum Basalt(?)</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 159 — To 171</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 171 — To 200</td>
</tr>
</tbody>
</table>


Comments:

The basalt layer is interpreted as the basalt of Lolo, but there are some doubts. See discussion for nearby Naylor Well and the included comments from George Grader (written commun., July 4, 2015).

The water in the Adam Reed Well is clearly from sediments of Bovill.

Granite bedrock is nearby to the east, but I disagree with Grader (written commun., July 4, 2015) that the white clay at the bottom of the Adam Reed Well indicates the well is near bedrock.

Latah County Tax Parcel RP40N052285428, 3180 FOOTHILL RD, 30 acres, owner is Adam C. Reed.

References Cited:
1. WELL TAG NO. D 0067943
   Drilling Permit No. 674483
   Water right or injection well #

2. OWNER: Adam Reed
   Name: Adam Reed
   Address: 1729 Lexington Ave
   City: Moscow
   State: ID
   Zip: 83843

3. WELL LOCATION:
   Twp. 40 North or South Rge 5 East or West
   Sec. 28
   Govt Lot
   County: Latah
   Lat. 41° 0 ' 40.727”, Deg. and Decimal Minutes
   Long. 116° 0 ' 58.821”, Deg. and Decimal Minutes
   Address of Well Site: 3180 Foot Hill Rd
   City: Moscow

4. USE: Domestic, Municipal, Monitor, Irrigation, Thermal, Injection, Other

5. TYPE OF WORK:
   New well, Replacement well, Modify existing well, Abandonment, Other

6. DRILL METHOD:
   Air Rotary, Mud Rotary, Cable, Other

7. SEALING PROCEDURES:
   Seal material: Portland cement or other
   Quantity (lbs or ft): 21
   Place method/procedure: Top pour

8. CASING/LINER:
   Diameter (nominal) From (ft) To (ft) Schedule Material Casing Liner Threaded Welded
   10' +2 10' 5 250 steel

9. PERFORATIONS/SCREENS:
   Perforations: Yes, N Method: drilling
   Manufactured screen: Y, N Type

Method of installation:

10. FILTER PACK:
    Filter Material From (ft) To (ft) Quantity (lbs or ft)

11. FLOWING ARTESIAN:
    Flowing Artesian? Y N
    Artesian Pressure (PSIG)
    Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft) 80
    Static water level (ft) 12
    Water temp. (°F) 51°
    Bottom hole temp. (°F)
    Describe access port
    Drawdown (feet) Discharge or yield (gpm) Test duration (minutes)
    160 15 100
    Good

13. LITHOLOGIC LOG and/or repairs or abandonment:
    Remarks, lithology or description of repairs or abandonment, water temp.
    Water Y N

    10 0 14 dirt
    10 14 20 clay + sand
    10 20 40 yellow sand
    10 40 63 grey sandy clay
    10 40 75 coarse white sand
    10 75 143 grey sandy brown clay
    10 143 151 brownish red clay
    10 151 159 grey clay
    10 159 171 grey silt
    10 171 200 soft red + white clay

    RECEIVED
    MAR 27 2015
    IDWR / NORTH

Completed Depth (Measurable): 160

Date Started: 3/11/15  Date Completed: 3/13/15

14. DRILLER'S CERTIFICATION:
   We certify that all minimum well construction standards were complied with at the time the rig was removed.
   Company Name
   Principal Driller
   Date 3/20/15
   Driller
   Date
   Operator I
   Date
   Operator II
   Date
   * Signature of Principal Driller and rig operator are required.
2015 Adam Reed Well Log in Naylor Paleovalley, Moscow Subbasin
1 message

Georgeo Grader <georgeo.g@uidaho.edu> Sat, Jul 4, 2015 at 12:01 PM
To: Steve Robischon <stever@uidaho.edu>
Cc: Erin Brooks <ebrooks@uidaho.edu>, "Dijksma, Roel" <Roel.Dijksma@wur.nl>, Shawn Ringo <shawnringo@gmail.com>, Heidi Anderson <heidi3anderson@gmail.com>, Pam and John Bush <pjbus43@gmail.com>, Adam Reed <reed.acr@gmail.com>, Jerry Fairley <jfairley@uidaho.edu>, Mark Solomon <msolomon@uidaho.edu>

Hi Steve (this is George in Massachusetts):

The Reed well is on the edge of the Moscow Subbasin Naylor paleovalley as predicted and shown in multiple figures (Grader, 2011) and (Bush, various publications).

This is in the area between the Naylor well and Fairley et al 2015 P2 and P5 locations - all locations one could throw a rock to from Reed's farming operation on Foothill Road. (see figures 4, 5, figs 9 & 10, figs 12, 13 Grader 2011, unpublished)

Reed's Ullenkott well went through 159 feet of Bovill Sediments with some lenses of water-producing fluvial paleochannel sands in between clays (75 and 143 ft, 15 GPM, with a high 12' static - it would have been artesian most likely 100 years ago....).

Between 143 to 159 feet are likely 16 feet of discontinuous wet but impermeable paleosols comprised of red and grey clays developed in the top of the basalt (alternatively they are just the fine grained bottom of the Sediments of Bovill....).

In between 159 to 171 feet represents the irregular invasive feather edge of the Wanapum or younger basalt flow (it's only 12 feet thick compared with like 80 feet at the Naylor well....). Sediments continue below, possibly seeing a rubble, very coarse layer before passing into either clean or paleosol-clayey granite top. (Reed well TDs at 200 ft). It is possible that the white clay at the bottom of his well represents contact with granite.

Reed is between abundant water (thick basalt & and over and underlying sediments, west of the foothill road), and zero water / or deep granite water to the east of him on the hill.

Reed is in buttress geologic contact zone. Here is a screen grab of the Naylor Well figure in Grader 2011. The top of it is not that different than what Reed's 2015 well encountered. The Naylor well continues with a thick section of the Vantage sediments, which is really where you want your drill bit if you are looking for water.

George

---

https://mail.google.com/mail/u/0?ui=2&ik=e49b725626&view=pt&as_sizeoperator=s_sl&as_sizeunit=s_smb&as_subset=all&as_date=2015%
On Sat, Jul 4, 2015 at 10:35 AM, Robischon, Steve (stever@uidaho.edu) <stever@uidaho.edu> wrote:

Hello George,

I hope this email finds you well, wherever in the world you may find yourself these days.

I read an article in the Daily News today about Adam Reed (attached), the produce grower who as you will remember has expanded to that land pretty much across the road from Naylor. The article mentions that he's having sand problems with his new well. I looked on the IDWR site and found the well log (also attached).

Based upon your ultimate expertise in matters such as these, do you believe his well is drawing from the Bovill sediments?

Also, I don't know whether you might be interested, but I'm told the GSA is holding a regional conference here next year (maybe in May?). Attila Foinagy (one of Osienky's grad students now working for the State of MT) wants to put together a Palouse geology session. I'm not a rock guy and PBAC likely won't be involved, but I've pointed him to John Bush (who says he has plans to be here and maybe do a field trip) and Rick Conrey (who has left WSU and is moving to NY to teach/work at a private school back there). They both say they are willing/interested, might you like to jump on the rockwagon? If so I'll pass your email on to Attila.

Any feedback you can provide will be welcomed.

Happy Independence Day! (as if that's something feasible)
Many foodies in the area, whether they know it or not, are familiar with Adam Reed's work.

"I can get about 288 plants a week using this system," he said Wednesday as he collected heads of green butterhead lettuce from the hydroponic growing system he keeps in a greenhouse along the Pullman-Moscow highway.

From his current 20-by-12 foot system he provides a variety of lettuces and greens for salad and other dishes served by Pullman's Black Cypress and Moscow's Sagria Grille and Maialina Pizzeria, as well as providing for individuals and families through Community Supported Agriculture for the Moscow Food Co-op and Farmers Market.

"Per square foot, this system is way more productive," he said.

For one, he said, he doesn't have to till soil, but it's really more about producing crops with a quick, year-round turnover.

The lettuce he was harvesting, he said, typically takes about two weeks in the propagation system, where it begins as a seed and then spends about two weeks each in a nursery and finishing channels before it's ready.

Depending on the particular plant or variety, from seed to harvest is somewhere between two and five weeks faster than soil-based crops, he said. Moreover, the rotation doesn't depend on the seasons.

"In theory I can get 26 crop turnovers a year on this table, versus three or four on the ground," Reed said.

While it's just his first year working with hydroponics, Reed's Moscow Urban Farm Company has been doing traditional farming on three-quarters of an acre of land in Moscow since 2012, and recently, through a loan from the United States Department of Agriculture's Beginners Farmer's program, he purchased a little less than 30 acres north of Moscow to expand his operation.

Reed's interest in farming actually began in the service industry, having worked for several restaurants throughout the years.

It was while he was in one of those jobs in Chicago, studying audio design and production at school and focusing on his musical career, that he discovered his passion.

"I was working at a restaurant in Chicago and during the summertime we would source some of our
ingredients from local farmers. I realized I just felt good about serving that food," he said.

It was through the combined influence of Reed's new interest in urban agriculture and inspiration from Stienbeck's "East of Eden," which he was reading at the time, that he said led him to a kind of epiphany. "The click was almost audible. It was just like, 'That's what I want to do,' " Reed said.

He applied to Washington State University's organic agricultural program and moved to Pullman in 2011. After a year working on the WSU Organic Farm and finishing his degree, he started the Moscow Urban Farm Company, and has been growing a variety of produce.

His previous familiarity with the service industry, aside from inspiring his career change, has also proven useful in his new one.

There are only certain ingredients small-scale growers can really compete on in terms of price, he said. "A restaurant can buy a gallon of peeled garlic for a couple of bucks. I can't compete with that," he said. "But I focus on specialty ingredients, crops where I can compete with the conventional supply in terms of quality and freshness."

For that he focuses primarily on salad mixes with a variety of lettuces, like the butterhead, watercress and frisee, along with some other greenery, like basil, needed year-round by restaurants. With the Co-op, Farmers Market and the CSA, he expands his selection to include some other greens, tomatoes, peppers, onion, garlic, broccoli and more.

Along with his new acreage north of Moscow - which he named Victory Farms after victory gardens grown by communities to help grow extra produce during times of war - Reed also recently purchased a tractor, and he is still working to get the irrigation system on his new property working.

He's still new to the business, he admits, and has had some stumbles along the way. He recently planted about half an acre on his new plot on a gamble since his irrigation system wasn't functioning properly yet, hoping if he couldn't get it working soon he might get some rain. He has since found out he has a problem with sand in his well and the heat has leveled out in the 90s this week after spiking at a record 105 degrees last weekend.

"It's a learning process," he said.

He's looking forward to expanding his operation, though. Most of his crops are grown organically, with the exception of his hydroponic system, and he's working toward getting his organic grower's certification.

Recently Reed said he's had talks with a couple local school districts which have expressed some interest in providing their students with locally grown produce, and WSU's dining services has been showing similar enthusiasm.

He's well aware the demand is out there.

"My problem is I just can't grow enough food yet," he said. "It's not a bad problem to have."
Bill McKee can be reached at (208) 883-4627, or by email to wmckee@dnews.com.
FRANCES AND BEN REED WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 2, 2017; November 9, 2017

Well Log ID: 809074  Elev (ft): 2540 ±10  Depth (ft): 380  7.5’ Quad: Viola

Latitude: 46.778110  Longitude: -117.088898  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 24 , T. 15 N , R. 45 E

Well Address and (or) Other Location Information:
51 Gray Road, Pullman, Wash., on south side of road, at intersection with Whelan Road.

Location Method:
Site visit (April 20, 2016), location is for driveway area; Google Earth imagery; topographic map; PLSS, tax parcel and first name are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From – To</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow-brown</td>
<td>0 – 19</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>19 – 122</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>122 – 154</td>
</tr>
<tr>
<td>Sand</td>
<td>154 – 161</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>161 – 194</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
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</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member(?)</td>
<td></td>
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<tr>
<td>Basalt, hard</td>
<td>194 – 305</td>
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<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>305 – 357</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>357 – 380</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515242190, GRAY ESTATE SHORT PLAT #1, 4.0 acres, owners now are RONNGREN, JEFFREY/JENNIFER; grantor was PARKER, FRANCES A, 06/24/14; previous grantor was Benjamin Reed, 12/02/10; three story residence built in 1912.

References Cited:
**WATER WELL REPORT**  
Original & 1st copy -- Ecology, 2nd copy -- owner, 3rd copy -- driller

**Construction/Decommission** ("x" in circle)
- Construction
- Decommission
- ORIGINAL INSTALLATION

**457020**  
Notice of Intent Number

**Proposed Use:**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**Type of Work:**
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Deg
- Bored
- Driven
- Deepened
- Cable
- Rotary
- Jetted

**Dimensions:**
- Diameter of well 8 inches, drilled
- Depth of completed well 360 ft.

**Construction Details**
- Casing: Welded 8.6" Diam. from +18.10 ft. to 33.230 ft.
- Installed: Liner installed 4" Diam. from 40 ft. to 380 ft.
- Perforations: Yes
- Size of perforator used: SAW
- Size of perfs 1/8 in. by 12 in. and no. of perfs 90 from 300 ft. to 360 ft.
- Screens: Yes
- K-Pac Location

**Manufacturer's Name**

**Gravel Filter packed:**
- Diam. Slot size from ft. to ft.
- Slotted size from ft. to ft.

**Surface Seal:**
- Yes
- No
- Size: BENTONITE

**Materials placed from ft. to ft.**

**Material used in seal:**
- To what depth?
- 33 ft.

**Did any strata contain unsuitable water?**
- Yes
- No

**Type of water:**
- Depth of strata

**Method of sealing strata off:**

**PUMP:**
- Manufacturer's Name
- H.P.

**Water Levels:**
- Land-surface elevation above mean sea level
- Static level 299 ft. below top of well
- Date: 5/18/09
- Artesian pressure: lbs. per square inch
- Date
- Artisan water is controlled by (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made?
- Yes
- No
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- Yield: gal./min. with ft. drawdown after hrs.
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time
- Water Level
- Time
- Water Level
- Time
- Water Level
- Time
- Water Level
- Date of test
- Bailer test: gal./min. with ft. drawdown after hrs.
- Airtest: 10 gal./min. with stem set at 375 ft. for hrs.
- Artisan flow: g.p.m.
- Date
- Temperature of water: Was a chemical analysis made?
- Yes
- No

**Start Date 5/12/09**  
**Completed Date 5/18/09**

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller
- Engineer
- Trainee
- Name (last) TED WRIGHT

**Driller/Engineer/Trainee Signature**

**Driller or trainee License No. 0532**

**IF TRAINEE: Driller's License No:**

**Driller's Signature:**

**Drilling Company:** MCPHERSON & WRIGHT DRILLING

**Address:** 2246 BURRELL

**City, State, Zip LEWISTON, ID, 83501**

**Contractor's Registration No.** MCPPWD135N1  
**Date 8/15/09**

---

**ECY 050-1504** If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**BRUCE REIBER WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 11, 2018

Well Log ID: 150109  
Elev (ft): 2560 ±10  
Depth (ft): 205  
7.5’  
Quad: Palouse

Latitude: 46.903550°  
Longitude: -117.064624°  
decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 6, T. 16N, R. 46E

**Well Address and (or) Other Location Information:**

751 South River Road, Palouse, Wash.; on south side of road.

**Location Method:**

Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018. Log for well also in Ralston (1996, p. 18).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>2 – 25</td>
</tr>
<tr>
<td>Wanapum Basalt, Columbia River Basalt Group</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>25 – 62</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>62 – 72</td>
</tr>
<tr>
<td>Basalt</td>
<td>72 – 188</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, white</td>
<td>188 – 205</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 826950000000013, 751 S RIVER RD, PALOUSE, TRACT 1 AF - 2H PALOUSE N1/2 6-16-46, owners are REIBER, BRUCE/JUDY; manufactured house (20x60) built in 1996.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Bruce Reiker
Address: 121 Baut. 37 - Palouse

(2) LOCATION OF WELL: County: Whitman
Township: N 2 Sec. 6 T. 16 N. R. 46 E.W.M.

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well
(if more than one) New well [ ] Method: Dug [ ] Bored [ ]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well: 446 inches.
Drilled: 205 ft. Depth of completed well: 205 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: [ ] 8" Diam. from +0 ft. to 200 ft.
Threaded [ ] Diam. from ft. to ft.
Welded [ ] Diam. from ft. to ft.

Perforations: Yes [ ] No [ ]
Type of perforator used in by in.
SIZE of perforations in. to ft.
- perforations from ft. to ft.
- perforations from ft. to ft.
- perforations from ft. to ft.

Screens: Yes [ ] No [ ]
Manufacturer's Name: Model No:...
Type: Diam. Slot size Slotted ft. to ft.
Diam. Slot size Drilled ft. to ft.

Gravel packed: Yes [ ] No [ ]
Size of gravel:...
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ]
To what depth? 35 ft.
Cement...
Material used in seal:...
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water:...
Depth of strata:...
Method of sealing strata off:...

(7) PUMP: Manufacturer's Name...
Type: H.P. 1

(8) WATER LEVELS: Land-surface elevation above mean sea level...
Static level: 172 ft. below top of well
Artesian pressure: lbs. per square inch
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ]
Yield: gal. per minute during ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test
Bailer test: gal./min. during ft. drawdown after hrs.
Artesian flow: g.p.m. Date
Temperature of water: Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay - Bill</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Basalt - Clay - Fossil</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Basalt - Clay - Fossil</td>
<td>22</td>
<td>188</td>
</tr>
<tr>
<td>Sand - Fossil White</td>
<td>188</td>
<td>205</td>
</tr>
</tbody>
</table>

Work started: 8-11 1988 Completed: 8-12 1988

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: McPherson & Wright Drilling
Address: 224 Burrell Leavenworth
(Signed) Lee Wright
(Well Driller)
License No: 0523 Date: 8-15 1988

(USE ADDITIONAL SHEETS IF NECESSARY)
JOHN REYNOLDS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August, 2016

Well Log ID: 4999462  Elev (ft): 2620 ±10  Depth (ft): 416  7.5’  Quad: Moscow West

Latitude: 46.717605  Longitude: -117.106139 decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 11, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1307 Sunshine Road, Pullman, Wash., on north side of road; south side of long lane to top of hill.

Location Method:
Location is for house; Whitman County Tax Assessor; Google Earth imagery, topographic map. PLSS subdivision incorrect on driller’s report. Site visit (September 18, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Geography</th>
<th>Description</th>
<th>From</th>
<th>To</th>
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<td>No description</td>
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<td>73</td>
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<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt, soft</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>75</td>
<td>221</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay</td>
<td>221</td>
<td>236</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt of Spokane Falls</td>
<td>Basalt, hard</td>
<td>236</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td>Meyer Ridge Member</td>
<td>Basalt, soft</td>
<td>310</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>338</td>
<td>399</td>
</tr>
<tr>
<td></td>
<td>Basalt, fractured</td>
<td>399</td>
<td>403</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514111691, 1307 SUNSHINE RD, NE1/4 LOT 4A THORSTEN SHPLT #1, owners now are LIGHTFOOT, CLIFFORD L/KIRSTIN L.; 5.02 acres; grantees were REYNOLDS, JONATHAN/JOELLE, on 03/14/12.

References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission (x in circle)

Construction
Decommission

PROPOSED USE:

Domestic
Industrial
Municipal
DeWater
Irrigation
Test Well
Other

TYPE OF WORK:

Owner's number of well (if more than one)
New Well
Reconditioned
Method:
Dug
Bored
Driven
Deepened
Cable
Rotary
Jetted

DIMENSIONS:

Diameter of well: 8 inches, drilled: 471/4 ft.
Depth of completed well: 41 1/2 ft.

CONSTRUCTION DETAILS

Casing:
Welded 8" Diam. from 1 ft to 81 ft
Installed:
Liner installed
Diam. from ft to ft
Threaded:
Diam. from ft to ft

Perforations:

Yes
No
Type of perforator used:

Screens:
K-Pac
Location:
Manufacturer's Name:
Type:
Model No.
Diam:
Slot Size:
from ft to ft
Diam.
Slot Size:
from ft to ft

Gravel/Filter packed:
Yes
No
Size of gravel/sand:

Materials placed from ft to ft

Surface Seal:
Yes
No
To what depth? 81 ft

Materials used in seal:

Did any strata contain unusable water?

Type of water:

Depth of strata

Method of sealing strata off:

PUMP:

Manufacturer's Name:
Type:

H.P.

WATER LEVELS:

Land surface elevation above mean sea level:

Static level:

ft below top of well

Date:

Artesian pressure:

lbs per square inch

Artesian water is controlled by

(cap, valve, etc.)

WELL TESTS:

Drawdown is amount water level is lowered below static level.

Was a pump test made?

Yes
No
If yes, by whom:

Yield:

gal/ min with ft. drawdown after hrs.

Yield:

gal/ min with ft. drawdown after hrs.

Yield:

gal/ min with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off): water level measured from well top to water level

Time
Water Level
Time
Water Level
Time
Water Level

Date of test

Bailer test:

gal/ min with ft. drawdown after hrs.

Airstest:

gal/ min with stem set at 1/2 hr. for hrs.

Artesian flow:

g.p.m. Date

Temperature of water:

Was a chemical analysis made?

Yes
No

RECEIVED

OCT 0 9 2007

DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

Driller/Engineer/Trainee Name (Print):
Roger Will

Driller or Trainee License No.

If trainee, licensed driller's signature and license no.

Drilling Company:
WITT Well Drilling

Address:
631 South Grade Rd

City, State, Zip:
Jaluit, Id 83535

Eco is an Equal Opportunity Employer. ECO 050-1-20 (Rev 4/01)
Lee Riddle Well

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 13, 2016

Well Log ID: 367500
Elev (ft): 2490 ±10
Depth (ft): 275
Quad: Elberton

Latitude: 46.876080
Longitude: -117.220682
decimal degrees (WGS84)

SW ¼, NW ¼, Sec. 13, T. 16 N, R. 44 E

Well Address and (or) Other Location Information:
9032 S Palouse River Road, Colfax, Wash., north side of road

Location Method:
Location is for only house in SW ¼, NW ¼, sec. 13; Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 10 of Bush and others (2005 [2006]). Site visit (September 15, 2016), gated driveway.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 33</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>33 – 143</td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td>143 – 160</td>
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<tr>
<td>Roza Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>160 – 203</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>203 – 225</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td>225 – 275</td>
</tr>
</tbody>
</table>

1511
Comments:

Whitman County Tax Parcel 200004416132390, 9032 S PALOUSE RIVER RD, COLFAK, NW1/4 PT SW1/4, now owned by NELMS, LISA G; 4.0 acres; grantor was FOSTER, SCOTT M, 07/24/09; prior grantors were Lee and Teri Riddle, 12/01/2003; 1½ story residence built in 1891.

References Cited:

**WATER WELL REPORT**

**CONSTRUCTION/DECOMMISSION**
- **Original & 1st copy** Ecology 2nd copy owner 3rd copy driller
- **AUG 1, 2003**

**PROPOSED USE**
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

**TYPE OF WORK**
- Owners number of well (if more than one)
- New Well
- Reconditioned
- Method
  - Dug
  - Bored
  - Driven
  - Deepened
  - Cable
  - Rotary
  - Jetted

**DIMENSIONS**
- Diameter of well
- Depth of completed well

**CONSTRUCTION DETAILS**
- Casing
  - Welded
  - Installed
- Diam from 2 ft to 3 ft
- Liner installed
- Diam from ft to ft

**Perforations**
- Yes
- No
- Type of perforator used
- Size of perfs
- Screens
  - Yes
  - No
- K Pac
- Location

**Gravel/Filter packed**
- Yes
- No
- Type of gravel/sand
- Materials placed from ft to ft

**Surface Seal**
- Yes
- No
- To what depth
- Materials used in seal

**Did any strata contain unusable water?**
- Yes
- No
- Type of water
- Depth of strata

**PUMP**
- Manufacturer’s Name
- Type
- H P

**WATER LEVELS**
- Land surface elevation above mean sea level
- Static level
- Artesian pressure
- Artesian water is controlled by

**WELL TESTS**
- Drawdown is amount water level is lowered below static level
- Was a pump test made
- Yes
- No
- If yes by whom
- Yield
- gal/mn with
- ft drawn down after
- hrs
- Recovery data (time taken as zero when pump turned off/water level measured from well top to water level)
- Time
- Water Level

**WELL CONSTRUCTION CERTIFICATION**
- I, [Name], a driller or trainee, [Name], hereby certify that the well was constructed in accordance with the regulations of the Department of Ecology.

**WELLSITES**
- Property Owner Name
- Well Street Address
- City
- County
- Location
- Survey
- Tax Parcel No

**CONSTRUCTION OR DECOMMISSION PROCEDURE**
- Formation: Describe by color, character, size, of material and structure and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information. Indicate all water encountered.

**ADDITIONAL SHEETS IF NECESSARY**

**MATERIAL**
- FROM
- TO
- Clay
- 0
- 23
- Hard Grav Belt
- 23
- 43
- Corn. Whirl Belt
- 43
- 160
- Soft Blk Belt
- 160
- 203
- Hard Blk Belt
- 203
- 225
- Soft Blk Belt
- 225
- 275

**RECEIVED**
- AUG 20, 2003

**DEPARTMENT OF ECOLOGY**
- EASTERN REGIONAL OFFICE

**DILLING COMPANY**
- UHLENKOTHL Drilling
- Address
- R 1 Box 26A
- City
- State
- Zip
- Grangeville
- ID
- 43330

**ECOLOGY**
- ECY 050 1 20 (Rev 40/1)
### ALLEN AND LAURA RISLEY WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, March 19, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID: 619761</th>
<th>Elev (ft): 2625 ±10</th>
<th>Depth (ft): 495</th>
<th>Quad: Albion</th>
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<tbody>
<tr>
<td>Latitude: 46.753792</td>
<td>Longitude: -117.140388</td>
<td>decimal degrees (WGS84)</td>
<td></td>
</tr>
<tr>
<td>¼, NE ¼, SE ¼, Sec. 28, T. 15 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
342 Eagle Lane, Pullman, Wash.; on east side of road

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS subdivisions on driller’s report are incorrect

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>83 – 229</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>229 – 253</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>253 – 368</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>368 – 391</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
</tbody>
</table>
Meyer Ridge Member(?)
Basalt, and weathered zone

391 – 495

Comments:

Grande Ronde units were split out by comparison to Washington State University and City of Pullman wells, and the DOE Pullman Observation and Test Well.

Whitman County Tax Parcel 200004515284907, 342 EAGLE LN PULLMAN, SE1/4 PT LOT RB- CARRIAGE HILL SHPLT DIST B, owners are RISLEY, ALLEN/LAURA; 4.56 acres.

References Cited:
WATER WELL REPORT  
Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller  
Construction/Decommission (‘x’ in circle)  

PROPOSED USE:  □ Domestic  □ Industrial  □ Municipal  
□ DeWater  □ Irrigation  □ Test Well  □ Other  

TYPE OF WORK:  Owner’s number of well (if more than one)  
□ New well  □ Reconditioned  Method:  □ Dog  □ Bored  □ Driven  
□ Deepened  □ Cable  □ Rotary  □ Jetted  

DIMENSIONS: Diameter of well __ inches, drilled __ ft.  
Depth of completed well __ ft.  

CONSTRUCTION DETAILS  
Casing:  □ Welded  □ Diam. from ___ ft. to ___ ft.  
□ Installed:  □ Liner installed ___ ft. from ___ ft. to ___ ft.  
□ Threaded ___ ft. Diam. from ___ ft. to ___ ft.  

Perforations:  □ Yes  □ No  
Type of perforator used ___  

Size of perf 1/8 in. by ___ in. and no. of perf ___ ft. from ___ ft. to ___ ft.  

Screens:  □ Yes  □ No  □ K-Pac  Location ___  

Manufacturer’s Name ___  

Type:  □ ___________ Model No. ___  
Diam. ___ ft. Slot size ___ ft. to ___ ft.  
Diam. ___ ft. Slot size ___ ft. to ___ ft.  

Gravel/Filter packed:  □ Yes  □ No  Size of gravel/sand ___ ft. to ___ ft.  

Materials placed from ___ ft. to ___ ft.  

Surface Seal:  □ Yes  □ No  To what depth ___ ft.  

Material used in seal ___  

Did any strata contain unusable water?  □ Yes  □ No  

Type of water ___  

Depth of strata ___ ft.  

Method of sealing strata off ___  

PUMP:  Manufacturer’s Name ___  

Type:  ___________ H.P. ___  

WATER LEVELS:  Land-surface elevation above mean sea level ___ ft.  

Static level ___ ft. below top of well  Date ___  

Artesian pressure ___ lbs. per square inch  Date ___  

Artesian water is controlled by (cap, valve, etc.) ___  

WELL TESTS:  Drawdown is amount water level is lowered below static level  

Was a pump test made?  □ Yes  □ No  If yes, by whom ___  

Yield:  gal/min. with ___ ft. drawdown after ___ hrs.  

Yield:  gal/min. with ___ ft. drawdown after ___ hrs.  

Yield:  gal/min. with ___ ft. drawdown after ___ hrs.  

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)  

Time  Water Level  Time  Water Level  Time  Water Level  Time  Water Level  

Date of test ___  

Bailer test ___ gal/min. with ___ ft. drawdown after ___ hrs.  

Arttest ___ gal/min. with stem set at ___ ft. for ___ hrs.  

Artesian flow ___ g.p.m. Date ___  

Temperature of water ___ Was a chemical analysis made?  □ Yes  □ No  

RECEIVED  
SEPT 11 2009  
DEPARTMENT OF ECOLOGY  
EASTERN REGIONAL OFFICE  

Driller __ ENGINEER __ Trainee __ Name ___  

Driller/Engineer/Trainee Signature ___  

Driller or trainee License No. ___  

IF TRAINEE:  Driller’s License No. ___  

Driller’s Signature ___  

Drilling Company ___  

Driller/Engineer/Trainee Signature ___  

Driller or trainee License No. ___  

IF TRAINEE:  Driller’s License No. ___  

Driller’s Signature ___  

Drilling Company ___  

Address 2246 BURRELL  
City, State, Zip LEWISTON IDAHO 83501  

Contractor’s Registration No. ___  

Date ___  

ECY 093-1 (09-06) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
WALT ROACH WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 24, 2016

Well Log ID: 160113  Elev (ft): 2420 ±10  Depth (ft): 145  Quad: Elberton

Latitude: 46.988351  Longitude: -117.227987  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 11, T. 17 N, R. 44 E

Well Address and (or) Other Location Information:
721 Omer Brown Road, Elberton, Wash., on west side of road

Location Method:
Location is approximate, in driveway area; Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 1 of Bush and others (2005 [2006]). Site visit (September 14, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, brown</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 39</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>39 – 98</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>98 – 126</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>126 – 145</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004417112690, 721 OMER-BROWN RD, NW1/4 PT N1/2 PFAFF-OMER BROWN RD SHRTPLT, owners are now PFAFF, RYAN/STEVIE, 7.62 acres; manufactured housing built 2003.

References Cited:
**WATER WELL REPORT**

**STATE OF WASHINGTON**

(1) **OWNER:** Wallach

(2) **LOCATION OF WELL:** Whitman

(3) **PROPOSED USE:**
- Domestic
- Irrigation
- Test Well

(4) **TYPE OF WORK:**
- New well
- Deepened
- Reconditioned

(5) **DIMENSIONS:**
- Diameter of well: 8 inches
- Drilled: 145 ft.
- Depth of completed well: 145 ft.

(6) **CONSTRUCTION DETAILS:**
- Casing installed: 6 ft.
- Perforations: Saw
  - Diameter: 116 in.
  - Perforations: 28 ft.
  - Type of perforator: Saw
- Screens: Yes
  - Manufacturer's Name: N/A
  - Model No.: N/A
  - Diameter: N/A
  - Slot size: N/A
- Gravel packed: Yes
  - Size of gravel: N/A
  - Gravel placed from: N/A
  - Surface seal: Yes
  - Material used: Cement
  - Depth of strata: 45 ft.
  - Method of sealing strata: N/A

(7) **PUMP:**
- Manufacturer's Name: N/A

(8) **WATER LEVELS:**
- Land-surface elevation: 56 ft.
- Static level: 56 ft.
- Artesian pressure: 36.8 lb. per square inch
- Artesian water controlled by: N/A

(9) **WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Yield: gal/min.
- Time: hours
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Water level: Time
- Water level: Time
- Water level: Time

(10) **WELL LOG:**
- Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand, Gravel</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Sand, Gravel</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Basalt, Clay, Black</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Basalt, Clay, Clay</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Basalt, Clay, Clay</td>
<td>13</td>
<td>15</td>
</tr>
</tbody>
</table>

**RECEIVED**

**JUL. 8 1988**

**DEPARTMENT OF ECOLOGY**

**REGIONAL OFFICE**

**Work started:** 6-24-88
**Completed:** 7-27-88

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

**Name:** Royce Wright

**Address:** 2246 Durward Lane

**License No.:** 0523

**Date:** 7-11-88
CHARLES ROBBINS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 18, 2016

Well Log ID: 351672 Elev (ft): 2298 Depth (ft): 100 7.5’ Quad: Albion

Latitude: 46.75846 Longitude: -117.23057 decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 26, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
504 Armstrong Road, Pullman, Wash., on northwest side of road; well plots in fenced area southwest of house

Location Method:
Latitude, longitude, and elevation from Moxley (2012, p. 73); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td>No description</td>
</tr>
<tr>
<td>Palouse Formation (?)</td>
<td>Clay</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>RozaMember(?)</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>N2 magnetostratigraphic unit</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Outcrops along the South Fork Palouse River (Hooper and Webster, 1982; Bush and Garwood, 2005 [2006]; and Moxley, 2012) clearly show that the Grande Ronde is a Spokane Falls flow.

The identification of the Roza Member is based upon well comparisons by Moxley (2012). The Roza pinches out and is not present in Pullman.

Whitman County Tax Parcel 200004415261907, 504 ARMSTRONG RD, NE 4 AC, ROBBINS, CHARLES/BARBARA, 1 story residence built in 1956.

References Cited:


WATER WELL REPORT

Construction/Decommission (x in circle) 125525

PROPOSED USE □ Domestic □ Industrial □ Municipal
□ DeWater □ Irrigation □ Test Well □ Other

TYPE OF WORK □ New Well □ Reconditioned □ Method □ Dug □ Bored □ Driven
□ Deepened □ Cable □ Rotary □ Jetted

DIMENSIONS
Diameter of well ________ inches drilled _______ ft
Depth of completed well _______ ft

CONSTRUCTION DETAILS
Casing □ Welded □ 6
Installed □ Liner installed _______ ft
□ Threaded _______ ft

Perforations □ Yes □ No
Type of perforator used Circular Saw
SIZE of perf in _______ in and no of perf _______ ft

Screens □ Yes □ No □ K Pac Location
Manufacturer's Name
Type __________ Model No ________

Gravel/Filter packed □ Yes □ No □ Size of gravel/sand
Materials placed from _______ ft to _______ ft

Surface Seal □ Yes □ No □ To what depth _______ ft
Materials used in seal Bentonite
Did any strata contain unusable water? □ Yes □ No

Type of water _______ Depth of strata _______
Method of sealing strata off

PUMP Manufacturer's Name
Type __________ HP

WATER LEVELS
Land surface elevation above mean sea level _______ ft
Static level _______ ft below top of well Date 5-25-02
Artesian pressure _______ lbs per square inch Date
Artesian water is controlled by (cap valve etc.)

WELL TESTS
Drawdown is amount water level is lowered below static level
Was a pump test made? □ Yes □ No If yes by whom
Yield _______ gal/min with _______ ft drawdown after _______ hrs
Yield _______ gal/min with _______ ft drawdown after _______ hrs

Recovery data (time taken as zero when pump turned off) water level measured from well top to water level
Time _______ Water Level _______ Time _______ Water Level _______

Date of test _______
Boiler test _______ gal/min with _______ ft drawdown after _______ hrs
Artesian flow _______ gpm Date
Temperature of water _______ Was a chemical analysis made? □ Yes □ No

WELL CONSTRUCTION CERTIFICATION
I constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller □ Engineer □ Trainee Name (Print) William Uhlenkott
Driller/Engineer/Trainee Signature
Driller or Trainee License No 1740

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation Describe by color character size of material and structure the kind and nature of the material in each stratum penetrated with at least one entry for each change of information. Indicate all water encounded

USE ADDITIONAL SHEETS IF NECESSARY

MATERIAL FROM TO

RECEIVED

JAN 02 2003
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

Drilling Company UHLENKOTT DRILLING
Address Rt 1 Box 26A
City State Zip Grangeville, IDAHO 83530
Contractor's Registration No 1983
Date 12-27-02
**Geologic Interpretation of Water Well Driller’s Log**

By John H. Bush, October 5, 2018

Well Log ID: **1585447**

Depth (ft): **460**

7.5’

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Elev (ft)</th>
<th>Well Log ID</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>460</td>
<td>2560 ±10</td>
<td><strong>1585447</strong></td>
<td>460</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515204190, 5421 SR 272 [stet.] PULLMAN, SE1/4 PT NE1/4 E OF HWY; owner is ROBERTS, GREG; 5421 SR 27, PULLMAN WA; 25 acres; 03/01/05: grantor was SCHULHAUSER, CHARLES to CARPENTER, SUSAN LONG; 06/01/09: grantors were ROBERTS, GREGORY/SUSAN to ROBERTS, GREG ($0); 06/01/09: grantor was CARPENTER, SUSAN LONG to ROBERTS, GREGORY/SUSAN; one story residence built in 1977.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Construction
Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Dog ☐ Bored ☐ Driven
☐ Slanted ☐ Rotary ☐ Jettied

DIMENSIONS: Diameter of well 10 inches, drilled 58 ft.
Depth of completed well 46 ft.

CONSTRUCTION DETAILS

Casing ☐ Welded ☐ 6 ft. Diam. from 2 ft. to 58 ft.
Installed: ☐ Liner installed 4 1/2 ft. Diam. from 20 ft. to 46 ft.
☐ Threaded ☐ Diam. From ft. to ft.

Perforations: ☐ Yes ☐ No

Type of perforator used ☐ SAW CUT

SIZE of screen 1½ in. by 4 in. and no. of perfor 5/10 in to 6/10 in.

Screens: ☐ Yes ☐ No ☐ K-Plug Location

Manufacturer's Name

Type ___________ Model No. ___________

Diam. ___________ Slot size ___________ ft. to ft. ft.
Diam. ___________ Slot size ___________ ft. to ft. ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand ___________

Materials placed from ___________ ft. to ___________ ft.

Surface Seal: ☐ Yes ☐ No To what depth? 58 ft.

Material used in seal bentonite - hole plug ___________

Did any strata contain usable water? ☐ Yes ☐ No

Type of water? ___________ Depth of strata ___________

Method of sealing strata off ___________

PUMP: Manufacturer's Name ___________

Type ___________ H.P. ___________

WATER LEVELS: Land-surface elevation above mean sea level ___________ ft.
Static level ___________ ft. below top of well Date ___________ 8-17-11
Artesian pressure ___________ lbs. per square inch Date ___________

Artesian water is controlled by ___________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom? ___________

Yield: ___________ gal./min. with ___________ ft. drawdown after ___________ hrs.

Yield: ___________ gal./min. with ___________ ft. drawdown after ___________ hrs.

Yield: ___________ gal./min. with ___________ ft. drawdown after ___________ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time ___________ Water Level ___________ Time ___________ Water Level ___________ Time ___________ Water Level ___________

Date of test ___________ 8-17-11

Boiler test ___________ gal./min. with ___________ ft. drawdown after ___________ hrs.

Artiest ___________ gal./min. with steam set at ___________ for ___________ hrs.

Artesian flow ___________ g.p.m. ___________ Date ___________

Temperature of water ___________ Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (Print) ___________ Brett Ulmenkott

Drilling Company ___________ Brett Ulmenkott Drilling

Address ___________ PO BOX 235

City, State, Zip ___________ Camas, WA 98607

Driller or trainee License No. ___________ 2049

Driller’s Signature ___________ 9-5-2011

To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-4080. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.
### Well Log ID: D0005064
### Elev (ft): 2630 ±10
### Depth (ft): 105
### Quad: Potlatch

### Latitude: 46.931410°
### Longitude: -116.994726°

**decimal degrees (WGS84)**

<table>
<thead>
<tr>
<th>Section</th>
<th>Township</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼</td>
<td>41</td>
<td>5</td>
</tr>
</tbody>
</table>

### Well Address and (or) Other Location Information:

1055 Sawyer Road, Potlatch, Idaho; on south side of road

### Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; driller recorded incorrect section subdivisions; site visit March 23, 2018 — well not observed from road

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Loess, clay</td>
<td>1</td>
<td>71</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>71</td>
<td>83</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>83</td>
<td>91</td>
</tr>
<tr>
<td>Basalt</td>
<td>91</td>
<td>105</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP41N05W050725, owner now is ROBERTS, JUDITH; 1055 SAWYER RD, 40.30 AC GOVT LOT 2; 40.29 AC GOVT LOT 3; E 15.55 AC GOVT LOT 4; NE 6.17 AC SWNW; 38.45 AC SWNE; N 26.28 AC SENW, 5 41 5.

References Cited:
RECEIVED
Form 238-7
3/98

IDAHOM DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
Use Typewriter or Ballpoint Pen

NORTHERN REGION
IDWR

1. DRILLING PERMIT NO. 87-98 N-36
Other IDWR No. D0005667

2. OWNER:
Name: ROBERTS, RICHARD B.
Address: 1055 SAWYER RD
City: POTLATCH
State: ID Zip: 83856

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp 41 N Rge E Sec 5 W 1/4 1/4 NE 1/4 1/4
Gov't Lot Latah
Latitude: 47° 00' 00"
Longitude: 117° 00' 00"
Address of Well Site: 1055 SAWYER RD
City: POTLATCH

4. USE:
Domestic ☑ Municipal ☐ Monitor ☐ Irrigation ☐
Thermal ☐ Injection ☐ Other ☐

5. TYPE OF WORK check all that apply
☑ New Well ☑ Modify ☑ Abandonment ☑ Other ☐
(Replacement etc.)

6. DRILL METHOD
☑ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ☐

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>Material</th>
<th>From</th>
<th>To</th>
<th>AMOUNT</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>1</td>
<td>11</td>
<td></td>
<td>DRY</td>
</tr>
</tbody>
</table>

Was drive shoe used? ☑ No ☐
Was drive shoe seal tested? ☑ Yes ☐

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>77</td>
<td>20</td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>105</td>
<td>4&quot;</td>
<td>PVC</td>
</tr>
</tbody>
</table>

Length of Headpipe: __________
Length of Tailpipe: __________

9. PERFORATIONS/SCREENS

Perforations Method: SAW
Screens Screen Type: __________

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>115</td>
<td>1/8</td>
<td>45</td>
<td>6&quot;</td>
<td>PVC</td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
17 ft. below ground
Artesian pressure ____________ lb.

Depth flow encountered ____________ ft.
Describe access port or control devices:

41 N 5W 5

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td></td>
<td></td>
<td>1/12</td>
</tr>
</tbody>
</table>

Water Temp. ____________
Bottom hole temp. ____________
Water Quality test or comments: ____________

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Hole Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>50% CLAY</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>1.125</td>
<td>45</td>
<td>81</td>
<td>5% BASALT &amp; CLAY</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>41.05</td>
<td>45</td>
<td>105</td>
<td>BASALT Weathered</td>
<td>Y</td>
<td>X</td>
</tr>
<tr>
<td>91.105</td>
<td>95</td>
<td>95</td>
<td>BASALT</td>
<td>Y</td>
<td>X</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION
I certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: MCPHERSON & WRIGHT
Firm No. 0376

Firm Official: ZACHARY WRIGHT
Date: 10/3/98

Supervisor or Operator: ____________
Date: 10/3/98

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES
1529
JACK ROBERTSON WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 16, 2016

Well Log ID: 168208  Elev (ft): 2570 ±10  Depth (ft): 228  7.5’  Quad: Moscow West

Latitude: 46.707082  Longitude: -117.069801  decimal degrees (WGS84)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 9</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>9 – 12</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken, with clay</td>
<td>12 – 22</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>22 – 82</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>82 – 101</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>101 – 193</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>193 – 198</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>198 – 218</td>
</tr>
<tr>
<td>Clay, with gravel</td>
<td>218 – 220</td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
901 Brown Road, Pullman, Wash., on northwest side of road; well is southwest of house

Location Method:
Site visit (April 12, 2016); Whitman County Assessor; Google Earth imagery; topographic map
N2 magnetostratigraphic unit
Sentinel Bluffs Member
*Basalt of Spokane Falls(?)
Basalt, broken 220 – 228

Comments:
*The identification of the Spokane Falls flow is based on comparison to the DOE Pullman Observation and Test Well approximately 1.5 mi to the northwest.

Whitman County Tax Parcel 200004614073429, 901 BROWN RD, SW SE1/4 PT NW OF RD, owners are now VAN WIE, BERNARD J/PAIGE, 6 acres, grantors ROBERTSON, JACK/SANDRA, 05/01/02.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

WRE 17981

(1) OWNER: Name: Jack M. Robinson
Address: Rt 3 Box 77, Moscow, ID 83843

(2) LOCATION OF WELL: County: Whitman
Sec. 7, T. 14 N., R. 46 W.

(3) PROPOSED USE: Domestic [X] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well [ ]
New well [X], Method: Dug [ ], Bored [ ]
Deepened [ ] Cased [X], Driven [ ]
Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS:
Diameter of well: 8 inches
Depth of completed well: 228 ft.

(6) CONSTRUCTION DETAILS:
Casing installed:
6" Diam. from 0 ft. to 23 ft.
Perforations:
Yes [X], No [ ], Type of perforator used: CUTTING TOOTH
SIZE of perforations: in. by in.

Screens:
Yes [X], No [ ], Manufacturer's Name: 
Type: 
Model No: 
Dia: ft. to ft.
Slot size: ft. to ft.

Gravel packed:
Yes [X], No [ ], Size of gravel: 
Gravel placed from ft. to ft.

Surface seal:
Yes [X], No [X], To what depth: 23 ft.
Material used in seal: Portland cement
Did any strata contain unusable water? Yes [X], No [ ],
Type of water: 
Depth of strata: 
Method of sealing strata: 

(7) PUMP:
Manufacturer's Name: 
Type: Sub-3P4D.02-17
HP: 3/4

(8) WATER LEVELS:
Static level: 26 ft.
Artesian pressure: lbs. per square inch
Artesian water is controlled by: (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level.
Yield: 8 gal/min. with 120 ft. drawdown after 1 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test: 
Time Water Level Time Water Level

Temperature of water: Was a chemical analysis made? Yes [X], No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO
Top Soil 0 2
Brow Clay 2 9
Brow Basalt with Streak of Clay 12 22
Basalt-Med 22 43
Basalt-Med Hard 43 82
Browen Basalt 82 101
Basalt-Gray Hard 101 193
Sandy Brown Clay 193 198
Tom Clay 198 218
Tom Clay with some gravel 218 220
Broken Basalt 220 228

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Ray B., SOUTH COAST WELL DRILLING
Address: RT 3, Box 332, P.O. Box 9243

License No. 223-03-14643. Date: 10-15-73

[Signature] Ray B. Nelson
(Well Driller)
# Geologic Interpretation of Water Well Driller’s Log

**By John H. Bush, August 14, 2016**

**Well Log ID:** D0017591  
**Elev (ft):** 272 ±10  
**Depth (ft):** 205  
**Quad:** Robinson Lake

**Latitude:** 46.757503  
**Longitude:** -116.99648 decimal degrees (WGS84)

**Well Address and (or) Other Location Information:**

2495 N Polk Extension, Moscow, Idaho; upper house on west side of road

**Location Method:**
Location is for house; Latah County Assessor; Google Earth imagery; topographic map. Site visit (April 14, 2016), gated driveway.

## GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden and Latah Formation (sediments of Bovill)</strong></td>
<td>From</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td><strong>Saddle Mountains Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lewiston Orchards</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>124</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>131</td>
</tr>
<tr>
<td><strong>Wanapum Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>145</td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td>165</td>
</tr>
<tr>
<td>*Clay, blue</td>
<td>169</td>
</tr>
</tbody>
</table>
Comments:

*This clay is believed to be weathered basalt.

There are three other wells in the NE¼, NW¼, sec. 5: Kenneth Robinson well 1 (drilled in 1982 by Don Town), Kenneth Robinson well 2 (drilled in 1986 by Don Town), and Ken Robinson well 3 (drilled in 1997 by Phil Olson). They all show gravel, sand, and white and yellow clays in the sediments of Bovill interval. The well drilled in 1997 shows soft basalt to 245 ft.

Latah County Tax Parcel RP39N05W053250, 2495 N POLK, owner is ROBINSON, KENNETH P; 15 acres, N 1/2 NW 5 39 5.

References Cited:
11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal./min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>170</td>
<td>1</td>
<td>HR</td>
</tr>
</tbody>
</table>

Water Temp. 54

Water Quality test or comments:

<table>
<thead>
<tr>
<th>Depth first Water Encounter</th>
</tr>
</thead>
<tbody>
<tr>
<td>165</td>
</tr>
</tbody>
</table>

12. LITHOLOGIC LOG:
(Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Layer</th>
<th>From</th>
<th>To</th>
<th>Remarks</th>
<th>Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>124</td>
<td></td>
<td>CLAY BROWN</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>124</td>
<td>129</td>
<td>BASALT MEDIUM GRAY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>129</td>
<td>131</td>
<td>BASALT MEDIUM GRAY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>131</td>
<td>145</td>
<td>CLAY BROWN</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>145</td>
<td>165</td>
<td>BASALT MEDIUM GRAY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>165</td>
<td>199</td>
<td>BASALT WEATHERED BROWN</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>169</td>
<td>205</td>
<td>CLAY BLUE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. DRILLER’S CERTIFICATION:

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCPHERSON & WRIGHT DRILLING

Firm Official: [Signature]

Date: 1/9/02

Driller or Operator: [Signature]

Date: 1/9/02

400 ft.
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT
State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name: Kenneth Robinson
Address: North Amon Ext, Moscow, Idaho 83843
Owner's Permit No.: 87-82-N-12

2. NATURE OF WORK
□ New well □ Deepened □ Replacement □ Abandoned (describe method of abandoning)

3. PROPOSED USE
□ Domestic □ Irrigation □ Test □ Municipal □ Industrial □ Stock □ Waste Disposal or Injection □ Other (specify type)

4. METHOD DRILLED
□ Rotary □ Air □ Hydraulic □ Reverse rotary □ Cable □ Dug □ Other

5. WELL CONSTRUCTION
Casing schedule: □ Steel □ Concrete □ Other
Thickness: □ 250 inches □ 8 inches □ above ground 131 feet

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 63 feet below land surface.
Flowing: □ Yes □ No
Artesian closed-in pressure: p.s.i.
Controlled by: □ Valve □ Cap □ Plug
Temperature: 0°F. Quality: 

8. WELL TEST DATA
□ Pump □ Bailer □ Air □ Other
Discharge: G.P.M.
Pumping level:
Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth From</th>
<th>Material</th>
<th>Water</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>Black dirt</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>2</td>
<td>Yellow clay</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>15</td>
<td>Gray clay</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>39</td>
<td>Brown clay</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>60</td>
<td>Granite-white clay</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>90</td>
<td>Granite-brown clay</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>111</td>
<td>White clay-granite</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>117</td>
<td>Red clay-granite</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>120</td>
<td>Brown clay-granite</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>125</td>
<td>Sand &amp; gravel</td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

10. Work started: 11-10-81 finished: 5-28-82

11. DRILLERS CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Don Town Wall Drilling No. 155
Address: Rt. 4 Box 429 Moscow, ID June 2, 1982
Signed by (Firm Official) Don Town
and (Operator)

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL OWNER
Name: Kenneth Robinson
Address: Robinson Trailer Ct., Moscow, ID 83843
Owner's Permit No.: 87-85-N-9

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement  ☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection  ☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other
Thickness above groundwater:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Diameter</th>
</tr>
</thead>
</table>

Was casing drive shoe used? ☐ Yes  ☐ No
Was a packer or seal used? ☐ Yes  ☐ No
Perforated? ☐ Yes  ☐ No

How perforated? ☐ Factory  ☐ Knife  ☐ Torch
Size of perforation 1/8 inch by 2 inch

Number of perforations 60 feet from 80 feet

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level 29 feet below land surface.
Flowing? ☐ Yes  ☐ No  ☐ G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug  ☐ Temperature  O°F.  Quality
Describe artesian or temperature zones below:

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☐ Air  ☐ Other
Discharge G.P.M.: Pumping Level: Hours Pumped: 14

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore</th>
<th>Depth</th>
<th>Water</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0-3</td>
<td>Yes</td>
<td>Black dirt</td>
</tr>
<tr>
<td>11</td>
<td>3-18</td>
<td>Yes</td>
<td>Lt. brown clay</td>
</tr>
<tr>
<td>12</td>
<td>18-50</td>
<td>No</td>
<td>Sand, small gravel</td>
</tr>
<tr>
<td>13</td>
<td>50-55</td>
<td>Yes</td>
<td>Decomposed granite</td>
</tr>
<tr>
<td>14</td>
<td>55-70</td>
<td>Yes</td>
<td>White clay</td>
</tr>
<tr>
<td>15</td>
<td>70-80</td>
<td>Yes</td>
<td>Decomposed granite</td>
</tr>
</tbody>
</table>

10. Work started 6-21-86 finished 7-11-86

11. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Don Town Halldrilling  Firm No.: 155
Address: 2380 Moscow Mtn Rd  Date: 7-21-86
Moscow, ID 83843  Signed by (Firm Official)

(Operator)

1557

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 gpm</td>
<td>120</td>
<td>4 hrs</td>
<td></td>
</tr>
</tbody>
</table>

Water Temp: ______________
Bottom hole temp: ______________
Water Quality test or comments: Good

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>0 30</td>
<td>Yellow Clay</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>30</td>
<td>50</td>
<td>Soft, Borehole 46%</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
<td>65</td>
<td>Clay and Creek Bed</td>
</tr>
<tr>
<td>8</td>
<td>65</td>
<td>138</td>
<td>Yellow Clay</td>
</tr>
<tr>
<td>6</td>
<td>128</td>
<td>238</td>
<td>Soft, Borehole Rock, White clay from 38ft</td>
</tr>
<tr>
<td>6</td>
<td>238</td>
<td>458</td>
<td>Soft, Borehole Rock</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Phil Wilson Well Drilling
Firm Official: Phil Wilson
Supervisor or Operator: Phil Wilson
Date: 5/17/97
DON RODEEN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: 810057  Elev (ft): 2320 ±10  Depth (ft): 130  Quad: Pullman

Latitude: 46.748483°  Longitude: -117.200855°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
2361 Brayton Road, Pullman, Wash.; on southwest side of road

Location Method:
Location is for house, at same address and in adjacent parcel to that recorded by driller; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 22</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>*N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>22 – 32</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>32 – 95</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>95 – 112</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>112 – 125</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>125 – 130</td>
</tr>
</tbody>
</table>

*Moxley (2012) noted outcrop of N2 along railroad tracks (see Outcrop 16).
Comments:

Whitman County Tax Parcel 200004515312906, 2361 BRAYTON RD, NW1/4 1 AC NW1/4 M/L, owners now are LAWSON, JOHN/SHANNON; 1.0 acre; 09/30/11: grantor was RODEEN, DONALD to LAWSON, JOHN/SHANNON; and 05/09/13: grantor was RODEEN, ROB A to LAWSON, JOHN/SHANNON ($0).

References Cited:

WATER WELL REPORT

Construction/Decommission ("x" in circle)

[ ] Construction
[ ] Decommission

[ ] ORIGINAL INSTALLATION

Notice of Intent Number W272957

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal

[ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)

[ ] New well [ ] Reconditioned
[ ] Method [ ] Bored [ ] Driven

[ ] Deepened [ ] Rotary [ ] Jetted

DIMENSIONS: Diameter of well in inches, drilled 190 ft

Depth of completed well 190 ft

CONSTRUCTION DETAILS

Casing: [ ] Welded 8" Dia from 1 1/2 ft to 190 ft

Installed: [ ] Liner installed 8" Dia from 10 ft to 190 ft

[ ] Threaded [ ] Diam from 1 ft to 10 ft

Perforations: [ ] Yes [ ] No

Type of perforator used: [ ] AWWA

SIZE of perfs 1/8 in by 1/2 in and no of perfs 90 from 90 ft to 190 ft

Screens: [ ] Yes [ ] No [ ] K-Pac Location

Manufacturer's Name

Model No

Type

Dia

Slot size

Dia

Slot size

Gravel/Filler packed: [ ] Yes [ ] No

Size of gravel/sand

Materials placed from____________________________ to____________________________

Surface Seal: [ ] Yes [ ] No To what depth? 35 ft

Material used in seal: [ ] BENTONITE

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water:

Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type

Water Levels: Land-surface elevation above mean sea level

Static level 80 ft below top of well Date 9/10/09

Artesian pressure________ lbs per square inch Date

Artesian water is controlled by____________________________ (calf, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? [ ] Yes [ ] No If yes, by whom?

Yield________ gpm with __________ drawdown after _______ hrs

Yield________ gpm with __________ drawdown after _______ hrs

Yield________ gpm with __________ drawdown after _______ hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time

Water Level

Time

Water Level

Start Date 9/9/09 Completed Date 9/10/09

 constitutional certification: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller: [ ] Engineer: [ ] Trainee: [ ] Name trainee TED WRIGHT

Driller/Engineer/Trainee Signature

Driller or trainee License No 0532

If Trainee Driller's License No

Driller's Signature

Drilling Company: MCPHERSON & WRIGHT DRILLING

Address: 2246 BURRELL

City, State, Zip LEWISTON ID 83501

Contractor's Registration No mcphed1351 Date 7/7/12

If you need this document in an alternate format, please call the Water Resources Program at 360-470-6872.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-333-6941.
MIKE AND CONNIE RODEEN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 11, 2018

Well Log ID: 175633  Elev (ft): 2540 ±10  Depth (ft): 155  7.5’  Quad: Pullman

Latitude: 46.72846°  Longitude: -117.225102°  decimal degrees (WGS84)

Location Method:
Location is for well, in backyard; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded adjacent Section and subsections; site visit March 30, 2018

Well Address and (or) Other Location Information:
22608 U.S. 195 (WA 195), Pullman, Wash., on west side of highway

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 64</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>64 – 134</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>134 – 142</td>
</tr>
<tr>
<td>Basalt</td>
<td>142 – 155</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004414021590, 22608 SR 195, PULLMAN 99163, LOT 2 RAY HARLOW SHORT PLAT, owner now is RODEEN, CONSTANCE; 07/28/17: grantor was RODEEN, MICHAEL to RODEEN, CONSTANCE.

Well is in backyard, between two small trees along the rear (western) boundary with field.

References Cited:
File Original and First Copy with Department of Ecology
Second Copy — Owner’s Copy
Third Copy — Driller’s Copy

OWNER: Mike Rodeen
Address: 605 SW Center, Pullman, WA 99163

LOCATION OF WELL: Whitman

STREET ADDRESS OF WELL: 605 SW Center, Pullman, WA

PROPOSED USE: Domestic

TYPE OF WORK: New well

DIMENSIONS: Diameter of well 6 ft. 6 in. Depth of completed well 155 ft.

CONSTRUCTION DETAILS:
- Casing Installed: Dia. 8 ft. from 10 ft. to 14 ft.
- Welded: Dia. 6 ft. from 14 ft. to 18 ft.
- Liner Installed: Dia. 6 ft. from 18 ft. to 20 ft.
- Threaded: Dia. 6 ft. from 20 ft. to 40 ft.

Perforations: Yes
- Made through: Dia. from 40 ft. to 100 ft.
- Size of perforations in. by in.
- Depth of strata

Screens: Yes
- Manufacturer: Name
- Type
- Dia.
- Slot size
- Gravel packed: Yes
- Size of gravel
- Gravel placed from ft. to ft.
- Surface seal: Yes
- Material used in seal

WATER LEVELS:
- Static level 47 ft. below top of well Date 6/19/97
- Artesian pressure 100 lbs. per square inch Date
- Artesian water is controlled by (Culvert, Valve, etc.)

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes
- Yield: gal/min. with ft. drawdown after hrs.
- Recovery data: Time taken as zero when pump turned off (water level measured from well top to water level)

WELL CONSTRUCTOR CERTIFICATION:
- I, the undersigned, do hereby certify that I have constructed the water well listed above in compliance with the Washington Water Well Construction Standards.
- Name
- Address
- (Signed)
- Contractor's Registration No.
- License No.

(USE ADDITIONAL SHEETS IF NECESSARY)

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**DAN ROGERS WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 20, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>D033813</th>
<th>Elev (ft):</th>
<th>2730 ±10</th>
<th>Depth (ft):</th>
<th>378</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.837512°</td>
<td>Longitude:</td>
<td>-117.005249°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Section | NE ¼, | SE ¼, | T. 40 N, | R. 5 W |

**Well Address and (or) Other Location Information:**
1111 Four Mile Road, Viola, Idaho; on south side of road

**Location Method:**
Location is for well, between driveway and Fourmile Creek, amongst trees; Latah County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ¼-¼ section. Site visit (March 21, 2018).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0 – To 18</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>From 18 – To 378</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP040040506002; ROGERS, DANIEL J; 1111 FOUR MILE RD; MCCOY LOT 2 & 1.00 AC TAX #6402; 6 40 5.

Well is beyond trees and creek. Close-up of well, above.

References Cited:
IDaho department of water resources
Well Driller's Report

1. WELL TAG No. D 003813
   Drilling Permit No. 3/4/12
   Water Right or Injection Well No. 3/4/12

2. Owner:
   Name: Dan Rogers
   Address: 113 South Monroe
   City: Moscow
   State: Id., Zip 83843

3. Location of Well by legal description:
   You must provide address or Lot, Blk, Sub. or Directions to well.
   Twp: 40 North or South
   Rge: 5 East or West
   Sec: 6 NW 1/4 SE 1/4
   Gov't Lot: 1/4
   County: Late
   Lat: Long:
   Address of Well Site: 1 mile East of Viola on 4th Rd (Or use full legal description Distance to property or landmark)
   City: Viola
   Lt: Blk: Sub. Name

4. Use:
   ☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
   ☐ Thermal ☐ Injection ☐ Other

5. Type of Work:
   ☐ New Well ☐ Modify ☐ Abandonment ☐ Other
   (Replacement etc.)

6. Drill Method:
   ☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. Sealing Procedures:
   Seal Material: Bentonite
   From: 0
   To: 27
   Weight / Volume: 200 lbs Dry
   Seal Placement Method: 
   Was drive shoe used? ☐ N
   Shoe Depth(s): 27'
   Was drive shoe seal tested? ☐ Y ☐ N
   How?

8. Casing/Liner:
   Diameter: 8
   From: +1
   To: 27
   Gauge: 250
   Steel or PVC
   Casing Liner Welded Threaded
   Length of Headpipe: 
   Length of Tailpipe: 
   Packer ☐ N Type: Shale Trap

9. Perforations/Screen Packers: Type: SAW
   Screen Type & Method of Installation:
   From: 358
   To: 378
   Slot Size: 3/8" or 1/8" or 3/16" or 3/32"
   Number: 32
   Diameter: 6
   Material: PVC or other
   Casing Liner

10. Filter Pack:
   Filter Material: 
   From: 
   To: 
   Weight / Volume: 
   Placement Method: 

11. Static Water Level or Artesian Pressure:
   ft. below ground Artesian pressure lb.
   Depth flow encountered ft. Describe access port or control devices:

12. Well Tests:
   ☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian
   Yield gal./min. Drawdown Pumping Level Time
   approx 368' 1 hr.
   Water Temp. Bottom hole temp.
   Water Quality test or comments:
   Depth first Water Encounter

13. Lithologic Log: (Describe repairs or abandonment)
   Bore Dia. From To Remarks: Lithology, Water Quality & Temperature
   8 0 18 Overburden
   8 10 27 Granite Firm
   8 27 50 Granite Firm
   8 50 58 Granite Soft
   8 74 76 Granite Soft
   8 76 109 Granite Firm
   8 109 126 Granite Soft
   8 126 378 Granite Firm

14. Driller's Certification
   If we certify that all minimum well construction standards were complied with at the time the rig was removed.
   Company Name: WittWell Drilling
   Firm No.: 58
   Principal Driller: Roger Witt
   Date: 6/1/104
   Driller or Operator II
   Date: 
   Operator I
   Date: 
   Principal Driller and Rig Operator Required.
   Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
DORAN ROGERS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, October 8, 2016

Well Log ID: 292869  Elev (ft): 2510 ±10  Depth (ft): 375  7.5’  Quad: Palouse

Latitude: 46.964729  Longitude: -117.072333  decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 13, T. 17 N, R. 45 E

Well Address and (or) Other Location Information:
903 Grinnell Road, Garfield, Wash., on south side of road (and northeast of Bunny Road); well is in yard east of house (and west of Cascade Aircraft Conversions business office/airplane hangar).

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 15, 2016); met Doran Rogers, CEO, Cascade Aircraft Conversions, at his business office/airplane hangar; also spoke with current owner of house and well. Cascade Aircraft and the current owners share water from the well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 10</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>10 – 15</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>15 – 16</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>16 – 22</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>22 – 23</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>23 – 213</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>213 – 237</td>
</tr>
<tr>
<td>Clay, brown, gray, and blue</td>
<td>237 – 316</td>
</tr>
<tr>
<td>*Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Argillite(?) , siltite(?) , decomposed</td>
<td>316 – 373</td>
</tr>
<tr>
<td>Clay, blue</td>
<td>373 – 375</td>
</tr>
</tbody>
</table>
Comments:

*This well is interpreted to have ended in weathered Precambrian rock; however, it could be all Latah Formation below the Wanapum Basalt.

Whitman County Tax Parcel 200004517134691, 903 GRINNEL RD, TRACT 1 D. ROGERS SHT PLT SE1/4 PT S1/2, WELCH, THOMAS R/KAREN L; 1.0 acre; grantors were ROGERS LIVING TRUST, DORAN/SANDRA on 09/19/12.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNED: Name: DOGAN RUGER
Address:

LOCATION OF WELL: County: JOHNSON

PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

TYPE OF WORK: Owner's number of well (if more than one):
New well [X] Method: Bug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [ ] Jetted [ ]

DIMENSIONS:
Diameter of well: 8 inches
Length of completed well: 37.5 ft.

CONSTRUCTION DETAILS:
Casing installed: 6 ft. Dia. from 17 ft. to 17 ft.
Threaded [ ] Dia. from 3 ft. to 3 ft.
Welded [X] Dia. from 3 ft. to 3 ft.

Perforations: Yes [X] No [ ]
Type of perforator used: 10 in.
SIZE of perforations: 10 in.
Perforations from 125 ft. to 325 ft.
Perforations from 325 ft. to 375 ft.
Perforations from 375 ft.

Screens: Yes [X] No [ ]
Manufacturer's Name:
Type:
Diam. from 6 ft. to 6 ft.
Slot size from 6 ft. to 6 ft.
Diam. from 6 ft. to 6 ft.
Slot size from 6 ft. to 6 ft.
Gravel packed: Yes [X] No [ ]
Size of gravel:
Gravel placed from to ft.

Surface seal: Yes [X] No [ ]
To what depth: 27 ft.
Material used in seal: GRAY, CLAY
Did any strata contain unusable water? Yes [X] No [ ]
Type of water: WATER
Depth of strata: 2 ft.
Method of sealing strata off: COVERS WITH WELL SEAL

PUMP: Manufacturer's Name:
Type:

WATER LEVELS:
Land-surface elevation above mean sea level: 2500 ft.
Static level: 81 ft. below top of well Date: 10-4-78
Artesian pressure: lbs. per square inch Date
Artesian water is controlled by: (Cap, valve, etc.)

WELL TESTS:
Drawdown is amount of water level is lowered below static level
Was a pump test made? Yes [X] No [ ] If yes, by whom? RAY McPHERSON
Yield: 15 gal./min. with 10 ft. drawdown after 7 hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
12.30 p.m. 91 12.35 p.m. 92 12.40 p.m. 93

day and test gal./min. with drawdown after 10 hrs.
Artesian flow: g.p.m. Date
Temperature of water: Was a chemical analysis made? Yes [X] No [ ]

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: RAY McPHERSON, WELL DRILLING
(Person, firm, or corporation) (Type of print)
Address: 141, BOX 332, PULLMAN, WASH. 99163

[Signed] Ray McPHERSON
(Well Driller)
License No. 0302 Date: 10-14-78

S. F. No. 7356 (Rev. 4-71)
**JUSTIN ROGERS WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 11, 2018

Well Log ID: 688523  Elev (ft): 2550 ±10  Depth (ft): 350  Quad: Pullman

Latitude: 46.707083°  Longitude: -117.222738° decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 12, T. 14 N, R. 44 E

**Well Address and (or) Other Location Information:**

871 Country Club Road, Pullman, Wash.; on north side of road

**Location Method:**

Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Weissenfels Ridge Member or Asotin Member</td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>123 – 176</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, green</td>
<td>321 – 350</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004414123795, 871 COUNTRY CLUB RD; ROGERS/HAWES COUNTY CLUB RD SHPLT, Lot 2; owners are ROGERS, JUSTIN/AMY M; 7.035 acres.

References Cited:
WATER WELL REPORT

Construction/Decommission (*x* in circle)

1. Construction
2. Decommission
3. ORIGINAL INSTALLATION

**PROPOSED USE:**
- ☐ Domestic
- ☐ Industrial
- ☐ Municipal
- ☐ DeWater
- ☐ Irrigation
- ☐ Test Well
- ☐ Other

**TYPE OF WORK:** Owner's number of well (if more than one)
- ☐ New well
- ☐ Reconditioned
- ☐ Method: □ Deg
- ☐ORED
- ☐ Bored
- ☐ Driven
- ☐ Deepened
- ☐ Cased
- ☐ Rotary
- ☐ Jetted

**DIMENSIONS:** Diameter of well __ inches, drilled __ ft. depths of completed well __ ft.

**CONSTRUCTION DETAILS**

Casing:
- □ Yes
- □ No

Installed:
- □ Yes
- □ No

Perforations:
- □ Yes
- □ No

**TYPE OF PERFORATION:**
- □ threaded dots

**SIZE OF PERFS:**
- □ Yes
- □ No

**Screen**:
- □ Yes
- □ No

**Owner/Operator's Name**

**PUMP:**
- Manufacturer's Name
- Type

**WATER LEVELS:**
- Land-surface elevation above mean sea level __ ft.
- Static level __ ft. below top of well Date __ __ __
- Artesian pressure __ lbs. per square inch. Date __ __ __
- Artesian water is controlled by __ (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? □ Yes
- □ No
- If yes, by whom.
- Yield:
  - gal/min. with __ ft. drawdown after __ hrs.
  - gal/min. with __ ft. drawdown after __ hrs.
  - gal/min. with __ ft. drawdown after __ hrs.

**RECOVERY DATA (TIME TAKEN AT ZERO WHEN PUMP TURNED OFF):**
- (water level measured from well top to water level)
  - Time __ Water Level __
  - Time __ Water Level __
  - Time __ Water Level __

**DATE OF TEST**
- Bailer test __ gal/min. with __ ft. drawdown after __ hrs.
- Airtest __ gal/min. with test set at __ ft. for __ hrs.
- Artesian flow __ g.p.m. Date __ __ __
- Temperature of water __ °F

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainer

**Driller/Engineer/Trainer Signature:**

**Driller or trainer's license No.:**

**IF TRAINEE:** Driller's license No.

**Driller's Signature:**

**CURRENT**

Notice of Intent No. WE12214

Unique Ecology Well ID Tag No. BBH 193

Water Right Permit No.

Property Owner Name Justin Rogers

Well Street Address 871 Country Club Rd.

City Pullman County Whitman

Location SW 1/4 1/4 SW 1/4 Sec 13 Twn 14 R 44

Lat/Long Lat Deg __ __ Lat Min/Sec __ __

Long Deg __ __ Long Min/Sec __ __

Tax Parcel No. (Required) 2-0020-44-14-12-3

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each layer of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

**MATERIAL:**
- FROM __ TO __
  - Brown Clay __ __ __
  - Black Basalt __ __ __
  - Brown Clay __ __ __
  - Medium blue, basalt __ __ __
  - Soft green basalt __ __ __

**RECEIVED**

OCT 26 2010

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Start Date 10-7-10 Completed Date 10-11-10

Drilling Company Brett Ulkenkott Drilling, LLC

Address PO Box 233

City, State, Zip Cottonwood, ID 83502

Contractor's Registration No. 100DBRETTU018B

Date 10-22-10
PAUL ROGERS WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, January 15, 2018

Well Log ID: Ralston (1996) [Not in WA DOE database]
Well Address and (or) Other Location Information:
461 Altergott Road, Palouse, Wash.; on northwest side of road, about 0.1 mi west of bridge over Palouse River

Latitude: 46.946768° Longitude: -117.148174° decimal degrees (WGS84)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>*Clay, tan</td>
<td>0 – 210</td>
</tr>
<tr>
<td>*Clay, brown</td>
<td>210 – 298</td>
</tr>
<tr>
<td>Cambrian–Precambrian</td>
<td></td>
</tr>
<tr>
<td>Argillite, fractured</td>
<td>298 – 330</td>
</tr>
</tbody>
</table>

*Some of the soft weathered argillites appear like clay in cuttings, so portions of these clays are probably weathered Precambrian rocks.
Comments:

Whitman County Tax Parcel 200004517282290, NW1/4 PT NW1/4, owner now is WOOD, NICOLE J; PO BOX 522, PALOUSE WA; 1.0 acre; residence built in 1980, 1980 sq. ft. in size; 11/08/15: grantors were FARR, LARRY R/RANDALL J to FARR, JAMES/WOOD NICOLE ($0); then on 11/18/13: grantors were FARR, JAMES/WOOD NICOLE to WOOD, NICOLE J ($0).

References Cited:

17/45 13 sw/se Rogers
0 - 1 soil
1 - 10 clay
10 - 15 sandy clay
15 - 22 basalt
22 - 23 basalt, broken
23 - 213 basalt
213 - 237 sandy clay
237 - 316 clay
316 - 373 decomposed granite, water
373 - 375 blue clay

17/45 13 se/se Kriebel
0 - 5 clay
5 - 213 basalt
213 - 217 clay
217 - 230 sand

17/45 28 nw/nw Paul Rogers
0 - 210 clay, tan
210 - 298 clay, brown
298 - 330 argillite, fractured

17/45 30 Shoemaker
0 - 58 clay
58 - 61 boulders
61 - 76 clay
76 - 80 boulders
80 - 90 clay
90 - 100 basalt
100 - 161 clay and gravels
161 - 175 rock
175 - 220 clay
220 - 229 rock
229 - 270 clay
270 - 355 basalt
355 - 367 clay
367 - 381 broken rock
381 - 392 broken rock and clay
392 - 421 shale and rock

17/45 36 se/sw A. Barabasz
0 - 2 soil
2 - 13 clay
13 - 137 basalt
137 - 138 basalt, weathered
138 - 202 basalt
202 - 218 basalt, weathered
218 - 233 clay
233 - 239 sandy clay
239 - 255 fine sand, water

DTW = 81' Q = 25 gpm
DTW = ?? Q = 12 gm
DTW = ?? Q = 15 gpm
DTW = 24' Q = 20 gpm
DTW = ?? Q = 50 gpm

Extracted from Ralston (1996)
## RAYMOND ROMJUE WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, August 14, 2016

| Well Log ID:     | 157891 | Elev (ft): | 2730 ±10 | Depth (ft): | 108 | 7.5’ Quad: | Elberton |

Latitude: 46.917864  Longitude: -117.171121  decimal degrees (WGS84)

SE ¼, SE ¼, SE ¼, Sec. 31, T. 17 N, R. 45 W

### Well Address and (or) Other Location Information:
2192 Ickes Road, Palouse, Wash., on north side of road

### Location Method:
Location is for old house; Whitman County Assessor; Google Earth imagery; topographic map; Elberton quadrangle Well 8 of Bush and others (2005 [2006]). Site visit (November 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>From 0 – 8</td>
</tr>
<tr>
<td>Cambrian/Precambrian(?)</td>
<td>Argillite, soft, gray 8 – 108</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004517314490, 2192 ICKES RD, SE SE COR; owner is ROMJUE, RAY E; 4.0 acres; 1 story residence built in 1900.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Raymond Lamoureux
Address: 211 3rd Ave,Palouse, WA

(2) LOCATION OF WELL:
County: Whitman
Township: 1/4 Sec. 31 T 17 N, R 15 W.M.

(3) PROPOSED USE:
Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK:
Owner's number of well (if more than one)...
New well ☐ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Recommissioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS:
Diameter of well: 18 inches
Depth of completed well: 108 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 ft. Diam. from 0 ft. to 108 ft.
Threaded ☐ Welded ☐ Perforations: Yes ☐ No ☐ Saw
Type of perforator used: [Blank]
SIZE of perforations: 1/16 in. by 1/16 in.
30 perforations from 0 ft. to 108 ft.
Screened: Yes ☐ No ☐
Manufacturer's Name: [Blank]
Diam.: [Blank] Slot size: [Blank] ft. from to ft.
Gravel packed: Yes ☐ No ☐ Size of gravel: [Blank]
Gravel placed from [Blank] ft. to [Blank] ft.
Surface seal: Yes ☐ No ☐ To what depth? 20 ft.
Material used in seal: [Blank]
Non-artesian water:[Blank]
Type of water? Artesian ☐ Non-artesian ☐
Depth of strata: [Blank]
Method of sealing strata off: [Blank]

(7) PUMP:
Manufacturer's Name: [Blank]
Type: [Blank]

(8) WATER LEVELS:
Land-surface elevation above mean sea level: [Blank] ft.
Static level [Blank] ft. below top of well.Date: [Blank]
Artesian pressure: [Blank] lbs. per square inch.Date: [Blank]
Artesian water is controlled by: (Cap, valve, etc.) [Blank]

(9) WELL TESTS:
Draft down is amount water level is lowered below static level.
Was a pump test made? Yes ☐ No ☐ If yes, by whom? [Blank]
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
</tbody>
</table>

Date of test: [Blank]
Artesian flow: [Blank] g.p.m. Date: [Blank]
Temperature of water: [Blank] Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Ardlite</td>
<td>Grey</td>
<td>Sept 8 108</td>
</tr>
</tbody>
</table>

RECEIVE

DEPART. CF ECOL. OF W.

[Signature] [Blank]

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: [Blank]
Address: 2146 Darrell Lewallen, Palouse, WA

[Signature] [Blank]
License No. 0523 Date: 8-25-1988

(USE ADDITIONAL SHEETS IF NECESSARY)
ELMER RUPP WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018

<table>
<thead>
<tr>
<th>Well Log ID: 152373</th>
<th>Elev (ft): 2480 ±10</th>
<th>Depth (ft): 165</th>
<th>7.5’</th>
<th>Quad: Viola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 46.858851°</td>
<td>Longitude: -117.123636°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE ¼, SW ¼, NE ¼, Sec. 22, T. 16 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**

302 Lyle West Road, Pullman, Wash., on north side of road

---

**Location Method:**

Location is for well at southeast corner of white pump house, east of driveway; Whitman County Assessor; Google Earth imagery; topographic map; Well 2 of Bush and Provant (1998); Lum and others (1990, p. 72) gave elevation of 2470 ft in 16/45-22K1 (NW SE). Site visit March 24, 2018.

---

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>Soil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Clay</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Gravel</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt, weathered</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
<td>17</td>
<td>142</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sand</td>
<td>142</td>
<td>165</td>
</tr>
</tbody>
</table>

1560
Comments:

Whitman County Tax Parcel 200004516221890, 302 L WEST RD, PALOUSE; NE PT S1/2 4-99/46909; JOVANOVICH, LINDA K; 302 L WEST RD; PALOUSE WA; 7.0 acres; one story residence built in 1975.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name: Elmer Bupp
Address: Pullman, Washington

LOCATION OF WELL: County: Whitman
Subdivision corner

PROPOSED USE: Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

TYPE OF WORK: Number of wells:
New well ☑ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

DIMENSIONS: Diameter of well: 6 ft. 8 in.
Drilled: ft. Depth of completed well: 165 ft.

CONSTRUCTION DETAILS:
- Perforations: Yes ☑ No ☐
  - Type of perforator:
  - Size of perforations:
    - In. by:
    - Perforations from:
      - ft. to:
      - ft. to:
      - ft. to:
      - ft. to:

- Screens: Yes ☑ No ☐
  - Manufacturer's Name:
  - Type:
  - Slot size:
    - from:
    - ft. to:
  - Dia.:
    - from:
    - ft. to:
  - Gravel packed: Yes ☑ No ☐
    - Size of gravel:
    - From:
    - ft. to:
    - ft. to:

- Surface seal: Yes ☑ No ☐
  - Material used:
  - Cements:
  - To what depth:
    - ft.
  - Did any strata contain unusable water?: Yes ☑ No ☐
  - Type of water:
  - Depth of strata:

- Method of sealing strata:

PUMP:
- Manufacturer's Name:
- Type:
- H.P.

WATER LEVELS:
- Land-surface elevation:
  - Above mean sea level:
  - 2500 ft.
- Static level:
  - ft. below top of well:
  - Date:
- Artesian pressure:
  - lbs. per square inch:
  - Date:
- Artesian water is controlled by:
  - (Cap, valve, etc.)

WELL TESTS:
- Drawdown is amount water level is lowered below static level:
- Was a pump test made?: Yes ☑ No ☐
  - If yes, by whom:
  - Yield:
    - gal./min. with
    - ft. drawdown after:
    - hrs.
    - AIR TEST:
      - 60 G.P.M.
- Recovery data:
  - Time:
  - Water Level:
  - Time:
  - Water Level:
  - Time:
  - Water Level:

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Adcock Air Drilling
Address: Lewiston, Idaho

License No. 0532 Date: June 4, 1974

(Signed) [Signature]

(USE ADDITIONAL SHEETS IF NECESSARY)
EDGAR RUSSELL WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 14, 2016

Well Log ID: 293639   Elev (ft): 2570 ±10   Depth (ft): 242   Quad: Albion

Latitude: 46.795044   Longitude: -117.181507   decimal degrees (WGS84)

Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 14 of Bush and Garwood (2005 [2006]). Site visit (September 19, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Geoform</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Palouse Form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>5</td>
<td>132</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td>132</td>
<td>240</td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latah Forma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>240</td>
<td>242</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515074559, 1702 BANNER RD, SE PT E 1/2 E OF RD, owners now are LAGERQUIST, LYNN/ELLEN, 5.0 acres, 1 story residence built in 1970.

References Cited:
WELL LOG

Record by: Driller
Source: Well report

Location: State of WASHINGTON
County: Whitman
Area: 
Map: 

Well No: S.E. 1/4 S.E. 1/4 sec. 7 T/5 N., R. 15 E. 
Diagram of Section

Drilling Co.: Detray Drilling
Address: 1036, 15th, Clarkston, Wash.

Method of Drilling: Rotary
Date: 8/30/1970

Owner: Edgar W. Russell
Address: Banner Rd. Rt. 1 Box 82 B Clarkston

Land surface, datum: ft. above

SWL: 70' Date: 8/30/1970 Dims.: 7" X 242'

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic (new well) clay, topsoil</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>5</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>132</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>240</td>
<td>242</td>
<td></td>
</tr>
</tbody>
</table>

Casing installed: Liner 5" diam from 162' to 242'; 7" diam from 0' to 132', welded.

No perforations, screens or gravel pack.

Surface seal: metal cap.

Pump: Berkeley, submersible, 15 HP

Turn up
<table>
<thead>
<tr>
<th>Comment</th>
<th>Material</th>
<th>From (feet)</th>
<th>To (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth forward</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well test: By Bud DeTray. Yield 100 gpm w/ 80' dd. after 1 hr. Bailer test.

Water temp: 45°
**SAND ROAD LAND COMPANY WELL 1**

**[DRILLED MAY 3, 2017]**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 24, 2018

Well Log ID: 1624858  Elev (ft): 2750 ±10  Depth (ft): 400  Quad: Moscow West

Latitude: 46.719238°  Longitude: -117.052833°  decimal degrees (WGS84)

  ¼,  SW ¼,  SW ¼,  Sec. 5 ,  T. 14 N ,  R. 46 E

**Well Address and (or) Other Location Information:**
5882 Old Moscow Road, Pullman, Wash., on north side of road

**Location Method:**
Location is approximate, for house area; Whitman County Assessor; Google Earth imagery; topographic map; driller's report provided incorrect Township; site visit March 19, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>158</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, clay, blue</td>
<td>320</td>
</tr>
<tr>
<td>*Sand and clay</td>
<td>390 – 400</td>
</tr>
</tbody>
</table>

*Driller listed as granite however second well nearby (Sand Road Land Company well 2) encounters basalt at 390 ft, thus the material recorded as granite is really sediment.*
Comments:
Whitman County Tax Parcel 200004614054901, SE1/4 PT W1/2 OF LOT 6; owner is SAND ROAD BUCKLERS LLC; 2653 SAND RD, PULLMAN WA; 2.0 acres; 12/21/17: grantor was SAND ROAD LAND CO (2) to SAND ROAD BUCKLERS LLC.

Well was dry.

References Cited:
WELL #1
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- [ ] Construction
- [ ] Decommission

ORIGINAL INSTALLATION
Notice of Intent Number

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
- [ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner’s number of well (if more than one) #1
- [ ] New well [ ] Reconditioned Method: [ ] Dug [ ] Bored [ ] Driven
- [ ] Deepened [ ] Cable [ ] Rotary [ ] Jotted

DIMENSIONS: Diameter of well 10 inches, drilled 18 ft.
Depth of completed well 48 ft.

CONSTRUCTION DETAILS
Casing [ ] Welded Le ft. Diam. from 2 ft. to 158 ft.
Installed: [ ] Liner installed _____ Diam. from _____ ft. to _____ ft.
[ ] Threaded _____ Diam. From _____ ft. to _____ ft.

Perforations: [ ] Yes [ ] No
Type of perforator used

SIZE of perf in. by in. and no. of perf from ft. to ft.

Screens: [ ] Yes [ ] No [ ] K-Pac Location
Manufacturer’s Name

Type _______ Model No. _______ Location _______

Materials placed from __________ ft. to __________ ft.

Surface Seal: [ ] Yes [ ] No To what depth ____ ft.
Material used in seal _______

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water _______

Method of sealing strata off

PUMP: Manufacturer’s Name

Type _______

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level _____ ft. below top of well Date
Artesian pressure _____ lbs. per square inch Date

Artesian water is controlled by __________ (cap, valve, etc.)

WELL TESTS: Drawdown is about water level is lowered below static level
Was a pump test made? [ ] Yes [ ] No If yes, by whom?
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from
top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test ______ gal./min. with ______ ft. drawdown after ______ hrs.
Air test ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow ______ g.p.m. Date

Temperature of water ______ Was a chemical analysis made? [ ] Yes [ ] No

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure,
and the kind and nature of the material in each stratum penetrated, with at
least one entry for each change of information. (USE ADDITIONAL
SHEETS IF NECESSARY.)

MATERIAL FROM TO

Hard brown clay 0 18
Med brown clay 18 158
Med black loam 158 290
Hard black loam 290 390
Sand & clay 390 480
Grey Granite

*Dry Hole - No Water*

JUN 17 2017

Start Date 5-2-17 Completed Date 5-3-17

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainee Name (Print): Britten Ziemet
[ ] Driller/Engineer/Trainee Signature: 

[ ] Driller’s License No. 2141
[ ] Contractor’s Registration No. 075664

SAND ROAD LAND COMPANY WELL 2

[DRILLED MAY 13, 2017]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 24, 2018

Well Log ID: 1624856   Elev (ft): 2750 ±10   Depth (ft): 580   7.5’   Quad: Moscow West

Latitude: 46.719278°   Longitude: -117.052359°   decimal degrees (WGS84)

¼,   SW ¼,   SW ¼,   Sec. 5 ,   T. 14 N ,   R. 46 E

Well Address and (or) Other Location Information:
5882 Old Moscow Road, Pullman, Wash., on north side of road

Location Method:
Location is for approximate driveway area east of house; Whitman County Assessor; Google Earth imagery; topographic map; driller's report provided incorrect Township; site visit March 19, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 158</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>158 – 320</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay and sand, brown</td>
<td>320 – 390</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>390 – 460</td>
</tr>
<tr>
<td>Basalt</td>
<td>460 – 510</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>510 – 550</td>
</tr>
<tr>
<td>Sand(?) and basalt(?)</td>
<td>550 – 575</td>
</tr>
<tr>
<td>Basalt</td>
<td>575 – 580</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004614054901, SE1/4 PT W1/2 OF LOT 6; owner is SAND ROAD BUCKLERS LLC; 2653 SAND RD, PULLMAN WA; 2.0 acres; 12/21/17: grantor was SAND ROAD LAND CO (2) to SAND ROAD BUCKLERS LLC.

Well may be at right margin (east) of drive, in green grassy area

SAND ROAD BUCKLERS, LLC (UBI Number: 604 119 505) registered agent is SHAWNA RASMUSSEN, governor is ROY DRUFFEL (Washington Secretary of State, 2018).

References Cited:

WATER WELL REPORT

Construction/Decommission ("x" in circle)

- Decommission ORIGINAL INSTALLATION
- Notice of Intent Number

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
[ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one) [ ] 2
[ ] New well [ ] Reconditioned Method: [ ] Drilled [ ] Bored [ ] Driven
[ ] Deepened [ ] Cable [ ] Rotary [ ] Jettied

DIMENSIONS: Diameter of well [ ] inches, drilled [ ] ft.
Depth of completed well [ ] ft.

CONSTRUCTION DETAILS

Casing [ ] Welded [ ] Liner installed
[ ] Threaded [ ] Diameter From [ ] ft.

Perforations: [ ] Yes [ ] No
Type of perforator used [ ] Skill saw cut
Size of perfor in. [ ] in. and no. of perfor [ ] from [ ] to [ ]
Screens: [ ] Yes [ ] No [ ] K-Pac Location
Manufacturer's Name

Type Diameter Slot size from ft. to ft.
Diameter Slot size from ft. to ft.
Gravel/Filter packed: [ ] Yes [ ] No Size of gravel/sand
Materials placed from ft. to ft.
Surface Seal: [ ] Yes [ ] No To what depth? [ ] ft.
Material used in seal [ ] Bentonite [ ] Hole Plug
Did any strata contain unusable water? [ ] Yes [ ] No
Type of water [ ] Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name

Type [ ] H.P.

WATER LEVELS: Land surface elevation above mean sea level [ ] ft.
Static level [ ] ft. below top of well Date [ ]
Artesian pressure [ ] lbs per square inch Date [ ]
Artesian water is controlled by [ ] (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [ ] No If yes, by whom?
Yield [ ] gal/min. [ ] ft. drawn after hrs.
Yield [ ] gal/min. [ ] ft. drawn after hrs.
Yield [ ] gal/min. [ ] ft. drawn after hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of test

Bailer test [ ] gal/min. with ft. drawn after hrs.
Airetest [ ] gal/min. with stem set at [ ] for hrs.
Artesian flow g.p.m. Date

Temperature of water [ ] Was a chemical analysis made? [ ] Yes [ ] No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>0</td>
</tr>
<tr>
<td>Black</td>
<td>3</td>
</tr>
<tr>
<td>Brown</td>
<td>158</td>
</tr>
<tr>
<td>Manganese</td>
<td>240</td>
</tr>
<tr>
<td>Black</td>
<td>380</td>
</tr>
<tr>
<td>Brown clay sands</td>
<td>320</td>
</tr>
<tr>
<td>Black</td>
<td>460</td>
</tr>
<tr>
<td>Black</td>
<td>510</td>
</tr>
</tbody>
</table>

Water [ ] 535

Start Date [ ] Completed Date [ ]

JUL 17
2017

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainer Name (Print): [ ]
Driller/Engineer/Trainer License No:

Drilling Company: [ ]
Address: [ ]
City, State, Zip: [ ]
Contractor's Registration No: [ ]

ECY 050-1-20 (Rev 02-2010) To request ADA accommodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-609-4092. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.
**EUGENE SCHELL WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 9, 2018

Well Log ID: 152499

Elev (ft): 2535 ±10

Depth (ft): 55

7.5’

Quad: Palouse

Latitude: 46.920538°

Longitude: -117.040147°

decimal degrees (WGS84)

¼, ¼, SW ¼, Sec. 32, T. 17 N, R. 46 E

**Well Address and (or) Other Location Information:**
1452 North River Road, Palouse, Wash.; at end of long driveway north of road, next to Washington-Idaho state line.

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 11</td>
</tr>
<tr>
<td>Wanapum Basalt, Columbia River Basalt Group</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>11 – 21</td>
</tr>
<tr>
<td>Basalt</td>
<td>21 – 35</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>35 – 55</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004617323900, SWLT 4, owner now is CASEY, KATHRINE J; 11114 111ST ST SW, TACOMA WA; 12/30/10: grantor was SCHELL, ELIZABETH R to CASEY, KATHRINE J; 25 acres; one story residence built in 1937.

Kathrine Casey is the daughter of Eugene and Elizabeth Schell (The Lewiston Tribune, 2010).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

1) OWNER: Eugene Schill
Address: 101 Broadway, Poc Barr, WA 99261

2) LOCATION OF WELL: Whitman
County

3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

4) TYPE OF WORK: New well [ ] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [ ] Jetted [ ]

5) DIMENSIONS: Diameter of well 8 inches. Drilled: 55 ft. Depth of completed well: 55 ft.

6) CONSTRUCTION DETAILS:
   Casing installed: 8" Diam. from 1 ft. to 27 ft.
   Threaded [ ] Welded [ ]
   Perforations: Yes [ ] No [ ] Saw
   SIZE of perforations 1/16 in. by 1/8 in.
   30 perforations from 30 ft. to 50 ft.
   30 perforations from 50 ft. to 75 ft.
   30 perforations from 75 ft. to 100 ft.
   Screens: Yes [] No []
   Manufacturer's Name:
   Type: Model No.:
   Diam. Slot size from ft. to ft.
   Gravel packed: Yes [ ] No [ ]
   Size of gravel:
   Gravel placed from ft. to ft.
   Surface seal: Yes [ ] No [ ]
   To what depth: 27 ft.
   Material used in seal: cement
   Did any strata contain unusable water? Yes [ ] No [ ]
   Type of water: depth of strata: Method of sealing strata off:

7) PUMP: Manufacturer's Name:
   Type:
   HP:

8) WATER LEVELS: Land-surface elevation above mean sea level: ft.
   Static level: ft. below top of well Date: 9-27-87
   Artesian pressure: lbs. per square inch
   Artesian water is controlled by:
   (Cap, valve, etc.)

9) WELL TESTS:
   Drawdown is amount water level is lowered below static level.
   Was a pump test made? Yes [ ] No [ ] If yes, by whom?
   Yield: gal/min. with ft. drawdown after hrs.
   60 G.P.M. Airstest
   Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
   Time Water Level Time Water Level Time Water Level

   Date of test:

   Balloon test: gal/min. with ft. drawdown after hrs.
   Artesian flow: g.p.m. Date
   Temperature of water: Was a chemical analysis made? Yes [ ] No [ ]

10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and
show thickness of aquifers and the kind and nature of the material in each
stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil - Black</td>
<td>03</td>
<td>3</td>
</tr>
<tr>
<td>Blue - Brown</td>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td>Gray - Gray - First</td>
<td>31</td>
<td>35</td>
</tr>
<tr>
<td>White</td>
<td>35</td>
<td>53</td>
</tr>
</tbody>
</table>

OCT 30 1987

WELL DRILLER’S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: McPherson Drilling
(Person, firm, or corporation) [ ] (Type or print)
Address: 1076 F. Merion, Pennsylvania, Ill.

[Signed] Neil Wright
(Well Driller)
License No. 0302 Date: 10-22-87

1575

(USE ADDITIONAL SHEETS IF NECESSARY)
GUY AND BARBARA SCHMIDTLEIN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 14, 2016

Well Log ID: 308292  Elev (ft): 2630 ±10  Depth (ft): 105  Quad: Pullman

Latitude: 46.631754  Longitude: -117.138020  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 10, T. 13 N, R. 45 E

Well Address and (or) Other Location Information:
7512 Johnson Road, Johnson, Wash., on east side of road; south of Becker Road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Anderson Map Company (1910). PLSS subdivisions and section incorrect on driller’s report.

<table>
<thead>
<tr>
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<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden</strong></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 33</td>
</tr>
<tr>
<td><strong>Wanapum Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>33 – 84</td>
</tr>
<tr>
<td><strong>Latah Formation</strong></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>84 – 105</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 121200009070000*, 7512 JOHNSON RD, COLTON; JOHNSON TGW 67X4 LT 9; owners are SCHMIDTEIN, GUY/BARBARA, 1 story house built in 1892, 2 bedrooms 1 bath, 1040 sq ft.

*Parcel number indicates Block 9, Lot 7.

Above, plat map (Anderson Map Company, 1910) showing Block 9 south of Main Street (now Becker Road), in section 10, with Lot 7 facing Front Street (now Johnson Road).

References Cited:

**WATER WELL REPORT**

**STATE OF WASHINGTON**

**Notice of Intent:** 124208

**UNIQUE WELL ID #:** AFE 131

**OWNER:** Guy & Barbara Schmidtlin

**Address:** 7512 Johnson Rd, Colton, WA 99113

**County:** Whitman

**TAX PARCEL NO:** 85033

**LOCATION OF WELL:** County Whitman

**STREET ADDRESS OF WELL:** 7512 Johnson Rd, Colton, WA 99113

**Proposed Use:**
- [ ] Domestic
- [ ] Industrial
- [ ] Municipal
- [ ] Irrigation
- [ ] Test Well
- [ ] Other

**Proposed Use:**
- [ ] New Well
- [ ] Method:
  - [ ] Deepened
  - [ ] Drilled
  - [ ] Bored
  - [ ] Reconditioned
  - [ ] Pneumatic
  - [ ] Jetted

**Type of Work:**
- [ ] Dam from
  - [ ] +1 ft to 39 ft
  - [ ] 15 ft to 105 ft

**Dimensions:**
- Diameter of well: 8.6 inches
- Depth of completed well: 105 ft

**Construction Details:**
- Casing Installed: [ ] Welded
- Liner Installed: [ ] Dam from
- Dam from
- [ ] +1 ft to 39 ft
- [ ] 15 ft to 105 ft

**Perforations:**
- Size of perforations: 1/8 in by 12 in
- 60 perforations from
- 65 ft to 105 ft
- [ ] Dam from
- [ ] +1 ft to 39 ft
- [ ] 15 ft to 105 ft

**Screens:**
- Yes
- [ ] No
- K-Pac Location
- Manufacturer's Name

**Type:**
- Model No
- Slot size from ft to ft
- Slot size from ft to ft

**Gravel/Filter packed:**
- Yes
- [ ] No
- Size of gravel/sand
- Material placed from ft to ft

**Surface Seal:**
- [ ] Yes
- [ ] No
- To what depth? 39 ft

**Bentonite:**
- Material used in seal

**Did any strata contain usable water?**
- [ ] Yes
- [ ] No

**Type of water?**
- Depth of strata

**Method of sealing strata off:**
- [ ] Deepening
- [ ] Bored
- [ ] Drilled
- [ ] Reconditioned

**PUMP:**
- Manufacturer's Name
- Type

**WATER LEVELS:**
- Land-surface elevation above mean sea level
- Static level: 35 ft below top of well
- Date: 10/6/2000

**Artesian Pressure:**
- lbs per square inch
- Date

**Artesian water is controlled by:**
- [ ] Cap, valve, etc.

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? [ ] Yes [ ] No
- If yes by whom?
  - Yield: gal/min
  - drawdown after hrs
  - drawdown after hrs
  - drawdown after hrs

**Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):**
- Time
- Water Level
- Time
- Water Level
- Time
- Water Level

**Date of Test:**
- Boiler test
- [ ] 80 ft for 1 hrs
- Artesian test
- gpm
- Temperature of water
- 51

**WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:**
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated with at least one entry for each change of information.
- Indicate all material encountered.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CLAY</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td>BASALT BLACK SOFT</td>
<td>33</td>
<td>84</td>
</tr>
<tr>
<td>SAND &amp; CLAY</td>
<td>84</td>
<td>105</td>
</tr>
</tbody>
</table>

**Work Started:** 10/5/2000

**Completed:** 10/5/2000

**WELL CONSTRUCTION CERTIFICATION:**

I, [conductor's name], have constructed and/or accept responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best of my knowledge and belief.

**Type or Print Name:** TED WRIGHT

**License No:** 0532

**Drilling Company:** MCPHERSON & WRIGHT DRILLING

**License No:** 0532

**Address:** 2246 Burrell, Lewiston ID 83501

**Contractor's Registration No:** MCEHDW135N1

**Date:** 12/15/2000

**(USE ADDITIONAL SHEETS IF NECESSARY)**

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6500. The TDD number is (360) 407-6006.
CARL SCHMOKE WELl
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 2, 2018

Well Log ID: 685942
[Well Tag ID: BBH188]

| Depth (ft) | 450 |
|———|———|
| Elev (ft): | 25 7 ±10 |
| Quad: | Viola |

Latitude: 46.750537
Longitude: -117.0972 decimal degrees (WGS84)

¼, SW ½, SW ¾, Sec. 25, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
3431 Pullman Airport Road, Pullman, Wash., on south side of road

Location Method:
Location is for well, behind large, metal warehouse building; Whitman County Assessor; Google Earth imagery; topographic map; driller misspelled owner's last name; site visit March 14, 2018 and verified well tag ID

| GEOLOGIC UNITS — DESCRIPTION | DEPTH (ft) |
|———|———|
| Overburden | |
| Clay | 0 – 50 |
| Wanapum Basalt | |
| Priest Rapids Member | |
| Basalt of Lolo | |
| Basalt | 50 – 175 |
| Grande Ronde Basalt(?) | |
| N2 magnetostratigraphic unit(?) | |
| Basalt, hard | 175 – 300 |
| Basalt | 300 – 345 |
| Basalt, soft | 345 – 375 |
| Latah Formation | |
| Sediments of Moscow | |
| Clay, green | 375 – 400 |
| Grande Ronde Basalt | |
| R2 magnetostratigraphic unit | |
| Meyer Ridge Member | |
| Basalt, soft | 400 – 428 |
| Basalt | 428 – 450 |
Comments:
Whitman County Tax Parcel 200004515253891, 3431 PULLMAN-AIRPORT RD, S1/2 OF SW1/4 LOT 1
CHRIS BOYD SHORT PLAT; owner now is CITY OF PULLMAN; 05/18/10: grantor was BOYD, CHRIS to
SCHMOKELE, CARL, AUGDAHL, BRIAN; 03/07/17: grantors were SCHMOKELE, CARL, AUGDAHL, BRIAN to
CITY OF PULLMAN; 2.92 acres.

References Cited:
WATER WELL REPORT

Construction/Decommission (‘x’ in circle)

Notice of Intent Number: WC44028

Unique Ecology Well ID Tag No.: BBH 188

Water Right Permit No.:

Property Owner Name: Carl Smokel

Well Street Address: 3431 Airport Rd.

City: Pullman

County: Whitman

Location: NW 1/4-1/4, SW 1/4 Sec 24, Twn 5N R 45, S, T, R Still REQUIRED

Lat/Long: Lat Deg _______ Lat Min/Sec _______

Long Deg _______ Long Min/Sec _______

Tax Parcel No. (Required): 2-6000-451-25-3891

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Medium black sand</td>
<td>50</td>
<td>175</td>
</tr>
<tr>
<td>Hard black sand</td>
<td>175</td>
<td>300</td>
</tr>
<tr>
<td>Medium, black sand</td>
<td>300</td>
<td>340</td>
</tr>
<tr>
<td>Soft black sand</td>
<td>345</td>
<td>575</td>
</tr>
<tr>
<td>Green shale</td>
<td>375</td>
<td>400</td>
</tr>
<tr>
<td>Soft black sand</td>
<td>400</td>
<td>438</td>
</tr>
<tr>
<td>Medium black sand</td>
<td>438</td>
<td>50</td>
</tr>
</tbody>
</table>

Start Date: 7-12-2010
Completed Date: 7-15-2010

Driller/Engineer/Trainee Name: Brett Uhlenkott

Driller’s Signature: 

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-470-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
BOB SCHNEIDER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, July/August 2016

Well Log ID: D0059315 Elev (ft): 3260 ±10 ft Depth (ft): 210 7.5’ Quad: Robinson Lake

Latitude: 46.81627 Longitude: -116.99770 decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 17, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1001 Joyce Road, Moscow, Idaho; at end of road on north side

Location Method:
Latitude and longitude from driller’s report plots well at house on Google Earth imagery; Latah County Assessor; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From  To</td>
</tr>
<tr>
<td>No description</td>
<td>0 – 13</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>13 – 78</td>
</tr>
<tr>
<td>*Idaho Batholith(?)</td>
<td></td>
</tr>
<tr>
<td>Alternating soft and hard zones</td>
<td>78 – 210</td>
</tr>
</tbody>
</table>
Comments:

*Not possible to tell if weathered in situ granite or slightly transported sediments.

See also driller's report online for the Doug Hughes well (three houses to the southwest, about 1,000 ft away); it shows similar geology.

Latah County Tax Parcel RP017500000060, 1001 JOYCE RD, NEARING'S 3RD ADD, LOT 6; owner is SCHNEIDER, ROBERT.

References Cited:
1. WELL TAG NO. D 0059315
   Drilling Permit No. 83213
   Water right or injection well #
2. OWNER: Bob Schneider
   Name
   Address 1101 Joyce Rd
   City Moscow
   State ID
   Zip 83843
3. WELL LOCATION:
   Twp. 46 N 4th Sec. 17 NW 1/4 or South 40 Rge. 5 East 1/4 or West 1/4
   Govt Lot 3, County LaTah
   Lat. 46° 59' 36" (Deg. and Decimal minutes)
   Long. 116° 59' 36" (Deg. and Decimal minutes)
   Address of Well Site Same
   [Give at least name of road + Distance to Road or Landmark]
   Lot. 10 Blk. 8 Sub. Name
4. USE:
   ☑ Domestic □ Municipal □ Monitor □ Irrigation □ Thermal □ Injection
   □ Other
5. TYPE OF WORK:
   ☑ New well □ Replacement well □ Modify existing well
   □ Abandonment □ Other
6. DRILL METHOD:
   ☑ Air Rotary □ Mud Rotary □ Cable □ Other
7. SEALING PROCEDURES:
   Seal material From (ft) To (ft) Quantity (lbs or ft³) Placement method/procedure
   Bentonite 0 83 dry
8. CASING/LINER:
   Diameter (nominal) From (ft) To (ft) Gauge/ Schedule Material Casing Liner Threaded Welded
   8 -1 83.250 steel
   6 -1 83.250 pvc
   Was drive shoe used? ☑ □ N Shoe Depth(s) 83
9. PERFORATIONS/SCREENS:
   Perforations ☑ □ N Method Saw
   Manufactured screen ☑ □ N Type
   Method of installation
   From (ft) To (ft) Slot size Number/ft Diameter (nominal) Material Gauge or Schedule
   170 210 1/8 40 6 pvc sch. 40
10. FILTER PACK:
    Filter Material From (ft) To (ft) Quantity (lbs or ft³) Placement method
    □
11. FLOWING ARTEIAN:
    Flowing Artesian? ☑ Y □ N Artesian Pressure (PSIG)
    Describe control device
12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft) 159 Static water level (ft) 138
    Water temp. (°F) __________ Bottom hole temp. (°F) __________
    Describe access port
    Drawdown (feet) Discharge or yield (gpm) Test duration (minutes)
    approx 8 1.1 Hr.
    Water quality test or comments: Good
13. LITHOLOGIC LOG and/or repairs or abandonment:
    Bore Dia. (in) From (ft) To (ft) Remarks, lithology or description of repairs or abandonment, water temp.
    | 8  | 0  | 13 | gravel
    | 13 | 78 | dec. granit
    | 8  | 104| granit firm
    | 10 | 123| dec. granit soft
    | 113| 116| granit soft
    | 113| 116| granit firm
    | 116| 127| granit soft
    | 127| 140| granit firm
    | 140| 156| granit soft
    | 156| 159| granit soft
    | 159| 183| granit firm
    | 183| 185| soft granit
    | 185| 188| soft granit
    | 188| 200| soft granit

RECEIVED
JUN 21 2011
IDWR / NORTH

Completed Depth (Measurable): 140

Date Started: 6/13/11 Date Completed: 6/17/11

14. DRILLER'S CERTIFICATION:
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.
Company Name Wittwell Drilling Co. No. 58
*Principal Driller Roger Witt Date 6/19/11
*Driller Date
*Operator II Date
Operator I Date
* Signature of Principal Driller and rig operator are required.
JIM SCHNEIDER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 14, 2016

Well Log ID: 168766  Elev (ft): 2630 ±10  Depth (ft): 448  Quad: Pullman

Latitude: 46.682292  Longitude: -117.205961 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 24, T. 14 N, R. 44 E

Well Address and (or) Other Location Information:
101 Barbee Road, Pullman, Wash., on west side of road, just south of Wilbourn Road.

Location Method:
Location is for concrete apron in front of garage; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Asotin Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>64</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>78</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>88</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>105</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>270</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 and R2 magnetostratigraphic units, undivided</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>310</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>420</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004414244119, MH SE1/4 PT NE1/4 COR, owners are SCHNEIDER, JAMES/FELICIA (101 BARBEE RD), 1 story residence built 1994, 1.0 acre.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Jim Schneider
Address: R+2 Box 632 Pullman WA 99163

(2a) STREET ADDRESS OF WELL (or nearest address): 5A

(3) PROPOSED USE: Domestic ☐, Irrigation ☐, Industrial ☐, Municipal ☐, Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐, New well ☐, Method: Dug ☐, Bored ☐, Deepened ☐, Reconditioned ☐,
Rotary ☐, Jetted ☐

(5) DIMENSIONS: Diameter of well 6 in. inches. Drilled 448 ft. Depth of completed well 448 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 ft. Diam. from +6 ft. to -62 ft.
Threaded ☐, Diam. ft. to
Perforations: Yes ☐, No ☐
Type of perforator used: SAW
SIZE of perforations in. by in.
8 1/8 perforations from 408 ft. to 448 ft.

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level ft. below top of well Date 7-28-93
Static level 80 ft. 2-28-93
Anamol pressure lbs. per square inch Date
Artesian water is controlled by (Carp. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐, No ☐
If yes, by whom?
Yield: gal./min. with ft. drilled after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test
Bailer test gal./min. with ft. drilled after hrs.
Airtest 10 gal./min. with slug set at ft. for
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐, No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Clay</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Black Salt</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>White Clay</td>
<td>54</td>
<td>78</td>
</tr>
<tr>
<td>Brown Clay</td>
<td>78</td>
<td>88</td>
</tr>
<tr>
<td>Black Salt</td>
<td>88</td>
<td>105</td>
</tr>
<tr>
<td>Blue Salt</td>
<td>105</td>
<td>270</td>
</tr>
<tr>
<td>Black Salt</td>
<td>270</td>
<td>310</td>
</tr>
<tr>
<td>Gray Salt</td>
<td>310</td>
<td>356</td>
</tr>
<tr>
<td>Frac. Salt</td>
<td>356</td>
<td>410</td>
</tr>
<tr>
<td>Black Salt</td>
<td>410</td>
<td>420</td>
</tr>
<tr>
<td>Black Salt</td>
<td>420</td>
<td>430</td>
</tr>
<tr>
<td>Black Salt</td>
<td>430</td>
<td>448</td>
</tr>
</tbody>
</table>

RECEIVED
SEP 11 1993

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Work Started: 7-26-93 10 Completed: 7-28-93 10

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Name: W. Michael
Address: R1 Box 20
(PEN NAME CORPORATION) (TYPE OR PRINT)
License No. 068
(Signed) W. Michael

Contractor's Registration No. Date 9-8-93 19
(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.

1587
DALE SCHOEPFLIN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 2, 2016

Well Log ID: 151050    Elev (ft): 2650 ±10    Depth (ft): 300    7.5’    Quad: Palouse

Latitude: 46.881697    Longitude: -117.075528    decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 12, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
80 Ringo Road, Palouse, Wash., on west side of road

Location Method:
Location is for a house built in 1993 in the SE¼ sec. 12; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision is incorrect on driller’s report. Site visit (November 13, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 – To 2</td>
</tr>
<tr>
<td>Clay</td>
<td>From 2 – To 58</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 58 – To 254</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>From 254 – To 300</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516124590, 80 RINGO RD, SE1/4 AIRSTRIP & PT E1/2 OF E1/2, owners are SCHOEPFLIN, DALE/COLLEEN; 12.0 acres; 1.5 story residence built in 1993.


References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

1) OWNER: Name: Dale Schoepfelin
Address: 3056 Ringo Rd Phooce, WA 9884

2) LOCATION OF WELL: County: Whitman

2a) STREET ADDRESS OF WELL (or nearest address): Address: 3056 Ringo Rd Phooce, WA 9884

3) PROPOSED USE: Domestic ☐ Irrigation ☐ Industrial ☐ Municipal ☐ DeWater ☐ Test Well ☐ Other ☐

4) TYPE OF WORK: Owner's number of well: 1590
Abandoned ☐ New well ☐ Deepened ☐ Reconditioned ☐
Method: Dug ☐ Bored ☐ Driven ☐ Rotary ☐ Jetted ☐

5) DIMENSIONS: Diameter of well: 8 1/2 inches.
Drilled: 300 feet. Depth of completed well: 300 ft.

6) CONSTRUCTION DETAILS:
Casing installed: 8' Diam. from 1' ft. to 64' ft.
Welded ☐ Liner installed ☐
Perforations: Yes ☐ No ☐

7) PUMP: Manufacturer's Name
Type

8) WATER LEVELS:
Land surface elevation above mean sea level: 84 ft.
Static level: 84 ft. below top of well Date: 5-18-93
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by:

9) WELL TESTS:
Drawdown is amount water level is lowered below static level Was a pump test made? Yes ☐ No ☐
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand &amp; Clay</td>
<td>654</td>
<td>300</td>
</tr>
</tbody>
</table>

Work started: 5-14 Completed: 5-18-93

WELL CONSTRUCTOR CERTIFICATION:
I, fabricated and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

(USE ADDITIONAL SHEETS IF NECESSARY)
DOUG SCOVILLE WELL

Geologic Interpretation of Water Well
By John H. Bush, March 26, 2018

Well Log ID: NA Elev (ft): 2640 ±10 (ft): 80 Quad: Potlatch

[Driller's report not recorded in IDWR online database.]

Latitude: 46.946614° Longitude: -116.987112° decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 29, T. 42 N, R. 5 W

Well Address and (or) Other Location Information:
1240 Scoville Road, Potlatch, Idaho; on north side of road

Location Method:
Location is for well house, at northeast corner of garage (which is east of house); Latah County Assessor; Google Earth imagery; topographic map; Well 3 of Bush and others (2005 [2006]) which was incorrectly located in the Palouse quadrangle (sec. 30), west of this site; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0 — 64</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>64 — 80</td>
</tr>
</tbody>
</table>

This log was derived from Bush and others (2005 [2006], Table 1, Well 3) which provided a minor amount of information (64 ft of overburden).
Comments:

Latah County Tax Parcel RP42N05W298869; owner is SCOVILLE, DOUG A; 1240 SCOVILLE RD; 4.90 AC
TAX #7168 SWSE 29 42 5.

References Cited:

Bush, J.H., Duncan, C.H., and Garwood, D.L., 2005 [2006], Bedrock geologic map of the Palouse 7.5-
minute quadrangle, Whitman County, Washington, and Latah County, Idaho: Moscow, Idaho, Palouse
content/uploads/2018/03/PALOUSE_DESCRIPTION.pdf.)
Table 1 - Wells used in Construction of Bedrock Map of the Palouse 7 ½ Minute Quadrangle, Whitman County, Washington and Latah County, Idaho.

<table>
<thead>
<tr>
<th>Well No.</th>
<th>Original Owners Name</th>
<th>Total Depth (ft)</th>
<th>Overburden Thickness (ft)</th>
<th>Geologic &amp; Other Comments</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-1</td>
<td>J. Cochran</td>
<td>125</td>
<td>1</td>
<td>Drill hole in weathered pre-basalt material, useful to estimate contact location.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-2</td>
<td>B. Wolterings</td>
<td>180</td>
<td>23</td>
<td>Drill hole in weathered pre-basalt material, useful to estimate contact location.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-3</td>
<td>D. Scoville</td>
<td>80 (64)</td>
<td></td>
<td>Top of Priest Rapids at 2566 ft. elevation.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-4</td>
<td>J. Kerns</td>
<td>190</td>
<td>47</td>
<td>All weathered pre-basalt rocks.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-8</td>
<td>D. Schoepflin</td>
<td>300</td>
<td>58</td>
<td>Vantage member at least 44 ft. in thickness.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-9</td>
<td>B. Reiber</td>
<td>205</td>
<td>25</td>
<td>Vantage member at least 17 ft. in thickness.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-10</td>
<td>T. Boone</td>
<td>180</td>
<td>14</td>
<td>Vantage member at least 20 ft. in thickness.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-11</td>
<td>D. Rogers</td>
<td>375</td>
<td>15</td>
<td>Pre-basalt estimated at 2189 ft. in elevation.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-12</td>
<td>Q. Hellinger</td>
<td>230</td>
<td>22</td>
<td>Top of Priest Rapids 2513 ft. in elevation.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-14</td>
<td>Zakarison</td>
<td>130</td>
<td>106</td>
<td>Top of Priest Rapids 2514 ft. in elevation.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-15</td>
<td>S. Parish</td>
<td>220</td>
<td>61</td>
<td>Vantage member at least 24 ft. in thickness.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-16</td>
<td>J. Dunning</td>
<td>240</td>
<td>31</td>
<td>Vantage member at least 95 ft. in thickness.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-18</td>
<td>Siebert</td>
<td>185</td>
<td>3</td>
<td>Example of interbed between Priest Rapids basalt, possible pre-basalt at 165 ft.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-20</td>
<td>A. Burns</td>
<td>212</td>
<td>83</td>
<td>Priest Rapids at least 212 ft. thick.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-23</td>
<td>A. Barabasz</td>
<td>255</td>
<td>13</td>
<td>Base of Priest Rapids at 218 ft.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-24</td>
<td>Lay</td>
<td>280</td>
<td>84</td>
<td>No basalt, well begins and ends in pre-basaltrocks.</td>
<td>Duncan (1998)</td>
</tr>
<tr>
<td>W-26</td>
<td>B. Beeson</td>
<td>135</td>
<td>37</td>
<td>Priest Rapids basalt at least 100 ft. thick.</td>
<td>Duncan (1998)</td>
</tr>
</tbody>
</table>
Robert Sharrett Well
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 10, 2018

Well Log ID: 254237  Elev (ft): 2530 ±10  Depth (ft): 186  Quad: Viola

Latitude: 46.847922°  Longitude: -117.093822° decimal degrees (WGS84)

⅛, W ⅛, NW ⅛, Sec. 25, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
Might be 151 Old Barn Road, Palouse, Wash.; driller reported “151 Charles Goetz Rd. Palouse” and “sec. 25, T16N, R45E” but only Viola Road and Old Barn Road are in section 25.

Location Method:
Assumed location is for house on Old Barn Road; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 27</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>27 – 32</td>
</tr>
<tr>
<td>Basalt, firm</td>
<td>32 – 185</td>
</tr>
<tr>
<td>Basalt</td>
<td>185 – 186</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>186</td>
</tr>
</tbody>
</table>
Comments:

Could be Whitman County Tax Parcel 200004516252790, 151 OLD BARN RD, NW1/4 PT WEST N OF CO RD, owner now is BRUNS-JONES, KELI; 10.0 acres; 08/18/16: grantors were BEEDY, GARY/JOAN to BRUNS LAND & LIVESTOCK LLC (who owns 50%); one story residence built in 1911.

[There is a 151 Viola Road (where the Robert Middleton well is located), but it is in section 27.]


Gary Grant Beedy died in 2013 (Kimball Funeral Home & Crematory, 2013).

"On the 18th of October, 1904, Dr. [Tracy R.] Mason was united in marriage to Katherine Goetz, a daughter of Charles Goetz, who was one the early settlers of the Palouse country. Mr. Goetz emigrated to the United States from Germany, his native land, settling first in San Francisco and afterward driving into the Palouse country from Walla Walla about thirty-five years ago" (Durham, 1912, p. 748).
One Charles Goetz is listed in Palouse, Wash., with a date of birth on June 20, 1919 and death on July 1, 1982; another Charles Goetz is listed in Moscow, Idaho, with a date of birth on November 1, 1894, and death on February 1, 1981 (LocateAncestors.com, 2018).

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name Robert Sharrett
Address RT 1 Box 119 Plummer ID 83851

LOCATION OF WELL: County Whitman
(2a) STREET ADDRESS OF WELL (or nearest address) 151 Charles Goezt Rd. Palouse WA 99161

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] DeWater [ ] Test Well [ ] Other

TYPE OF WORK: [ ] Abandoned [ ] New Well [ ] Deepened [ ] Method: Dug [ ] Bored [ ] Reconditioned [ ] Rotated [ ] Jetted

DIMENSIONS: Diameter of well 8 inches
Drilled 186 feet
Depth of completed well 186 feet

CONSTRUCTION DETAILS:
Casing Installed: 8' Diam. from +1 ft. to 41 ft.
Welded [ ]
Liner Installed: [ ]
Threaded: [ ]
Perforations: Yes [ ] No [x]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [x]
Manufacturer's Name
Type
Diam
Slot size
from
ft.
to
ft.

Gravel packed: Yes [ ] No [x]
Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [x] To what depth? 41 ft.
Material used in seal: bentonite
Did any strata contain unusable water? Yes [ ] No [x]
Type of water: Depth of strata
Method of sealing strata off:

PUMP: Manufacturer's Name
Type
H.P.

WATER LEVELS:
Land surface elevation above mean sea level 98 ft.
Static level 11285/77 ft. below top of well
Artesian pressure 150 lbs. per square inch
Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [x]
Yield: gal. per min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Bail test: gal. per min. with ft. drawdown after hrs.
Air test: ft. with stem set at g.p.m. Date
Artesian flow: g.p.m. Date
Temperature of water ___________ Was a chemical analysis made? Yes [ ] No [x]

RECEIVED
JUL 1 9 1999
DEPARTMENT OF ECOLOGY
WESTERN REGIONAL OFFICE

WELL CONSTRUCTORS CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best knowledge and belief.

NAME: Witt Well Drilling
Address: 1091 South Grade Rd. Julietta ID 83635
(Signed) Roger Witt License No. 0673
Contractor's Registration No. WD 03508 Date: 11/18/97

(USE ADDITIONAL SHEETS IF NECESSARY)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
DEBI G. SIEBERT WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018

Well Log ID: NA  Elev (ft): 2550 ±10  Depth (ft): 185  Quad: Palouse

Latitude: 46.907633°  Longitude: -117.037452°  decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 12, T. 41 N, R. 6 W

Well Address and (or) Other Location Information:
1320 (formerly 7301) West Cove Road, Viola, Idaho; on north side of road, about 500 ft east of the Washington-Idaho state line

Location Method:
Location is for driveway area, as westernmost house wasn’t built until after July 10, 1996; Whitman County Assessor; Google Earth imagery; topographic map; incorrect quarter-quarter section on driller’s report; Ralston (1996) incorrectly plotted well in Washington, just west of the Idaho boundary; Well 18 (Siebert) of Bush and others (2005 [2006]) which they incorrectly located further west in Washington. Site visit March 26, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>3 – 129</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>129 – 136</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>136 – 165</td>
</tr>
<tr>
<td>Shale(?), brown</td>
<td>165 – 185</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N06W124902, owner now is DOCKINS, SCOTT J; 1320 WEST COVE RD, 7.48 AC TAX #5011, NESW 12 41 6.

Apparently the property addresses were renumbered, as "Scotty J Dockins" is listed as residing at "7301 Cove Rd, Viola, ID" according to Rehold.com (2018). The "7301" street number fits with the driller’s reported well address.

References Cited:


1. WELL OWNER

Name: Debi G. Siebert
Address: 166 W. Cove Rd. - Viola, ID
Drilling Permit No.: 87-93-N-17-100
Water Right Permit No.: 

2. NATURE OF WORK

- New well
- Deepened
- Replacement
- Well diameter increase
- Modification
- Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9)

3. PROPOSED USE

- Domestic
- Irrigation
- Monitor
- Industrial
- Stock
- Waste Disposal or Injection
- Other (specify type)

4. METHOD DRILLED

- Rotary Air
- Cable
- Mud
- Other
- Rotary Air
- Auger
- Reverse rotary (backhoe, hydraulic, etc.)

5. WELL CONSTRUCTION

Casing schedule: Steel
- Thickness: ____________ inches
- Diameter: ____________ inches
- Casing: ____________ feet
- Gravel packed: ____________ feet

Well screen installed? Yes
Manufacturer: ____________
Top Packer or Headpipe: 
Bottom of Tailpipe: 

6. LOCATION OF WELL

Sketch map location must agree with written location.
Subdivision Name: 
Lot No.: ____________ Block No.: ____________
County: ____________ Address of Well Site: 166 W. Cove Rd.
(give at least name of road)

7. WATER LEVEL

Static water level: 86' feet below land surface.
Flowing? Yes
G.P.M. flow: ____________
Artesian closed-in pressure: ____________ p.s.i.
Controlled by: Valve
Temperature: ____________ °F
Quality: ____________

8. WELL TEST DATA

- Pump
- Bailer
- Air
- Other
Discharge G.P.M.: ____________
Pumping Level: ____________
Hours Pumped: ____________

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Diam.</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01</td>
<td>0.38</td>
<td>Bentonite</td>
<td>Clay</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2.01</td>
<td>0.73</td>
<td>Bentonite</td>
<td>Clay</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>3.01</td>
<td>1.18</td>
<td>Bentonite</td>
<td>Clay</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>4.02</td>
<td>1.65</td>
<td>Clay</td>
<td>BROWN</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

10. Work started: 6-23-93 finished: 6-25-93

11. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

McPherson & Wright Drilling
Firm No. 376
Address: 2246 Burrell
Lewiston, Idaho 83501
Signed by: Donald L. McPherson
Date: 7-20-93
(Operator)
# Irene Simpson Well

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 14, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>168029</th>
<th>Elev (ft):</th>
<th>2635 ±10</th>
<th>Depth (ft):</th>
<th>141</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Pullman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.631734</td>
<td>Longitude:</td>
<td>−117.136039</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>¼, SE ¼, SW ¼, Sec. 3, T. 13 N, R. 45 E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**

102 Becker Road, Colton, Wash., on north side of road, next door to Pete Steiner

**Location Method:**

Location is for house at Box 135 (102 Becker Road), Colton, Wash.; Whitman County Assessor; Google Earth imagery; topographic map; site visit (April 12, 2016).

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>Soil</th>
<th>Clay, tan</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>To</td>
<td>3</td>
<td>36</td>
</tr>
</tbody>
</table>

**Wanapum Basalt**

Priest Rapids Member

Basalt of Lolo

<table>
<thead>
<tr>
<th>Basalt, hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
</tr>
<tr>
<td>To</td>
</tr>
</tbody>
</table>

**Latah Formation**

Vantage Member

<table>
<thead>
<tr>
<th>Clay, tan</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
</tr>
<tr>
<td>To</td>
</tr>
</tbody>
</table>

**Grande Ronde Basalt**

N2 magnetostratigraphic unit

Sentinel Bluffs Member

<table>
<thead>
<tr>
<th>Basalt, vesicular</th>
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</thead>
<tbody>
<tr>
<td>From</td>
</tr>
<tr>
<td>To</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 1212000005160000, JOHNSON LTS 13 THRU 16 BLK 5, now owned by SIMPSON LIV TRUST, GARY/JULIE; grantor was SIMPSON ETAL, IRENE, on 06/09/09.

Above, plat map from Anderson Map Company (1910) showing Original Town (in yellow) of Johnson.

Irene Simpson is 100 yrs old (Ladwig, 2016) and lives at 102 Becker Road; her brother was Roy Steiner (The Lewiston Tribune, 1993).
References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Irene Simpson Address: 135 - Cotton St., 99113
Location of Well: County: Whitman Section: 3, T. 13 N., R. 45 E.

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well: 1604
Method: Dug [ ] Bored [ ] Reconditioned [ ]
Reconditioned [ ] Cable [ ] Driven [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS:
Diameter of well: 9 inches.
Drilled: 141 ft. Depth of completed well: 141 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 1 ft. to 42 ft.
Welded [ ]
Perforations: Yes [ ] No [ ]
Type of perforator used: 1/4" in. by 1/4" in.
40 perforations from 100 ft. to 141 ft.
40 perforations from ft. to ft.
40 perforations from ft. to ft.

Screens: Yes [ ] No [ ]
Manufacturer's Name:
Type: [ ] Model No. [ ]
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ]
Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ]
Material used in seal:
To what depth? 42 ft.
Material used in seal:
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water:
Depth of strata:
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: H.P.

(8) WATER LEVELS:
Static level: 57 ft. below top of well Date: 5-17-88
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom:
Yield: gal/min. with ft. drawdown after hrs:
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

20 6 P.M. Artest

Date of test:
Bail test: gal/min with ft. drawdown after hrs:
Artesian flow: g.p.m. Date:
Temperature of water:
Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and where thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sed. - Brown</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Clay - Hum.</td>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>Sand - Gravel - Thd. Hard</td>
<td>36</td>
<td>84</td>
</tr>
<tr>
<td>Clay - Grav. - Porous</td>
<td>84</td>
<td>129</td>
</tr>
</tbody>
</table>

DEPARTMENT OF ECOLOGY
SPOKANE REGION

Work started: 5-14-88 Completed: 5-17-88

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Wanda L. Wright (Well Driller)
Address: 2405 E. N. Jackson, Spokane, WA

License No. 0323 Date: 6-10-88

USE ADDITIONAL SHEETS IF NECESSARY.
ALAN SLONAKER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 27, 2016

Well Log ID: 161457     Elev (ft): 2590 ±10     Depth (ft): 124     7.5' Quad: Elberton

Latitude: 46.880271     Longitude: -117.166592     decimal degrees (WGS84)

¼, ¼, ¼, ¼, Sec. 17, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
2527 Fugate Road, Palouse, Wash., south side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect and owner’s first name misspelled on driller’s report. Site visit (May 24, 2016), but did not see a well; Elberton quadrangle Well 11 (Bush and others, 2005 [2006]).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td>3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>80</td>
</tr>
<tr>
<td>Clay, white, silty</td>
<td>100</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>110</td>
</tr>
<tr>
<td>Basalt</td>
<td>122</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516171290, 2527 FUGATE RD, NE1/4 PT NW1/4 25AC, owner now is SLON-ACRES, INC., 1 story residence built in 1915 (2,000 square feet).

Registered agent for Slon-Acres, Inc., is SHANE DUNCAN, 2521 FUGATE ROAD, PALOUSE, WA 99161; Chairman and President is SLONAKER, ALAN, 1309 SLONAKER DR, MOSCOW, ID 83843 (Washington Secretary of State, 2016).

References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name SLOANKER, ALLEN
Address Rt. 1 Box 194, PALOUSE, WA 99161

(2) LOCATION OF WELL: County WHITMAN
(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: DOMESTIC

(4) TYPE OF WORK: NEW WELL
Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches
Drilled 124 ft. Depth of completed well 124 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 0 " Dia. from ft. to ft.
STEEL CASING

Perforations: NO
Type of perforator used in. by in.
Size of perforations

Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel packed: NO
Size of gravel
Gravel placed from ft. to ft.

Surface seal: YES
To what depth? 10 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water?

(7) PUMP: Manufacturer's Name

(8) WATER LEVELS:

Land-surface elevation
above mean sea level...

Static level 60 ft. below top of well Date 07/08/96
Artesian Pressure lbs. per square inch Date
Artesian water controlled by

(9) WELL TESTS: The water level is lowered below static level.
Was a pump test made? NO If yes, by whom?
Yield: gal./min. With ft. drawdown after hrs.

Recovery data

Date of test / / 
Bailer test gal./min. ft. drawdown after hrs.
Air test 25 gal./min. w/ stem set at 120 ft. for 1 hrs.

Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? NO

Can Shaft (in ft.):

(10) WELL LOG

FORMATION: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change in formation.

MATERIAL

TOPSOIL
BROWN CLAY
WHITE CLAY
SILT WHITE CLAY
BROKEN BASALT
BLACK BASALT WITH WATER

PROM TO

0 3
3 80
80 100
100 110
110 122
122 124
124

Work started 07/03/96 Completed 07/08/96

PONDEROSA DRILLING

ADDRESS 6010 BROADWAY

(SIGNED) [Signature] License No. 2257

[License No. 2257]

Contractor's Registration No. PO-ND-EI*248JE Date 07/09/96

1607
LEONARD SMALL WELL
Geologic Interpretation of Water Well Driller's Log

Well Log ID: 169978   Elev (ft): 2435 ±10   Depth (ft): 151   7.5'
Quad: Ewartsville

Latitude:   46.749222   Longitude: -117.273848   decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 33, T. 15 N, R. 44

Well Address and (or) Other Location Information:
3451 Enman-Kincaid Road, Pullman, Wash., on south side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 7</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>7 – 53</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>53 – 55</td>
</tr>
<tr>
<td>Basalt</td>
<td>55 – 131</td>
</tr>
<tr>
<td>Basalt, fractured, weathered</td>
<td>131 – 151</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004415331900, 3451 ENMAN- KINCAID RD, NE1/4, owner is now SMALL, RODGER, 156.0 acres; no grantor listed; one story residence built in 1994.

Mr. Leonard Carl Small died in 2001; in 1983 he and his wife, the former Janet Lindley, returned to the Palouse to the farm that was homesteaded by his grandparents, James M. and Sarah Elizabeth Page Small, in 1877 (Moscow-Pullman Daily News, 2001).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Leonard Smed

(2) LOCATION OF WELL: County: Whitman

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: New well: [ ] Method: Dug [ ] Bored [ ] Deepened [ ] Cable Driven [ ]
Reconditioned [ ] Rotary [ ] Jetted [ ]

(5) DIMENSIONS:
Diameter of well: 8 64 inches
Depth of completed well: 151 ft

(6) CONSTRUCTION DETAILS:
Casing installed: [ ] Diam. from 1 ft. to 20 ft.
Threaded [ ] Diam. from 2 ft. to 3 ft.
Welded [ ] Diam. from 3 ft. to 4 ft.

Perforations: Yes [ ] No [ ]
Type of perforator used:
SIZE of perforations: in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [ ]
Manufacturer's Name:
Type: [ ] Model No. [ ]
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ]
Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ] To what depth? 20 ft.
Material used in seal: [ ]
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water: [ ]
Depth of strata: [ ]
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: [ ] HP

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 42 ft.
Static level: 930-88 ft. below top of well Date: 9-30-88
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by: (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom:
Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time: Water Level

Date of test:
Boiler test: gal/min. with ft. drawdown after hrs.
Artesian flow: gpm Date:
Temperature of water: Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL FROM TO

(11) RECEIVED:

(12) DEPARTMENT OF ECOLOGY:

(13) WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: McPherson & Wright Drilling
Address: Lowston, Idaho 83501
License No. 0523 Date: 10-5-1988

[Signature] John Wright (Well Driller)

Work started 9-30-88 Completed 9-30-88

(USE ADDITIONAL SHEETS IF NECESSARY)
### Don Smith Well

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, November 2, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>165784</th>
<th>Elev (ft):</th>
<th>2535 ±10</th>
<th>Depth (ft):</th>
<th>178</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Moscow West</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.701204</td>
<td>Longitude:</td>
<td>-117.041548</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Well Address and (or) Other Location Information:
6302 Sand Road, Pullman, Wash.; on northwest side of road, near state line.

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller’s report. Site visit (November 18, 2016).

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 9</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft, fractured</td>
<td>9 – 34</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>34 – 103</td>
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<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>103 – 153</td>
</tr>
<tr>
<td>Sand</td>
<td>153 – 178</td>
</tr>
</tbody>
</table>
Comments:

Assumed to be Whitman County Tax Parcel 200004614171691, 6302 SAND RD, LOT B OF D & C SMITH S.P., owners now are AMBROSI, THOMAS A/KAREN M; 1½ story residence built in 1894); 2.5 acres.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Don Smith
Address: Pullman

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: □ Domestic □ Irrigation □ DeWater □ Industrial □ Test Well □ Municipal □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one)
□ Abandoned □ New well □ Deepened □ Reconditioned □ Method: Dug □ Cable □ Driven □ Bored □ Jetted □

(5) DIMENSIONS: Diameter of well: 8" inches
Drilled: _______ ft. Depth of completed well: 28' ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8' Diam. from ______ ft. to ______ ft.
Welded: □ Diam. from ______ ft. to ______ ft.
Liner installed: □ Diam. from ______ ft. to ______ ft.
Threaded: □ Diam. from ______ ft. to ______ ft.

Perforations: Yes □ No □
Type of perforator used

SIZE of perforations: in. by in.
perforations from ft. to ft.

Screens: Yes □ No □
Manufacturer's Name:
Type:
Model No.: 

Small: ft. Slot size: ft. from ft. to ft.
Diam. Slot size: ft. from ft. to ft.

Gravel packed: Yes □ No □
Size of gravel: ______
Gravel placed from ______ ft. to ______ ft.

Surface seal: Yes □ No □
To what depth? ______ ft.
Material used in seal: ______

Did any strata contain unusable water? Yes □ No □
Type of water?: ______
Depth of strata: ______

Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: ______

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 60 ft.
Static level: ______ ft. below top of well Date: 6/4/83
Artesian pressure: ______ lbs. per square inch Date: ______
Artesian water is controlled by: ______ (Gaz, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes □ No □ If yes, by whom? ______
Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test: ______

Boiler test: ______ gal./min. with ______ ft. drawdown after ______ hrs.
Airtest: 4 ______ gal./min. with stem set at ______ ft. for ______ hrs.
Artesian flow: ______ g.p.m. Date: ______
Temperature of water: ______ Was a chemical analysis made? Yes □ No □

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Soft Fract. basalt</td>
<td>9</td>
<td>39</td>
</tr>
<tr>
<td>Basalt firm</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Clay</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>Sand, quartz</td>
<td>153</td>
<td>178</td>
</tr>
</tbody>
</table>

Work started: 19 ______. Completed: 19 ______.

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Name: Wettlaufer, Dilling
Address: 128 Pavers Lane
(Signed) Roger Wettlaufer
WELL DRILLER
License No: 0673
Contractor's Registration No: 137 Pb Date: 9/18/92

(USE ADDITIONAL SHEETS IF NECESSARY)
R.C. SMOLINSKI WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, March 20, 2016

Well Log ID: 484577    Elev (ft): 2430 ±10    Depth (ft): 165    7.5’ Quad: Albion

Latitude: 46.773188    Longitude: -117.207509    decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 24, T. 15 N, R. 44 E

Well Address and (or) Other Location Information:
2652 Pullman Albion Road, Pullman, Wash., on north side of road; Sunset Mobile Home Court; well is at end of easternmost lane in trailer court, just north of mobile home #160 and ~30 ft east of lane; owner in 2007 was June Davidson.

Location Method:
Location is for well observed during site visit (April 13, 2016); Whitman County Assessor; Google Earth imagery; topographic map. Moxley (2012, p. 73, CS-15, “Smalinski” well) places the well about 65 ft southwest of this location. PLSS subdivisions incorrect on report for an existing well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 23</td>
</tr>
<tr>
<td>Quaternary(?)</td>
<td></td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>23 – 25</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>25 – 117</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken, and clay</td>
<td>117 – 138</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
</tbody>
</table>

1614
*Basalt of Spokane Falls
Basalt, some clay  138 – 165

Comments:

*The uppermost Grande Ronde flow in the DOE Banner Road (Central Basin) Well about 2,000 ft to the east is the N2 Spokane Falls flow (Conrey and others, 2013).

Moxley (2012, p. 102–103) interpreted the Wanapum Basalt in the “Smalinski” well (well CS-15) to consist only of the Priest Rapids Member (basalt of Lolo).

It may be Whitman County Tax Parcel 3531000006550350, 2652 ALBION RD A10 PULLMAN; SUNSET MHP A10, 64X28FLEETWOOD 1979, owner now is SHORT, BAILEY RENE'; previous grantors were ALMDALE, JAQUELINE on 09/23/11 to DAVIDSON, DEBRA/DANETTE; then DAVIDSON, DEBRA/DANETTE on 11/02/11 to JONES, LISA; then JONES, LISA to HERRBOLDT, MICHAEL B/LARISSA ON 03/12/13; then HERRBOLDT, MICHAEL B/LARISSA to SHORT, BAILEY RENE' on 06/16/15.

June Davidson's address and contact information is 2652 Pullman Albion Rd #A10, Pullman, WA 99163, (509) 332-0501 (Superpages.com, 2016).

[Note: Whitman County Tax Parcel 353100006562005, 2602 PULLMAN ALBION RD SP# B2, Pullman, SUNSET MHP B2, 60X12HOMETTE 1976, now owned by WHITE, HALLARD/MICHELLE, previous grantors include DAVIDSON, JUNE, 09/04/15, to EASTBURN, KAREN A, and on same date, EASTBURN, KAREN A to WHITE, HALLARD/MICHELLE.]
References Cited:


WELL NO. AGG 326

OWNER OF WELL  Smeleński
LOCATION OF WELL  Albion Rd
NEAREST POST OFFICE  Pullman
STATE  Washington  COUNTY  Whitman
DRILLING BEGUN  8-5-68  WELL FINISHED  8-25-68

WELL RECORD
CASING SIZE  8"  CASING DEPTH  40'
HOLE SIZE  3"  HOLE DEPTH  165'
CAPACITY OF WELL  20 G.P.M.
PUMP SETTINGS
CASING PERFORATIONS

INVOICE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL AMOUNT DUE

MEMO:

COPY

sent in by existing owners,
Sunset Mobile Home Court Shop
WATER WELL REPORT
FOR AN EXISTING WELL

INSTRUCTIONS:
Use this form only if an original water well report was NEVER filed or is MISSING from Ecology records.
Your well must be properly tagged prior to submitting this form. Please fill in all blanks as completely as possible. If information is not known, leave blank. After completing, mail the original form to: Wa State Dept of Ecology, PO Box 47600, Olympia, WA, 98504-7600, ATTN: Marian Bruner.

CURRENT USE:  ☐ Domestic  ☐ Industrial  ☒ Municipal  ☐ DeWater  ☐ Irrigation  ☐ Test Well
☐ Other

DIMENSIONS: Diameter of well  8 inches
Depth of completed well  145 ft. if known.

CONSTRUCTION DETAILS
Liner Installed: ☒ Yes  ☐ No  ☐ Unknown
Type: ☐ PVC  ☐ Steel  ☐ Concrete Liner  ☐ Other  ☐ Unknown
Perforations: ☐ Yes  ☐ No  ☒ Unknown
Size of perfs: in., by in., and no. of perfs from ft. to ft.
Screen: ☐ Yes  ☐ No  ☒ Unknown  Mfr's Name
Type: ☐ Stainless Steel  ☐ PVC  ☐ Other
Diam. Slot Size from ft. to ft.
Gravel/Filter packed: ☐ Yes  ☐ No  ☒ Unknown
Materials placed from ft. to ft.
Surface Seal: ☐ Yes  ☐ No  ☒ Unknown  If known, to what depth ft.
Materials used known: ☐ Bentonite  ☐ Cement

PUMP: ☒ Yes  ☐ No  ☒ Mfr's Name Geardi
Type:  ☒ H.F.  S

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level ft. below top of casing Date measured 7-5-07
Artisan pressure lbs. per square inch Date measured
Well head has cap? ☐ Yes  ☐ No  Shut off valve? ☐ Yes  ☐ No

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? ☐ Yes  ☐ No  If yes, attach copy
Unknown
Yield: gal./min. with ft. drawdown after hrs.

CERTIFICATION: The information reported above is true to the best of my knowledge and belief.
☐ Driller  ☐ Engineer  ☐ Property Owner  ☒ Other
Name  ☒ Kenneth G. Smith  ☐ Other
Signature  ☒ Christian Williams
Driller License No.
Date Signed  7-14-07  2007

Unique Ecology Well ID Tag No. A66326
Water Right?  ☐ Yes  ☒ No
Property Owner Name  ☒ June Davidson
Well Street Address  2162 Pullman-Albion Rd
City  Pullman  WA  County  Whitman
Tax Parcel No.

LOCATION:
An accurate location of your well is very important. The Township, Range, Section and 1/4, 1/4 can be found on your legal description or through your county assesor's office.

Section
Twn. 16  N  R  44  E
WWM circle one

This square represents one section of land, which is approx 640 acres. Within this section, circle the letter that best represents the location of the well within this section.

Latitude/Longitude NOTE: Section, Township, Range still REQUIRED
Lat Deg  41  Lat Min/Sec  49
Long Deg  119  Long Min/Sec
GPS  ☐ Regular  ☐ Hand Held
Topographic Map  ☐ Yes  ☐ No
Computer Generated

Additional Information, if available:
☐ Location marked on toponographic map (please attach)
☒ Location marked on air photo (please attach)

RECEIVED
JUL 13 2007

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Drilling Company  A&J SPRAY
Address of person completing this form:
PO Box 291
City, State, Zip  ALBION WA 99102

Ecology is an Equal Opportunity Employer.

Original - Ecology
The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
ELMER SMOOT WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018

Well Log ID: D0055479   Elev (ft): 2610 ±10   Depth (ft): 186   7.5’   Quad: Palouse

Latitude: 46.987674°   Longitude: -117.032653°   decimal degrees (WGS84)

  ¼, NW ¼, NE ¼, Sec. 13, T. 42N, R. 6W

Well Address and (or) Other Location Information:
1044 Yellow Dog Road, Potlatch, Idaho; on east side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 24, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
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<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>3</td>
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<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>22</td>
</tr>
<tr>
<td>Basalt</td>
<td>35</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP42N06W130763, owner is SMOOT, AUDREY J; 1044 YELLOW DOG RD, 8.31 AC TAX #6793, 13 42 6.

References Cited:
1. WELL TAG NO. D  DO055479
   Drilling Permit No. 8543880
   Water right or injection well #

2. OWNER: ELMER SMOOT
   Name: ELMER SMOOT
   Address: PO BOX 3587
   City: POST FALLS State: ID Zip: 83877

3. WELL LOCATION:
   Twp. Sec. 13
   Gov't Lot 14
   County: LATHAH
   Lat. (Deg. and Decimal minutes)
   Long. (Deg. and Decimal minutes)
   Address of Well Site: 1044 Yellow Dog Rd.
   City: Post Falls

4. USE: & Domestic
   Municipal
   Monitor
   Irrigation
   Thermal
   Injection

5. TYPE OF WORK:
   New well
   Replacement well
   Modify existing well
   Abandonment
   Other

6. DRILL METHOD:
   Air Rotary
   Mud Rotary
   Cable
   Other

7. SEALING PROCEDURES:
   Seal material
   From (ft)
   Length of Headpipe & Tailpipe
   Headpipe & Tailpipe
   Casing Liner
   Threaded
   Welded

8. CASING/LINER:
   Diameter (Nominal) From (ft) To (ft) Gauge or Schedule
   Material
   Casing Liner
   Threaded
   Welded

9. PERFORATIONS/SCREENS:
   Perforations
   Method: Drill
   Manufactured screen
   N Type
   Method of installation
   N/A

10. FILTER PACK:
    Filter Material
    From (ft) To (ft)
    Quantity (lbs or ft)
    Placement method
    None

11. FLOWING ARTESSIAN:
    Flowing Artesian?
    Artesian Pressure (PSIG)
    Describe control device

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft) 80
    Static water level (ft) 2
    Water temp. (°F) 50
    Bottom hole temp. (°F)
    Describe access port
    Well Cap

    Water test:
    Test method:
    Drawdown (feet)
    Discharge or yield (gpm)
    Test duration (minutes)
    Pump
    Bailer
    Air
    Flowing artesian

    Water quality test or comments: Clear no odor

13. LITHOLOGIC LOG and/or repairs or abandonment:

14. DRILLER'S CERTIFICATION:
    We certify that all minimum well construction standards were complied with at
    the time the rig was removed.
    Name: ACTION DRILLING
    Co. No.: 618
    Date Started: 12-5-08
    Date Completed: 12-8-08
    *Principal Driller
    Date: 1-1-09
    *Driller
    Date: 1-1-09
    *Operator II
    Date: 
    Operator I
    Date: 

    * Signature of Principal Driller and rig operator are required.

1622
## GERALD SNOW WELL 1

[Drilled and abandoned in 1968]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 9, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2610 ±10</th>
<th>Depth (ft):</th>
<th>262</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Moscow West</th>
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<tbody>
<tr>
<td>Latitude:</td>
<td>46.673734</td>
<td>Longitude:</td>
<td>-117.022291</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>¼, SW ¼, SW ¼, Sec. 31</td>
<td></td>
<td>R. 5 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
1005 Zeitler Road, Moscow, Idaho, on south side of road, just east of U.S. 95

**Location Method:**
Location is for only house in SW¼, SW¼, sec. 31; Latah County Assessor; Google Earth imagery; topographic map.

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td>34</td>
<td>49</td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, gray green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>49</td>
<td>61</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>61</td>
<td>70</td>
</tr>
<tr>
<td>Basalt, vesicular, and clay, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latteh Formation</td>
<td>70</td>
<td>224</td>
</tr>
<tr>
<td>Vantage Member</td>
<td>224</td>
<td>246</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>246</td>
<td>250</td>
</tr>
<tr>
<td>Sand</td>
<td>250</td>
<td>262</td>
</tr>
</tbody>
</table>
Comments:

There are two wells on this tax parcel: Gerald Snow well 1 (a dry hole) and Gerald Snow well 3 (drilled in 1981); and one well on an adjacent parcel to the southwest: Gerald Snow well 4 (drilled in 1982).

Latah County Tax Parcel RP39N05W316207, 1005 ZEITLER RD, owner now is GERMER, LARRY; 6.04 acres. [The Michael J. Snow estate owns adjacent parcels of farm land to the south, and also farm land on the west side of US 95.]

Mr. Gerald J. Snow died in 2010, age 82; Michael Snow was his son (Moscow-Pullman Daily News, 2010. Mr. Michael James Snow died in 2014, age 66 (Moscow-Pullman Daily News, 2014).

References Cited:


REPORT OF WELL DRILLER
State of Idaho

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER:
Name: GERALD SNOW
Address: MOSCOW, IDAHO
Owner's Permit No.:
NATURE OF WORK (check): Replacement well  □  New well  □  Deepened  □  Abandoned  □
Water is to be used for:  □  DOMESTIC  □  OTHER

METHOD OF CONSTRUCTION:  □  Rotary  □  Cable  □  Other (explain)  □

CASING SCHEDULE:  □  Threaded  □  Welded  □

Diam. from ft. to ft.
=Diam. from ft. to ft.
=Diam. from ft. to ft.
Thickness of casing:  □  10  □  20  □  30  □  40  □  Material:  □  Steel  □  concrete  □  wood  □  other  □

(explain)

PERFORATED? Yes  □  No  □  Type of perforator used:

Size of perforations:  □  by  □

WAS SCREEN INSTALLED? Yes  □  No  □

Manufacturer's name:

Type:  □  Model No.

CONSTRUCTION:  □  Well gravel packed? Yes  □  No  □

Gravel placed from ft. to ft.  □

Surface seal provided? Yes  □  No  □

Material used in seal:

Did any strata contain usable water? Yes  □  No  □

Type of water:

Depth of strata ft.  □

METHOD OF SEALING STRATA:

Surface casing used? Yes  □  No  □

Cemented in place? Yes  □  No  □

Locate well in section

LOCATION OF WELL: County  □  LATAH

Use other side for additional remarks

USGS 1625

OCT 1 1968

Department of Reclamation

[Signature]

[Address]

[License No.]

[Date]

[Stamp]
# Gerald Snow Well 3

**[Drilled in 1981]**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, August 2016

<table>
<thead>
<tr>
<th>Well Log ID</th>
<th>Elev (ft)</th>
<th>Depth (ft)</th>
<th>7.5’ Quad</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>2610 ±10</td>
<td>310</td>
<td>Moscow West</td>
</tr>
</tbody>
</table>

| Latitude: | 46.673734 | Longitude: | -117.022291 | decimal degrees (WGS84) |

| ¼, SW ¼, SW ¼, Sec. 31, T. 39 N, R. 5 W |

---

**Well Address and (or) Other Location Information:**

1005 Zeitler Road, Moscow, Idaho, on south side of road, and just east of US 95

**Location Method:**

Location is for only house in SW¼, SW¼, sec. 31; Latah County Assessor; Google Earth imagery; topographic map

---

## GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From — To</td>
</tr>
<tr>
<td>Soil</td>
<td>0 — 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 — 15</td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>15 — 20</td>
</tr>
<tr>
<td>Gravel, basalt</td>
<td>20 — 32</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>32 — 138</td>
</tr>
<tr>
<td>Basalt, hard and soft</td>
<td>138 — 153</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>153 — 173</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>173 — 195</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>195 — 282</td>
</tr>
<tr>
<td>Idaho Batholith(?)</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>282 — 310</td>
</tr>
</tbody>
</table>
Comments:

There are two wells on this tax parcel: Gerald Snow well 1 (a dry well drilled in 1968), and Gerald Snow well 3; and one well on an adjacent parcel to the southwest: Gerald Snow well 4 (drilled in 1982).

The 1968 well reported shale, sandstone, and sand beneath the Lolo flow.

Latah County Tax Parcel RP39N05W316207, 1005 ZEITLER RD, owner now is GERMER, LARRY; 6.04 acres. [The Michael J. Snow estate owns adjacent parcels of farm land to the south, and also farm land on the west side of US 95.]

Mr. Gerald J. Snow died in 2010, age 82; Michael Snow was his son (Moscow-Pullman Daily News, 2010). Mr. Michael James Snow died in 2014, age 66 (Moscow-Pullman Daily News, 2014).

References Cited:


STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name: Gerald Snow
Address: Route 1 Moscow, Idaho 83843
Owner’s Permit No.: 87-B-20 N 9

2. NATURE OF WORK
☐ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☒ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)
☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED
☐ Cable ☐ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches
Total depth: 310 feet
Casing schedule: ☒ Steel ☐ Concrete

Thickness Diameter From To
250 inches 8 inches above x 3 feet 34 feet
150 inches 6 inches feet feet
50 inches 4 inches feet feet
Was casing drive shoe used? ☐ Yes ☒ No
Was a packer or seal used? ☐ Yes ☒ No
Perforated? ☒ Yes ☐ No
How perforated? ☒ Factory ☐ Knife ☐ Torch
Size of perforation: inches by inches

Number of perforations From To feet feet

Perforations feet feet
Perforations feet feet
Well screen installed? ☒ Yes ☐ No
Manufacturer's name
Type: Model No.
Diameter Slot size Set from feet to feet
Diameter Slot size Set from feet to feet
Gravel packed? ☐ Yes ☒ No Size of gravel
Placed from feet to feet
Surface seal depth: 18 feet
Material used in seal: ☒ Cement grout
Bentonite & ☒ Puddling clay ☐ Well cuttings
Sealing procedure used: ☒ Slurry pit ☐ Temporary surface casing ☐ Over bore seal depth

6. LOCATION OF WELL
Sketch map location must agree with written location.

Subdivision Name: 
Lot No.: Block No.: 
County: Latah

7. WATER LEVEL
Static water level: 101 feet below land surface.
Flowing? ☐ Yes ☒ No G.P.M. flow
Temperature: °F. Quality:
Artesian closed in pressure: p.s.i.
Controlled by: ☐ Valve ☒ Cap ☐ Plug

8. WELL TEST DATA
☐ Pump ☒ Baller ☐ Other
Discharge: G.P.M. Drawdown Hours Pumped

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diameter</th>
<th>Depth From To</th>
<th>Material</th>
<th>Water Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0 3</td>
<td>Black dirt</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>3 15</td>
<td>Brown clay</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>15 20</td>
<td>Lt brown clay, rock</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>20 32</td>
<td>Basalt boulders</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>32 130</td>
<td>Hard basalt</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>130 193</td>
<td>Harl &amp; soft layers rock</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>193 173</td>
<td>Blue clay, rock layers</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>173 195</td>
<td>Brown clay, rock layers</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>195 228</td>
<td>Granite &amp; clay layers</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>228 310</td>
<td>Granite, hard &amp; soft layers</td>
<td>x</td>
</tr>
</tbody>
</table>

10. Work started: Sept. 15-80 finished: Feb. 18, 81

11. DRILLERS CERTIFICATION
Firm Name: Don Town Well Drilling  Firm No. 155
Address: Rt 4 Box 429 Moscow, Idaho Date 1-12-81
Signed by (Firm Official) Don Town
(Operator)

USE ADDITIONAL SHEETS IF NECESSARY – FORWARD THE WHITE COPY TO THE DEPARTMENT
GERALD SNOW WELL 4
[DRILLED IN 1982]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 9, 2016

Well Log ID: NA  Elev (ft): 2600 ±10  Depth (ft): 80  Quad: Moscow West

Latitude: 46.673162  Longitude: -117.023165  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1005 Zeitler Road, Moscow, Idaho, on south side of road, just east of US 95

Location Method:
Location is for yard southwest of house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow and brown</td>
<td>2 – 23</td>
</tr>
<tr>
<td>1Sand and clay</td>
<td>23 – 80</td>
</tr>
</tbody>
</table>
Comments:

1 Driller reported mostly granite, but some soft. I suggest well is in decomposed granite or sediments of Bovill.

There are two wells on the adjacent tax parcel with house (to the east): Gerald Snow well 1 (a dry well drilled in 1968), and Gerald Snow well 3 (drilled in 1981).

Latah County Tax Parcel RP39N06W369908, owner now is GERMER, LARRY; 1.5 acres. [The Michael J. Snow estate owns adjacent parcels of farm land to the south, and also farm land on the west side of US 95.]

Mr. Gerald J. Snow died in 2010, age 82; Michael Snow was his son (Moscow-Pullman Daily News, 2010). Mr. Michael James Snow died in 2014, age 66 (Moscow-Pullman Daily News, 2014).

References Cited:


STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER
Name: Gerald Snow
Address: Route 1, Moscow, Idaho 83843
Owner's Permit No.: 87-82-N-14

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement  ☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection  ☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary  ☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other
Thickness: 250 inches Diameter: 8 inches * From: 25 feet To: above

6. LOCATION OF WELL
Sketch map location must agree with written location.
Subdivision Name: 
Lot No.: 
Block No.: 
County: Latah
SE corner Sec. 36, T. 39, R. 6

7. WATER LEVEL
Static water level: 30 feet below land surface.
Flowing? ☐ Yes ☐ No  G.P.M. flow:
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature: °F. Quality:

8. WELL TEST DATA
☐ Pump  ☐ Bailier  ☐ Air  ☐ Other
Discharge G.P.M.: Pumping Level: Hours Pumped:

9. LITHOLOGIC LOG
Hole Diam. From To

<table>
<thead>
<tr>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2&quot;</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>2&quot;</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>2&quot;</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>2&quot;</td>
<td>33</td>
<td>46</td>
</tr>
<tr>
<td>2&quot;</td>
<td>46</td>
<td>67</td>
</tr>
<tr>
<td>2&quot;</td>
<td>67</td>
<td>75</td>
</tr>
<tr>
<td>2&quot;</td>
<td>75</td>
<td>80</td>
</tr>
</tbody>
</table>

10. Work started: 6-25-82  finished: 7-9-82

11. DRILLERS CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Don Town Wall Drilling Co.  Address: 2380 Moscow Mtn. Road
Date: 5-7-82

Signed by (Firm Official) Don Town
and (Operator) Don Town

1631

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
# GeoLogic Interpretation of Water Well Driller’s Log

By John H. Bush, April 30, 2018

## L.C. Staley Well 1

[Drilled in 1941]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, April 30, 2018

- **Well Log ID:** Foxworthy and Washburn (1963)
- **Elev (ft):** 2520 ±10
- **Depth (ft):** 165
- **Quadrant:** Pullman
- **Latitude:** 46.669751°
- **Longitude:** -117.145192°
- **Depth:** 7.5’
- **Well Address and (or) Other Location Information:**
  801 Staley Road, Pullman, Wash.; on north side of road

### Location Method:
Location is for well, east of house, under a bushy tree; Whitman County Assessor; Google Earth imagery; topographic map; corresponds to well 14/45–28 H1, L. C. Staley, of Foxworthy and Washburn (1963, p. 50–51, 64, plate 1); site visit March 21, 2018

### Geologic Units — Description

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>5 – 150</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, fine, white</td>
<td>150 – 165</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514281490, 801 STALEY RD, PULLMAN, NE PT SE 1/4 STALEY, owner now is STALEY-BENSCOTER, LLC.

Well is to left, under bushy tree

John Fletcher Staley, son of Lindsey and Anona Staley, died in 2012; his family has homesteaded the Staley Ranch since 1877 (Moscow-Pullman Daily News, 2012).

References Cited:


### Table 2—Logs of representative wells in the Pullman area—Continued

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14/46-15E1. C. A. Stratton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, porous (water-bearing)</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>14/46-6R1. Edgar Anderson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Altitude about 2,751 ft. Drilled by J. W. Queen, 1940. Casing: 7-in. to 90 ft]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, porous (water-bearing)</td>
<td>202</td>
<td>212</td>
</tr>
<tr>
<td>14/46-6R2. Edgar Anderson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Altitude about 2,665 ft. Drilled by J. W. Queen, 1940. Casing: 6-in. to 50 ft]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Sand</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>(Deepened later)</td>
<td>49</td>
<td>350</td>
</tr>
<tr>
<td>14/46-7G1. Harlan Reid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>160</td>
<td>190</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crevice (water-bearing)</td>
<td>20</td>
<td>180</td>
</tr>
<tr>
<td>14/46-7N2. Howard Shriver Estate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Basalt, very soft</td>
<td>50</td>
<td>64</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>2</td>
<td>68</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>24</td>
<td>90</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>55</td>
<td>145</td>
</tr>
<tr>
<td>Clay, blue, and sand, black at bottom</td>
<td>20</td>
<td>165</td>
</tr>
<tr>
<td>Basalt, soft, and hard</td>
<td>77</td>
<td>242</td>
</tr>
<tr>
<td>14/46-8K2. Arnold Anderson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil and loess</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Granite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock, hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand (water-bearing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14/46-19M1. Elmer Haynes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Basalt</td>
<td>54</td>
<td>79</td>
</tr>
<tr>
<td>Sand</td>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>14/46-29L1. C. V. Strohm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Altitude about 2,575 ft. Drilled by J. W. Queen, 1940. Casing: 6-in. to 278 ft]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Basalt</td>
<td>290</td>
<td>275</td>
</tr>
<tr>
<td>Sand</td>
<td>3</td>
<td>278</td>
</tr>
<tr>
<td>15/44-1G1. A. V. Clark, Jr.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Basalt, soft, decomposed</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>117</td>
<td>157</td>
</tr>
<tr>
<td>15/44-1N1. A. V. Clark, Sr.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Altitude about 2,481 ft. Drilled by J. W. Queen, 1940. Casing: 6-in. to 35 ft]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loess</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Basalt</td>
<td>35</td>
<td>73</td>
</tr>
<tr>
<td>15/44-11A1. Joe Bryan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Altitude about 2,552 ft. Drilled in 1934. Casing: 6-in. to 90 ft]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Clay</td>
<td>66</td>
<td>70</td>
</tr>
<tr>
<td>Clay and boulders</td>
<td>20</td>
<td>90</td>
</tr>
<tr>
<td>Basalt</td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>15</td>
<td>135</td>
</tr>
<tr>
<td>Basalt, crevice</td>
<td>15</td>
<td>130</td>
</tr>
<tr>
<td>15/44-14D1. City of Alton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Altitude about 2,281 ft. Drilled by Spray Bros., 1952]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil and loess</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Granite</td>
<td>215</td>
<td>235</td>
</tr>
</tbody>
</table>

[Extracted from Foxworthy and Washburn (1963)]
ESTHER STALNAKER WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 15, 2016

Well Log ID: NA Elev (ft): 2607.42 Depth (ft): 229 7.5’ Quad: Moscow East

Latitude: 46.746873 Longitude: -116.995707 decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 5, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1121 Leepike Court, Moscow, Idaho

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile). The well plots on the west side of the cul-de-sac at the north end of Leepike Court, in the common area of the Greensides Hill subdivision.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 — 61</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>61 — 91</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>91 — 95</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>95 — 222</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>222 — 229</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RPM03650COMMON, owner is not identified, Greensides Hill Addition common area.

[Esther and Louis Stalnaker lived at 1008 N Polk, Moscow, Idaho, in 1998; they were alive in 2/2/2007. The subdivision was platted ~2007.]

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL OWNER
Name: Esther Stalnaker
Address: Moscow
Drilling Permit No: 87-91-N-4
Water Right Permit No:

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other: __________ (specify type)

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other
Thickness: __________ inches + __________ inches + __________ inches + __________ inches
Diameter: __________ inches
From  To  From  To
6  8
was casing drive shoe used? ☐ Yes  ☐ No
was a packer or seal used? ☐ Yes  ☐ No
was perforated? ☐ Yes  ☐ No
How perforated? ☐ Factory  ☐ Knife  ☐ Torch  ☐ Gun
Size of perforation: __________ inches by __________ inches
Number of perforations: __________ feet from __________ feet to __________ feet
Well screen installed? ☐ Yes  ☐ No
Manufacturer’s name: ______________________
Type: ______________________  Model No: ______________________
Diameter: __________ inches  Slot size: __________ feet from __________ feet to __________ feet
Gravel packed? ☐ Yes  ☐ No  ☐ Size of gravel: __________ feet from __________ feet to __________ feet
Surface seal depth: __________ feet
Material used in seal: ☐ Cement grout  ☐ Bentonite  ☐ Puddling clay  ☐ Sealing procedure used: ☐ Slurry pit  ☐ Temp. surface casing
Method of joining casing: ☐ Threaded  ☐ Welded  ☐ Solvent Weld  ☐ Cemented between strata
Describe access port: ______________________

6. LOCATION OF WELL
Sketch map location must agree with written location.

N

W

E

S

4  56  1  39  1832

Subdivision Name: ______________________
Lot No.  : __________  Block No.  : __________
County: _________  1/2 Sec.  S  T.  N  R.  E.

7. WATER LEVEL
Static water level: __________ feet below land surface.
Flowing: ☐ Yes  ☐ No  g.p.m. flow: __________
Artesian closed-in pressure: __________ p.s.i.
Controlled by: ☐ Valve  ☐ Cap  ☐ Plug
Temperature: __________  quality: __________
Describe artesian or temperature zones below:

8. WELL TEST DATA
☐ Pump  ☐ Baller  ☐ Air  ☐ Other
Discharge: __________ g.p.m.
Pumping level: __________'
Hours pumped: __________

9. LITHOLOGIC LOG
Bore  

Depth

Material

Water

Yes  No

8'  0'  61  overburden
8'  61'  91  basalt form
8'  91'  95  basalt form
8'  95'  98  basalt form
8'  99'  frac. basalt

Department of Water Resources

10. Work started: 7/1/91  finished: 7/15/91

11. DRILLERS CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Witt Well Drilling
Address: __________

Signed by (Firm Official): ______________________  Date: __________

(Operator): ______________________

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
KERRI STANISZEWSKI WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 24, 2018

Well Log ID: 169569  Elev (ft): 2630 ±10  Depth (ft): 230  Quad: Viola

Latitude: 46.752317°  Longitude: -117.071102°  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
4452 Pullman Airport Road, Pullman, Wash.; on north side of road

Location Method:
Location is for well, east of flagpole within raised driveway circle; Whitman County Assessor; Google Earth imagery; topographic map. Site visit March 14, 2018.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 61</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>61 – 221</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>221 – 226</td>
</tr>
<tr>
<td>Basalt</td>
<td>226 – 230</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004615303390, 4452 AIRPORT RD; SW1/4 PT SW1/4 NO OF RD; owners are STANISZEWSKI, CHRIS/KERRI; 2.0 acres; one story residence built in 1994. [Daydream Graphics is located here.]

Well is to right (east) of flag pole.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

START CARD No. 658

OWNER: Name

LOCATION OF WELL: County

STREET ADDRESS OF WELL (or nearest address)

PROPOSED USE:

TYPE OF WORK:

DIMENSIONS:

CONSTRUCTION DETAILS:

SCREENS:

PUMP:

WATER LEVELS:

WELL TESTS:

WELL CONSTRUCTOR CERTIFICATION:

I, [NAME], accept responsibility for construction of this well, and its compliance with all Washington well construction standards.

I declare that the above statements are true to my best knowledge and belief.

License No.

Reg. No.

Date

Address

(USE ADDITIONAL SHEETS IF NECESSARY)
PETE STEINER WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 15, 2016; November 9, 2017

Well Log ID: 424471  Elev (ft): 2630 ±10  Depth (ft): 141  7.5’
Quad: Pullman

Latitude: 46.631840  Longitude: -117.136374  decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 3, T. 13 N, R. 45 E

Well Address and (or) Other Location Information:
72 Becker Road, Colton, Wash., on north side of road (next door to Irene Simpson)

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Lot 11, Block 5, Johnson, per driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 – 3</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>To 3 – 37</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt 37 – 86</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>86 – 131</td>
</tr>
<tr>
<td>Sand, white</td>
<td>131 – 136</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt, fractured 136 – 141</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 121200005120000*, JOHNSON, owner is STEINER, PETER M (72 BECKER RD). *Parcel number indicates Block 5, Lot 12; Mr. Steiner's driveway is in Lot 11.

Above, plat map from Anderson Map Company (1910) showing Original Town (in yellow) of Johnson.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Pete Stumper
Address: Lot 1 - Bury 138 Cotton, WA
LOT 11 % Sec. 3 T 13 N, R 45 W

(2) LOCATION OF WELL: County: Whatcom

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
DeWater ☐ Dewater ☐

(4) TYPE OF WORK: Owner's number of well (if more than one):
Abandoned ☐ New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well: 8 inches.
Drilled 74 feet, Depth of completed well: 141 feet.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 ft. Dia from +1 ft. to 46 ft.
Welded ☐ Liner installed ☐ Dia. from 40 ft. to 100 ft.
Threaded ☐ Dia. from ft. to ft.
Perforations: Yes ☐ No ☐ Saw ☐
Type of perforator used:
SIZE of perforations: 4/16 in. by 1/16 in.
90 perforations from 110 ft. to 140 ft.

Screens: Yes ☐ No ☐
Manufacturer's Name:
Diam. Slot size from ft. to ft.
Gravel packed: Yes ☐ No ☐ Size of gravel:
Gravel placed from ft. to ft.
Surface seal: Yes ☐ No ☐ To what depth? 46 ft.
Material used in seal:
Did any strata contain unusable water? Yes ☐ No ☐
Type of water:
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type:

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 34 ft.
Static level: 34 ft. below top of well Date: 9-2
Artesian pressure: lbs. per square inch Date:
Artesian water is controlled by (Cap, valve, etc.):

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test

20 B.P.M. Curt test

Boiler test: gal./min with ft. drawdown after hrs.
Airtest: gal./min with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water: Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Clay - Ten.</td>
<td>37</td>
<td>86</td>
</tr>
<tr>
<td>Clay - Ten.</td>
<td>86</td>
<td>136</td>
</tr>
<tr>
<td>Sand - Ten.</td>
<td>13</td>
<td>136</td>
</tr>
</tbody>
</table>

Work started: 5-1 , Completed: 9-2

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: [Signature]
Address: [Address]
Contractor’s Registration No.: [Registration No.]
Date: [Date]

(Use additional sheets if necessary)
ROY AND TRACY STENLUND WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 9, 2018

Well Log ID: D0013879 Elev (ft): 2690 ±10 Depth (ft): 255 7.5’ Quad: Viola

Latitude: 46.840021° Longitude: -117.017136° decimal degrees (WGS84)

¼, ¼, NW ¼, Sec. 6, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1045 Four Mile Road, Viola, Idaho; on south side of road

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 12</td>
</tr>
<tr>
<td>Latah Formation*</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay, brown</td>
<td>12 – 139</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>139 – 255</td>
</tr>
</tbody>
</table>

*Driller reported "Granite brown soft," but interpreted as sediments of Bovill
Comments:

Latah County Tax Parcel RP40N05W063726, STENLUND, ROY WILLIAM III; 1045 FOUR MILE RD; 4.76 AC TAX #5915; 6 40 5.

References Cited:
RECEIVED
JAN 08 2001

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D0013879
DRILLING PERMIT NO.
Other IDWR No.

2. OWNER:
Name: ROY & TRACY STENLUND
Address: 923 VANDAL DR
City: MOSCOW
State: ID Zip: 83843

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. USE:
[X] Domestic
[ ] Municipal
[ ] Monitor
[ ] Irrigation
[ ] Thermal
[ ] Injection
[ ] Other

5. TYPE OF WORK: check all that apply
[X] New Well
[ ] Modify
[ ] Abandonment
[ ] Other

6. DRILL METHOD:
[X] Air Rotary
[ ] Cable
[ ] Mud Rotary
[ ] Other

7. SEALING PROCEDURES:

<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DRY</td>
</tr>
</tbody>
</table>

Was drive shoe used? [X] Y [ ] N Shoe Depth(s) 20
Was drive shoe seal tested? [X] Y [ ] N How? 300 PSI

8. CASING/LINER:

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Chicago</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
<th>Welded</th>
<th>Threaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>+1</td>
<td>20</td>
<td>1/4</td>
<td>STEEL</td>
<td></td>
<td>[X]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>255</td>
<td>160</td>
<td>PVC</td>
<td>[X]</td>
<td></td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

9. PERFORATIONS/SCREENS:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
</tr>
</thead>
<tbody>
<tr>
<td>195</td>
<td>255</td>
<td>1/8</td>
<td>90</td>
<td>PVC</td>
<td>[X]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

33 ft. below ground Artesian pressure: 0 lb
Depth flow encountered: 150 ft. Describe access port or control devices: WELL CAP

11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td></td>
<td>235</td>
<td>1 HR</td>
</tr>
</tbody>
</table>

Water Temp. 51
Water Quality test or comments:

12. LITHOLOGIC LOG:
(Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Box Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>1</td>
<td>SOIL</td>
<td>N</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>12</td>
<td>CLAY</td>
<td>N</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>20</td>
<td>GRANITE BROWN SOFT</td>
<td>N</td>
</tr>
<tr>
<td>8</td>
<td>20</td>
<td>139</td>
<td>GRANITE BROWN SOFT</td>
<td>N</td>
</tr>
<tr>
<td>8</td>
<td>139</td>
<td>203</td>
<td>GRANITE MEDIUM GRAY</td>
<td>N</td>
</tr>
<tr>
<td>8</td>
<td>203</td>
<td>205</td>
<td>GRANITE MEDIUM BROWN</td>
<td>N</td>
</tr>
<tr>
<td>8</td>
<td>205</td>
<td>255</td>
<td>GRANITE MEDIUM GRAY</td>
<td>N</td>
</tr>
</tbody>
</table>

13. DRILLER’S CERTIFICATION:
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCKEHERSON & WRIGHT DRILLING

Firm Official: [Signature]
Date: 12/17/00

Driller or Operator: [Signature]
Date: 12/17/00

FORWARD WHITE COPY TO WATER RESOURCES
## J.J. Streibick Well 1

[Drilled November 2, 2004]

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, February 7, 2018

**Well Log ID:** 619755  
**Elev (ft):** 2550 ±10  
**Depth (ft):** 420  
**Quad:** Albion

**Latitude:** 46.755649°  
**Longitude:** -117.140653°  
**decimal degrees (WGS84)**

____ ¼, ____ ¼, ____ SE ¼, Sec. 28, T. 15 N, R. 45 E

### Well Address and (or) Other Location Information:

103(?) Eagle Lane, Pullman, Wash.; on west side of lane

### Location Method:

Location may be well, south of well house between 51 and 103 Eagle Lane; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded tax parcel number 200004515284900 (which may have been the parent number to many of the Eagle Lane parcels) and incorrect subsections; site visit March 27, 2018; plotted at same location as JJ Streibick well 2

### Geologic Units — Description

<table>
<thead>
<tr>
<th>Geographic Unit</th>
<th>Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td></td>
<td>0</td>
<td>1</td>
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<tr>
<td>Clay, light brown</td>
<td></td>
<td>1</td>
<td>43</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
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<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
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<tr>
<td>Basalt</td>
<td></td>
<td>43</td>
<td>174</td>
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<tr>
<td>Grande Ronde Basalt</td>
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<td></td>
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<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
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<tr>
<td>Sentinel Bluffs Member</td>
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<td>Basalt, weathered</td>
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<td>269</td>
<td>278</td>
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<td>Basalt</td>
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<td>317</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>317</td>
<td>404</td>
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</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515284900, LOT E JJ STEIBICK AG AC#2, $34,500/ 12 ACRES = $2,875 PER ACRE FUTURE SITE OF BIRCH HILLS II, owner now is BIRCH HILLS LLC, C/O JEFF MOTLEY, 6901 STATE ROUTE 270, PULLMAN WA; 12.0 acres; 08/01/06: grantor was PRITCHARD, EARL REV TRUSTSTREIBICK [sic] to JACK/MAUREEN [sic]; 08/02/15: grantors were STREIBICK, JACK/MAUREEN to M&P PROPERTIES INC ($0); 08/03/16: grantor was M&P PROPERTIES INC to BIRCH HILLS LLC.

This property is south of Parcels A and D shown below (in plat map provided for 200004515284290, for WACKER, BRYAN/KARINE, 1601 KITZMILLER RD)
Or perhaps now is Whitman County Tax Parcel 200004515284902, 103 EAGLE LANE, MCKEE'S SHORT PLAT #1 LT A-2 4.40 AC, owners now are SOLOMON, G/WARD K; 4.40 acres; 01/01/06: grantors were MCKEE, DARIN/STACIA to WARD/SOLOMON.

Well is at lower right (northeast) corner of tan well house.


References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Type of is Decommission ORIGINIAL INSTALLATION

Notice of Intent Number W166158

PROPOSED USE:  ☐ Domestic ☐ Industrial ☐ Municipal  ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)

☐ New well  ☐ Reconditioned  Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened  ☐ Liner installed  Diam. From  to  ft.
☐ Threaded  ” Diam. From  to  ft.

DIMENSIONS: Diameter of well 8 inches, drilled 420 ft. Depth of completed well 420 ft.

CONSTRUCTION DETAILS

Casing  ☐ Welded  Diam. from  to  ft.
Installed:  ☐ Liner installed  Diam. From  to  ft.
☐ Threaded  ” Diam. From  to  ft.

Perforations:  ☐ Yes ☐ No

Type of perforator used  SAW

SIZE of perfs 1/8 in. by 12 in. and no. of perfs 90 from 360 to 420 ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name

Type ______________ Model No. ______________

Diam. Slot size from  ft. to  ft.
Diam. Slot size from  ft. to  ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand

Materials placed from  ft. to  ft.

Surface Seal: ☐ Yes ☐ No To what depth? 50 ft.

Material used in seal BENTONITE

Did any strata contain usable water? ☐ Yes ☐ No

Type of water: ______________ Depth of strata ______________

Method of sealing strata off

PUMP: Manufacturer's Name

Type:  H.P.

WATER LEVELS: Land-surface elevation above mean sea level ______________ ft.

Static level 348 ft. below top of well Date 11-2-04

Artesian pressure ______________ lbs. per square inch Date

Artesian water is controlled by ______________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal/min. with ______________ ft. drawdown after ______________ hrs.
Yield: gal/min. with ______________ ft. drawdown after ______________ hrs.
Yield: gal/min. with ______________ ft. drawdown after ______________ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time ______________ Water Level ______________ Time ______________ Water Level ______________

Date of test ______________

Bailer test ______________ gal/min. with ______________ ft. drawdown after ______________ hrs.

Artisan 25 gal/min. with stem set at 415 ft. for 1 hrs.

Artesian flow ______________ g.p.m. Date ______________

Temperature of water ______________ Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (first) TWD WRIGHT

Driller/Engineer/Trainee Signature

Driller or trainee License No.

IF TRAINEE: Driller's License No.

Driller's Signature: [Signature]

ECY 056-14656-09 (06/98) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call TTY for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
**J.J. STREIBICK WELL 2**

**[DRILLED APRIL 12, 2005]**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, February 7, 2018

Well Log ID: 617179  Elev (ft): 2550 ±10  Depth (ft): 430  Quad: Albion

Latitude: 46.755649°  Longitude: -117.140653°  decimal degrees (WGS84)

¼, ¼, SE ¼, Sec. 28, T. 15 N, R. 45 E

**Well Address and (or) Other Location Information:**
103(?) Eagle Lane, Pullman, Wash.; on west side of lane

---

**Location Method:**
Location may be well, south of well house between 51 and 103 Eagle Lane; Whitman County Assessor; Google Earth imagery; topographic map; driller recorded "¼ mile south on Eagle Lane Rd" and incorrect tax parcel number and subsections; site visit March 27, 2018; plotted at same location as J.J. Streibick well 1

---

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th></th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
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</tr>
<tr>
<td>Clay, light brown</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
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<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
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<tr>
<td>Latah Formation</td>
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<td>Basalt, vesicular</td>
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<tr>
<td>Basalt, red</td>
<td>324</td>
</tr>
</tbody>
</table>
Comments:

Maybe Whitman County Tax Parcel 200004515284902, 103 EAGLE LANE, MCKEE'S SHORT PLAT #1 LT A-2 4.40 AC, owners now are SOLOMON, G/WARD K; 4.40 acres; 01/01/06: grantors were MCKEE, DARIN/STACIA to WARD/SOLOMON.

Well is at lower right (northeast) corner of tan well house.

References Cited:

WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction

Decommission ORIGIONAL INSTALLATION

Notice of Intent Number 358133

PROPOSED USE:
- Domestic
- Industrial
- Municipal
- DeWater
- Irrigation
- Test Well
- Other

TYPE OF WORK:
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Drilled
- Bored
- Bored
- Driven
- Depressed
- Cable
- Rotary
- Jetted

DIMENSIONS:
- Diameter of well: 8 inches
- Drilled: 430 ft.
- Depth of completed well: 430 ft.

CONSTRUCTION DETAILS

Casing: Welded 8" Diam. from 0 ft. to 45 ft.

Installed: Liner installed 8" Diam. from 45 ft. to 430 ft.

Threaded: Diam. from 0 ft. to 45 ft.

Perforations: Yes ☑ No

Type of perforator used: SAW

SIZE of perfe 1/8 in. by 12 in. and no. of perfs 99 from 370 ft. to 430 ft.

Screens: Yes ☑ No

P.C. Location: Location

Manufacturer's Name: Manufacturer

Type: __________

Model No: __________

Diam: __________ Slot size: from __________ ft. to __________ ft.

Diam: __________ Slot size: from __________ ft. to __________ ft.

Gravel/Filter packed: Yes ☑ No

Size of gravel/sand: __________

MATERIALS placed from __________ to __________ ft.

Surface Seal: Yes ☑ No

To what depth? 45 ft.

Material used in seal: BENTONITE

Did any strata contain unsalable water? Yes ☑ No

Type of water: __________

Depth of strata: __________

Method of sealing strata off: __________

PUMP: Manufacturer's Name: Manufacturer

Type: __________ H.P.: __________

WATER LEVELS: Land-surface elevation above mean sea level __________ ft.

Static level __________ ft. below top of well Date __________

Artesian pressure __________ lbs. per square inch Date __________

Artesian water is controlled by __________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☑ No

Yield: __________ gal./min. with __________ ft. drawdown after __________ hrs.

Yield: __________ gal./min. with __________ ft. drawdown after __________ hrs.

Yield: __________ gal./min. with __________ ft. drawdown after __________ hrs.

Recovery data (time taken at zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test: __________

Solder test __________ gal./min. with __________ ft. drawdown after __________ hrs.

Artesian __________ gal./min. with stem set at __________ ft. for __________ hrs.

Artesian flow __________ g.p.m. Date __________

Temperature of water __________ Was a chemical analysis made? Yes ☑ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☑ Engineer ☑ Trainee Name (last): TED WRIGHT

Driller/Engineer/Trainee Signature: Ted Wright

Driller or trainee License No: __________________

IF TRAINEE: Driller's License No: __________________

Driller's Signature: Ted Wright

CURRENT

Notice of Intent No. W166160

Unique Ecology Well ID Tag No. AHR714

Water Right Permit No.

Property Owner Name: JJ STREIBICK

Well Street Address: 1/4 MILE SOUTH ON EAGLE LANE RD

City: PHILMAN County: WHITMAN

Location SW1/4-1/4 NW1/4 Sec 28 Twn 15N R 45 E

(Lat/Long: 45 or

WWM) ☑

Lat/Long: Lat Deg __________ Lat Min/Sec __________

Long Deg __________ Long Min/Sec __________

Tax Parcel No. (Required) 02-000-46-14-11-6001

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO

SOIL BLACK 0 1

CLAY LIGHT BROWN STIFF 1 37

BASALT STRONG BLACK 37 182

CLAY LIGHT BROWN STIFF 182 204

BASALT STRONG BLACK 204 278

BASALT VASCULAR WEAK 278 324

BASALT MODERATE RED 324 338

BASALT STRONG BLACK 338 415

BASALT VASCULAR WEAK 415 420

BASALT STRONG BLACK 420 430

SEP 11 2004

Start Date 4/6/05 Completed Date 4/12/05

ECY 056-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-333-6341.
PAUL STUBBS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 15, 2018

Well Log ID: D0056660
Elev (ft): 2630 ± 10
Depth (ft): 275
Quad: Palouse

Latitude: 46.992781°
Longitude: -117.033075°
decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1020 Schneider Road, Potlatch, Idaho; on east side of road

Location Method:
Location is for well, by power pole in front of house; latitude and longitude from driller’s report plots
in the field south of tax parcel for the address; Whitman County Assessor; Google Earth imagery;
topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0  – 150</td>
</tr>
<tr>
<td>Cambrian—Precambrian (?)</td>
<td></td>
</tr>
<tr>
<td>¹Quartzite and argillite (?)</td>
<td>150  – 275</td>
</tr>
</tbody>
</table>

¹Driller reported basalt, but pink and white colors are more indicative of quartzites and argillites; thick
overburden of clay is common above basement rocks in places.
Comments:

Latah County Tax Parcel RP42N06W126150, owner now is REDMON, CHARLES III; 1020 SCHNEIDER RD, 5.00 AC TAX #7731 SWSE, 12 42 6.

Well, at left, in grass behind trees, at left (northwest corner) of house.

Paul Stubbs used to live at 1020 Schneider Road (Nuwber, Inc., 2018).

References Cited:

Form 238-7

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL TAG NO. D 005,000
   DRILLING PERMIT NO. 857,502
   Water Right or Injection Well No. 

2. OWNER:
   Name: Paul Stubbs
   Address: PO Box 55
   City: Potlatch
   State: ID Zip: 83856

3. LOCATION OF WELL by legal description:
   You must provide address or lot, Blk, Sub. or Directions to well.
   Twp.: 42 North [ ] or South [ ]
   Rge.: 16 East [ ] or West [ ]
   Sec.: 14
   Gov’t Lot: 
   County: Latah
   Lat.: 46° 59’ 27.6” Long: 117° 01’ 59.07”
   Address of Well Site: 1200 Schindler Rd
   City: Potlatch
   Lt.: 
   Blk.: 
   Sub.: Name: 

4. USE:
   [ ] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
   [ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK check all that apply (Replacement etc.)
   [ ] New Well [ ] Modify [ ] Abandonment [ ] Other

6. DRILL METHOD:
   [ ] Water Rotary [ ] Cable [ ] Mud Rotary [ ] Other

7. SEALING PROCEDURES
   Seal Material: Bentonite
   From: 0 To: 158 Weight / Volume: 650 lbs  top pour
   Was drive shoe used? [ ] N
   Was drive shoe seal tested? [ ] Y
   How? aw

8. CASING/LINER:
   Diameter: 4/2" From: 158 To: 210 Gauge: 42 Material: pvc
   Casing Liner Welded Threaded
   Length of Headpipe: 
   Length of Tailpipe: 
   Packer [ ] Y [ ] N [ ]

9. PERFORATIONS/SCREENS PACKER TYPE
   Perforation Method: 
   Screen Type & Method of Installation: 

10. FILTER PACK
    Filter Material: 
    From: To Weight / Volume: Placement Method: 

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    Depth measured below ground: 42
    Artesian pressure: 100 lb
    Depth flow encountered: 280 ft.
    Describe access port or control devices: 

12. WELL TESTS:
   [ ] Pump [ ] Bailer [ ] Air [ ] Flowing Artesian
   Yield gal/min: 10 Flowing Artesian: 1 hr
   Drawdown: 3 water levels
   Pumping Level: 1 hr
   Time: 
   Water Temp.: 41° Water Quality test or comments: __
   Bottom hole temp.: 

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
    Water
    Bore Dia. From To Remarks: Lithology, Water Quality & Temperature
    10 D 150 clay
    10 150 158 hard pink basalt
    6 158 190 hard pink basalt
    6 190 250 hard pink basalt
    6 250 375 soft red basalt

14. DRILLER’S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Brett Uihlein Drilling
    Principal Driller: Brett Uihlein
    Driller or Operator II: 
    Date: 9/18/09
    Operator I: 
    Principal Driller and Rig Operator Required.
    Operator I must have signature of Driller/Operator II.

1250

RECEIVED
SEP 11 2009
IDWR/North

Completed Depth 275 (Measurable)

Date: Started 8/28/09 Completed 8/29/09

1656 FORWARD WHITE COPY TO WATER RESOURCES
**SUESS FARMS WELL**

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 26, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 616966</th>
<th>Elev (ft): 2340 ±10</th>
<th>Depth (ft): 305</th>
<th>Quad: Colfax North</th>
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<tr>
<td>Latitude: 46.968224</td>
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<td>decimal degrees (WGS84)</td>
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<tr>
<td>¼, NE ¼, SE ¼, Sec. 18, T. 17 N, R. 44 E</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Well Address and (or) Other Location Information:**
9451 Dry Creek Road, Colfax, Wash., on north side of road

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS subdivision incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
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<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
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</tr>
<tr>
<td>Priest Rapids Member</td>
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<tr>
<td>Basalt of Lolo</td>
<td></td>
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<tr>
<td>Basalt, hard</td>
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</tr>
<tr>
<td>Latah Formation</td>
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<td>Unnamed interbed</td>
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<td>Roza Member</td>
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<td>Basalt, vesicular</td>
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<tr>
<td>Basalt, hard</td>
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<tr>
<td>Basalt, vesicular</td>
<td>185</td>
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<tr>
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<td>240</td>
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<tr>
<td>Basalt, weathered</td>
<td>257</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>277</td>
</tr>
</tbody>
</table>
Comments:

*Driller’s reports for wells in this area do not note an interbed at the Vantage interval, and the top of the Grande Ronde is difficult to pick. Water levels show that this well was completed in the Grande Ronde.

Whitman County Tax Parcel 200004417181490, 9451 DRY CREEK RD, NE PT SE1/4, owner is SUESS, RANDALL H; 2.0 acres.

Randall Henry and Laurie Suess, 9451 Dry Creek Road, Colfax, are governors of Suess Farms, Inc. (Washington Secretary of State, 2016).

References Cited:

WATER WELL REPORT

Construction/Decommission ("x" in circle)

Notice of Intent Number: 258016

Proposed Use: Domestic □, Industrial □, Municipal □, Domestic □, Irrigation □, Test Well □, Other □

Type of Work: New well □, Reconditioned Method: Drilled □, Bored □, Driven □, Deepened □, Cable □, Rotary □, Jetted □

Dimensions: Diameter of well 8" inches, depth drilled: 300 ft., Depth of completed well: 305 ft.

Construction Details

Casing: Welded 8" Diam. from 0 to 200 ft.

Installed: Liner installed 8" Diam. from 150 ft. to 305 ft.

Perforations: Yes □, No □

Type of perforator used: SAW □

Size of permeable strata 16 in. by 12 in. and no. of perforations 90 from 245 ft. to 305 ft.

Screen: Yes □, No □, K-Frac Location: Manufacturer's Name:

Type: Model No:

Diam. Slot size: from ft. to ft.

Diam. Slot size: from ft. to ft.

Gravel/Filter packed: Yes □, No □, Size of gravel/sand:

Materials placed from ft. to ft.

Surface Seal: Yes □, No □, To what depth: 20 ft.

Material used in seal: BENTONITE □

Did any strata contain unusable water? Yes □, No □

Type of water? Depth of strata:

Method of sealing strata off:

Pump: Manufacturer's Name:

Type:

Water Levels: Land-surface elevation above mean sea level ft.

Static level: 210 ft. below top of well Date 7/3/07

Artesian pressure: lbs. per square inch Date

Artesian water is controlled by (cap, valve, etc.)

Well Tests: Drawdown at amount water level is lowered after static level

Was a pump test made? Yes □, No □

Yield: gal./min. with drawdown after ft. hrs.

Yield: gal./min. with drawdown after ft. hrs.

Yield: gal./min. with drawdown after ft. hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailier test gal./min. with drawdown after ft. hours.

Artiest 15 gal./min. with stem set at 290 ft. for hrs.

Artesian flow p.g.p.m. Date

Temperature of water °F Was a chemical analysis made? Yes □, No □

Start Date 6/29/07 Completed Date 7/3/07

SEF 11 2009

Current

Notice of Intent No. W219563

Unique Ecology Well ID Tag No. ARH730

Water Right Permit No.

Property Owner Name: SUESS FARMS INC

Well Street Address: 941 DRY CREEK RD

City: COLFAX County: WHITMAN

Location: SE1/4 NW1/4 Sec 18 Twn 17N R 44 EWM 40 EWM 40

Late/Long Lat Deg Lat Min/Sec Long Deg Long Min/Sec

Tax Parcel No. (Required) 2-0000-44-18-4680

Construction or Decommission Procedure

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO

CLAY YELLOW BROWN STIFF 0 12

BASALT STRONG BLACK 88 94

BASALT VASCULAR BLACK WEAK 94 112

BASALT STRONG BLACK 112 185

BASALT VASCULAR BLACK WEAK 185 240

BASALT STRONG BLACK 240 257

BASALT WEATHERED WEAK 257 277

BASALT STRONG BLACK 277 305

Well Construction Certification: I certify and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller □, Engineer □, Trainee Name (Post) TED WRIGHT

Driller/Engineer/Trainee Signature

Driller or trainee License No.

If Trainee: Driller's License No.

Driller's Signature: TED WRIGHT

ECY 059-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
SUNSET MEMORIAL GARDENS WELL
(MOSCOW CEMETERY WELL 1)
[DRILLED IN 1955]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 5, 2016

Well Log ID: NA Elev (ft): 2610
Depth (ft): 552 7.5’
Quad: Moscow East

Latitude: 46.721503 Longitude: -116.980427 decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 17, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1423 South Mountain View Road, Moscow, Idaho, on west side of road; small city building/well house

Location Method:
Latitude and longitude from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); elevation from Smith (1958); Latah County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil, black</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, light gray</td>
<td>5</td>
</tr>
<tr>
<td>Clay, with gravel, light gray to brown</td>
<td>21</td>
</tr>
<tr>
<td>Gravel, with yellow clay</td>
<td>39</td>
</tr>
<tr>
<td>Clay, brown-blue clay, with wood</td>
<td>53</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken and weathered</td>
<td>87</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>91</td>
</tr>
<tr>
<td>Basalt, broken, with clay</td>
<td>254</td>
</tr>
</tbody>
</table>

Latah Formation
Vantage Member

- Clay, green, brown, yellow: 272 – 354
- Clay, sandy, light brown: 354 – 371
- Clay, brown, blue: 371 – 447
- Sand, salt and pepper, wood: 447 – 513
- Clay, brown: 513 – 550

Grande Ronde Basalt

- R2 magnetostratigraphic unit
- Meyer Ridge Member(?)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt</td>
<td>550</td>
<td>552</td>
</tr>
</tbody>
</table>

Comments:

There are two wells here: Sunset Memorial Gardens well and Moscow Cemetery well 2 (Keil, 2012, fig. 2-3).

Both Smith’s (1958) and A.A. Durand and Son’s well logs for the Sunset Memorial Gardens well were used for the interpretations given herein.

Water is from gravel in sediments of Bovill and sand layer in the Vantage. The correlation of the lower basalt to the Meyer Ridge Member is based only on that basalt identified at similar elevations in Moscow city wells by Conrey and Wolf (2010).

Latah County Tax Parcel RPM05250000050, owner is CITY OF MOSCOW, LES SCHWAB ADDITION, LOT 5.
References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
WELL LOG AND REPORT TO THE
STATE RECLAMATION ENGINEER OF IDAHO

624832

A. A. DURAND & SON
Well Drilling Contractors
P. O. Box 437
Wallace, Washington

Owner: SUNSET MEMORIAL GARDENS, INC.
Address: Moscow, Idaho

Driller: A. A. DURAND & SON
Address: Wallace, Wash.
Lic. No. 47

Location of Well: NE 1/4 SE 1/4 Sec. 17, T. 59 N., R. 5 W., 8th Meridian.

and

N 1/4 Sec., Corner of 1/4 1/4 Sec.

Size of Drilled Hole: 12" x 10" x 8"

Size of Pump: Total depth of Well: 608'

Give depth of standing water from surface: 124'

Water Temp.: 59°F

On pumping test delivery was: 650 g.p.m. or c.f.s.

Drawdown: 100 ft. diesel engine with vertical belt pulley drive.

Size of pump and motor used: 3/4 HP of 4" pump column with 10 stage, 6" drive; airline installed inside pump column.

Length of time pumped during check was: 24 hrs. continuously.

If flowing well, give flow in c.f.s. or g.p.m. and shut in pressure.

If flowing well, describe control works.

Water will be used for: Irrigation of cemetery

Type and size of valve, etc.: 12" = 45# lbs.

Weight of casing per linear foot: 8" = 25# lbs.

Thickness of casing: 12 5/8" Od. x 12" I.D.

Casing material: Standard black steel pipe

E.G.: PIPE, CONCRETE, WOOD.

Pump pit 7' below ground surface.

Diameter, length and location of casing:

(Casing 12" in diameter and under give inside diameter; casing over 12" in diameter give outside diameter.)

Number and size of perforations: none

Located feet from surface of ground.

Other perforations: See well screen data in casing record

Date of commencement of well: May 17, 1965
Date of completion of well: August 23, 1965

Type of well: 82 Speed star - spudder - cable tool

Well drilled under supervision of Consulting Engineer Frank S. Junk, Moscow, Idaho

All measurements are based on ground surface, 6" depth of dug well pit.

Casing Record

<table>
<thead>
<tr>
<th>DIAM.</th>
<th>FROM</th>
<th>TO</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; I.D.</td>
<td>6'</td>
<td>36'</td>
<td>30'</td>
</tr>
<tr>
<td>8&quot; I.D.</td>
<td>6'</td>
<td>11'</td>
<td>46'</td>
</tr>
<tr>
<td>8 5/8&quot; I. D.</td>
<td>10'</td>
<td>50'</td>
<td></td>
</tr>
</tbody>
</table>

"REMARKS" - SEALS, GRAVITY, ETC.

12" seated into top of first basalt drilled through 18" of natural clay seal material forming an effective seal against "surface water" infiltration into well 8" casing seated within aquifer sand - pulled back to expose screen.

8" telescope type Johnson, Eyedur well screen with No. 25 slot. Bottom of well screen is completed depth of well filled back from 52' for screen foundation.

GENERAL INFORMATION - Pumping Test, Quality of Water, Etc.

(Note: 8" casing anchored to 12" casing with casing cap installed 8/23/65 to prevent 8"
(hanging free) from slipping down over screen.

Water supply developed in interbasalt sediments within a thick aquifer sand.

NE SE 5/7 39N 5EW
WELL LOG

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Type of Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Sheet No. 2 for Well Formation Log.

A Well Capacity Pump Test was conducted for a continuous pumping period of 24 hours during 8/19 - 20/55. The static water level below ground surface was 124' and pumping rates are as follows: All data is below ground surface.

<table>
<thead>
<tr>
<th>GPM Drawdown</th>
<th>Water Level</th>
<th>Specific Capacity</th>
<th>Temp.</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>650</td>
<td>168'</td>
<td>10.16</td>
<td>59°</td>
<td>4½</td>
</tr>
<tr>
<td>200</td>
<td>136'</td>
<td>16.0</td>
<td>57°</td>
<td>4½</td>
</tr>
</tbody>
</table>

Note: Pumping rates above 650 GPM caused creeping drawdown and since this pumping rate is in excess of owners proposed use, pumping at higher rates were discontinued.

If more space is required use Sheet No. 2

WELL DRILLERS STATEMENT

This well was drilled under my jurisdiction and the above information is true and correct to the best of my knowledge and belief.

Signed

[Signature]

License No. C 47

Dated: 19...
## WELL LOG

<table>
<thead>
<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Type of Material</th>
<th>Drilling Time</th>
<th>Water Bearing Ann. Year or No</th>
<th>Casing Ann. Year or No</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
<td>Soft, black topsoil</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
<td>Light grey, sticky clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>21</td>
<td>29</td>
<td>Light brown clay, with small washed gravel</td>
<td></td>
<td>YES</td>
<td>None</td>
</tr>
<tr>
<td>29</td>
<td>39</td>
<td>Yellow clay with small washed gravel; Water bearing gravel @ 34'; first water encountered and is water occurring in the overburden formations lying above the first basalt. All of this water is shut off by the 12&quot; pipe.</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>39</td>
<td>53</td>
<td>Coarse, washed gravel with yellow clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>53</td>
<td>69</td>
<td>Light brown clay with wood</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>69</td>
<td>82</td>
<td>Dark brown clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>82</td>
<td>87</td>
<td>Blue clay; 87' end of overburden material lying above the first basalt.</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>87</td>
<td>91</td>
<td>Dark brown broken decomposed basalt</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>91</td>
<td>254</td>
<td>Very dense hard black basalt</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>254</td>
<td>272</td>
<td>Broken basalt with blue clay/ end of first basalt</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>272</td>
<td>278</td>
<td>Light green sticky clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>278</td>
<td>281</td>
<td>Light yellow clay with broken basalt chips</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>281</td>
<td>354</td>
<td>Green clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>354</td>
<td>371</td>
<td>Light brown clay with sand</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>371</td>
<td>409</td>
<td>Light brown sticky clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>409</td>
<td>414</td>
<td>Sticky blue clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>414</td>
<td>447</td>
<td>Chocolate brown clay</td>
<td></td>
<td>YES</td>
<td>None</td>
</tr>
<tr>
<td>447</td>
<td>513</td>
<td>Light grey decomposed granite sand; (aquifer sand; looks like salt and pepper). Beginning from 480' to 513' observed some wood particles in some samples.</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>513</td>
<td>550</td>
<td>Sticky chocolate brown clay</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>550</td>
<td>552</td>
<td>Black basalt; beginning of second basalt formation;</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>552</td>
<td>508</td>
<td>Hole filled back to 508'</td>
<td></td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

* Note: From ground surface to 8' - dug pump pit unfinished at well completion to cut off 12" and 8" casings @ 6' 11" below ground surface.
ROGER SWAN WELL 1

[DRILLED IN 1988]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 19, 2018

Well Log ID: 158500     Elev (ft): 2520 ±10     Depth (ft): 155     Quad: Viola

Latitude: 46.826087°   Longitude: -117.111695°   decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 35, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
101 Estes Road, Pullman, Wash.; on south side of road, ~850 ft due east of SR 27.

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; Well 6 of Bush and Provant (1998); site visit March 16, 2018 — did not observe well.
Ralston (1996) refers to two Swan wells in SW¼, SW¼, sec. 35, T. 16N, R45E: Swan, 205 ft in depth, 1 gpm (no record in DOE database); and Swan, 155 ft in depth, 15 gpm (which we refer to in this report as Roger Swan well 1).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, brown</td>
<td>From 0 To 3</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>From 3 To 14</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 14 To 56</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>From 56 To 59</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 59 To 137</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>From 137 To 147</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 147 To 155</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516353902, 101 ESTES RD 99163, SW EAST IF SR 27 & SOUTH OF RR; owner now is SWAN, WILLIAM; 48 acres; 2 story residence built in 1896.

References Cited:


WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Roger Steen Address: 257 97 Pullman Av

(2) LOCATION OF WELL: County: Whitman Sec: 35 T: 16 N. R. 45 W.M.

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well (if more than one) New well [ ] Method: Dug [ ] Bored [ ]
Depleted [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [ ] Jetted [ ]


(6) CONSTRUCTION DETAILS:
Casing installed: Dia. from 8" ft. to 20 ft.
Threaded [ ] Dia. from ft. to ft.
Welded [ ] Dia. from ft. to ft.

Perforations: Yes [ ] No [ ]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [ ]
Manufacturer's Name
Type
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ]
Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [ ] No [ ] To what depth? 20 ft.
Material used in seal
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water?
Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name

(8) WATER LEVELS: Land-surface elevation above mean sea level...
Static level ft. below top of well Date: 10-12-86
Artesian pressure lbs. per square inch Date
Artesian water is controlled by
(Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
</table>

Date of test
Basalt test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sed.-Brown</td>
<td>0 3</td>
<td>1 0</td>
</tr>
<tr>
<td>Basalt-Gray Mud</td>
<td>14 34</td>
<td>14 34</td>
</tr>
<tr>
<td>Basalt-Gray Mud</td>
<td>34 59</td>
<td>59 73</td>
</tr>
<tr>
<td>Clay-Drift</td>
<td>137 147</td>
<td>147 155</td>
</tr>
</tbody>
</table>

Received: Nov 15 1986

[Signature] McPHERSON & WRIGHT DRILLING

2240 S. Burwell

LEWISTON, IDAHO 83501

Address

[License No.] 0523 Date: 10-20-86

1988

(USE ADDITIONAL SHEETS IF NECESSARY)
ROGER SWAN WELL 2

[Drilled in 2010]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 15, 2016

Well Log ID: 688739       Elev (ft): 2570 ±10       Depth (ft): 100       7.5’       Quad: Viola

Latitude: 46.837522       Longitude: -117.069945       decimal degrees (WGS84)

⅛, SW ⅛, SW ⅛, Sec. 30, T. 16 N, R. 46 E

Well Address and (or) Other Location Information:
2881 Viola Road, Viola, Wash., on south side of road; well is just east of water tank, near western driveway.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map; PLSS section and tax parcel are incorrect on driller’s report. Site visit (April 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>*Basalt, soft</td>
<td>8 – 17</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>17 – 52</td>
</tr>
<tr>
<td>Basalt</td>
<td>52 – 73</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>73 – 100</td>
</tr>
</tbody>
</table>
Comments:

*The uppermost basalt could be Saddle Mountains, but it was interpreted that the underlying clay was invaded or carried along in the Lolo flow.

Whitman County Tax Parcel 200004616303890, 2881 VIOLA RD, PALOUSE, SWAN'S VIOLA RD SHPLT SW 30 PT NW 31, owner now is KIMBALL, HOLLY; grantors were SWAN, ROGER H/BERTHA on 07/01/11.

References Cited:
WATER WELL REPORT
Original & 1st copy—Ecology, 2nd copy—owner, 3rd copy—driller
Construction/Decommission ("x" in circle)
Decommission ORIGNAL INSTALLATION
Notice of Intent Number W159974

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal
[ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)
[ ] New well [ ] Reconditioned [ ] Method: [ ] Deg [ ] Graded [ ] Driven
[ ] Deepened [ ] Threaded [ ] Diameter from [ ] Diam. From [ ] to [ ] ft.

DIMENSIONS: Diameter of well [ ] inches, drilled [ ] ft. Depth of completed well [ ] ft.

CONSTRUCTION DETAILS
Casing [ ] Welded Diam. from [ ] ft. to [ ] ft.
Installed: [ ] Lowered Diam. from [ ] ft. to [ ] ft.
[ ] Threaded Diam. From [ ] to [ ] ft.

Perforation: [ ] Yes [ ] No
Type of perforator used [ ] Skill saw
SIZE of perfs: [ ] in. by [ ] in. and no. of perfs [ ] from [ ] to [ ] ft.

Screens: [ ] Yes [ ] No [ ] K-Pac
Manufacturer's Name

Type [ ] Model No.
Diam. [ ] Slot size [ ] ft. to [ ] ft.
Diam. Slot size [ ] ft. to [ ] ft.
Gravel/Filter packet [ ] Yes [ ] No Size of gravel/sand
Materials placed from [ ] to [ ] ft.

Surface Seal: [ ] Yes [ ] No To what depth [ ] ft.
Material used in seal bentonite granules

Did any strata contain unusable water? [ ] Yes [ ] No
Type of water? Depth of strata

METHOD OF SEALING STRATA OFF

PUMP: Manufacturer's Name
Type [ ] H.P.

WATER LEVELS: Land-surface elevation above mean sea level [ ] ft.
Static level [ ] ft. below top of well Date 10-15-10
Artesian pressure [ ] lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [ ] No If yes, by whom?
Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
Yield: [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
Recovery date (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Well test [ ] gal./min. with [ ] ft. drawdown after [ ] hrs.
Air test [ ] gal./min. with stem set at [ ] ft. for [ ] hrs.
Artesian flow g.p.m. Date
Artesian pressure [ ] lbs. per square inch
Temperature of water [ ] Was a chemical analysis made? [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller [ ] Engineer [ ] Trainee Name (Rev): [ ] Brett W. Uhlenkott
Driller/Engineer/Trainee Signature [ ] Brett W. Uhlenkott
Driller or trainee License No. [ ] 6097
IP TRAINEE: Driller's License No.
Driller's Signature:

ECY 050-1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
ROGER SWAN WELL 3

[DRILLED IN 2011]

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, February 2, 2017; November 9, 2017

Well Log ID: 768959  Elev (ft): 2510 ±10  Depth (ft): 525  7.5’  Quad: Viola

Latitude: 46.828252  Longitude: -117.111128  decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 35, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
952 Fallon Road, Pullman, Wash., on north side of road; well is in field southeast of house.

Location Method:
Location is for well; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller’s report. Site visit (April 15, 2016)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>12</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>177</td>
</tr>
<tr>
<td>*Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>218</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?)</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>303</td>
</tr>
<tr>
<td>Basalt</td>
<td>371</td>
</tr>
</tbody>
</table>
Comments:

*The 307 ft of Grande Ronde Basalt encountered in this well is difficult to correlate due to several miles distance to wells with chemical determinations. The N2 is missing in the DOE Butte Gap well, approximately 2 mi to the north, where the Meyer Ridge Member comprises the upper 140 ft of the Grande Ronde Basalt (Conrey and others, 2013). However, comparisons of elevations of major flow breaks to the DOE Butte Gap well suggest that the N2 exists in this well and must pinch out to the north.

Whitman County Tax Parcel 200004516353690, 952 FALLON RD, PALOUSE, MODULAR SW1/4 PT N1/2 ROGER SWAN SHORTPLAT #1, owner is SWAN, ROGER.

References Cited:

## WATER WELL REPORT

**Notice of Intent Number** WE 13073  
**Property Owner Last Name** Swan  
**First Name** Roger  
**Organization Name**  
**Well Tag ID Number (e.g., AAA-001)** BCP 092  
**Variance Granted? (Circle One)** Yes  
**Water Right Permit Required? (Circle One)** Yes  
**If Yes, enter Water Right Permit Here (Required)**  

### Well Use (Circle All That Apply):  
- **Agricultural irrigation**  
- **Domestic**  
- **Individual Irrigation**  
- **Parks and recreation**  
- **Test Well**  
- **Other**  

### Type of Work (Circle One):  
- **Alteration**  
- **Hydrofracturing**  
- **Deepered Well**  
- **Replacement**  
- **Other**  

### Method (Circle One):  
- **Cable**  
- **Driven**  
- **Dug**  
- **Jetted**  
- **Rotary**  

### Drilling Start Date  
**6/8/2011**  
**Mark**  
### Drilling Completion Date  
**6/15/2011**

### Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)  
**Well Street Address** 952 Fallon Rd.  
**Well City** Pullman  
**Well County** Whitman  
**Well Zip Code** 99163  
**Tax Parcel Number** 2-000-4516-35-3640  

### If claiming tax parcel exemption (Circle One):  
- **Tribal**  
- **Federal Property**  
- **Right of Way**  
- **Railroad Land**  

### Township  
160 N  
### Range  
45  
### Circle One: East or West  
Section 35  
### SWSW  

### CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.  
**Diameter of Well**  
3 ft, Drilled 18 ft in  
**Depth of Completed Well** 525 ft in

### Casings (At least one casing must have a 6 in of stickup and all fields must be filled out for each casing entered)  
**Type (Circle One)** Concrete  
**Plastic**  
**Steel**  
**Other**  
**Diameter** 8 inches  
**Stickup** 24 inches  
**Depth** +2 ft in, TO -18 ft in  

### Liners? Circle One Yes No  
**Type 1 (Circle One)** PVC  
**Steel**  
**Other**  
**Diameter** 6 in, From -5 ft in TC 195 ft in  
**Type 2 (Circle One)** PVC  
**Steel**  
**Other**  
**Diameter** 6 in, From -5 ft in TC 195 ft in

### Perforations? Circle One Yes No  
**Type of Perforator (Circle One)** Drill  
**Mills Knife**  
**Saw Cut**  
**Star Torch Cut**  
**Other**  
**Perforation size** 18 in by 4 in  
**Total Perforations** 5 ft

### Perforation 1 from  
485 ft in, TO 525 ft inches  
**Perforation 2 from**  

### Screens? Circle One Yes No  
**Mfr 1**  
**Type**  
**Diam in**  
**Slot Size**  
**From** ft in  
**To** ft in  
**Mfr 2**  
**Type**  
**Diam in**  
**Slot Size**  
**From** ft in  
**To** ft in

---

ECY 050-1-20 (Rev 1/11)  
The Department of Ecology does NOT warrant the Data and/or Information on this Well Report.  
If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.  
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes [ ] No [X] If yes, then complete the below fields that apply

Packing Material 1 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _______ ft _______ in TO _______ ft _______ in
Packing Material 2 Circle One 10-20 20-40 8-12 Coarse Sand Pea Gravel From _______ ft _______ in TO _______ ft _______ in

Surface Seal Was there an existing surface seal? Yes [ ] No [X] Depth of Seal _______ ft _______ in
Type of Seal Material (Circle One) Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes [ ] No [X] If yes, Mfr Name _______ Pump Type _______ HP

Static Water Level (Circle One and fill in the blanks if needed)

Yes [ ] Measured Level (Below top of well) 275 ft _______ in Date Measured 6/15/11

Flowing Artesian (Circle One) Greater Than or Equal To _______ GPM _______ PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)

Dry Hole

Unusable Water Strata? (Circle One) Yes [ ] No [X] If Yes is circled, method of sealing strata off

Strata 1 (Specify Usable Water Type) _______ From _______ ft _______ in TO _______ ft _______ in
Strata 2 (Specify Usable Water Type) _______ From _______ ft _______ in TO _______ ft _______ in

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test (Circle One) Date of test _______ Greater Than or Equal To _______ GPM, with _______ Drawdown after _______ hrs _______ min
Air Test (Circle One) Date of test _______ Greater Than or Equal To _______ GPM, with stem set at _______ ft _______ in Test Duration _______ hrs _______ min

Pump Test Date of test _______ Test performed by _______

Note: Drawdown - the amount the water level is lowered below the static level

Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min
Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min Yield _______ gpm, with _______ ft _______ in; Drawdown after _______ hrs _______ min

Note: Recovery - The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording

Time _______ hrs _______ min; Water Level _______ ft _______ in Time _______ hrs _______ min; Water Level _______ ft _______ in
Time _______ hrs _______ min; Water Level _______ ft _______ in Time _______ hrs _______ min; Water Level _______ ft _______ in
Time _______ hrs _______ min; Water Level _______ ft _______ in Time _______ hrs _______ min; Water Level _______ ft _______ in

Well Lithology Details - Your lithology MUST be reported to the drilled depth of the well. Please check your "From" and "To" feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durt</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>medium black bsalt</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>medium black bsalt</td>
<td>18</td>
<td>177</td>
</tr>
<tr>
<td>blue shale</td>
<td>177</td>
<td>218</td>
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<tr>
<td>medium black bsalt</td>
<td>218</td>
<td>303</td>
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<tr>
<td>soft black bsalt</td>
<td>303</td>
<td>371</td>
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<tr>
<td>medium black bsalt</td>
<td>371</td>
<td>485</td>
</tr>
<tr>
<td>soft black bsalt</td>
<td>485</td>
<td>525</td>
</tr>
</tbody>
</table>

Comments - Enter any other important well construction and/or location details here.

CERTIFICATION - I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

(Circle One) Driller/Trainee Engineer/Name/Print
Driller/Engineer/Trainee Signature [ ]

Driller/Trainee/PE License No. [ ]

If TRAINEE, Mentor Driller License No. [ ]
Mentor Driller Signature [ ]

Brett Uhlenkott Drilling
Address PO Box 233
City, State, Zip Cottonwood, ID 83522
Phone Number 208-962-3200
Email Address [ ]
**STEVE AND FRANKIE SWINNEY WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, January 9, 2018

Well Log ID: 883107  
Elev (ft): 2750 ±10  
Depth (ft): 205  
Quad: Elberton

Latitude: 46.923641°  
Longitude: -117.189219°  
decimal degrees (WGS84)

Well Address and (or) Other Location Information:  
1101 Swanson Road, Palouse, Wash.; on west side of road.

Location Method:  
Presumed location is for house in the tax parcel recorded by driller (not the address); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>4</td>
</tr>
<tr>
<td>Cambrian–Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>*Basalt</td>
<td>31</td>
</tr>
</tbody>
</table>

*The driller reported basalt for this well. It is located in an area mapped as argillite and siltite. If basalt, then the top is higher than surrounding areas; in addition, water level is much too high for a Wanapum well. In places, the argillites are black and it is possible the driller was mistaken. There are outcrops of Precambrian rocks less than 1,500 ft to the southwest of the well.
Comments:

Whitman County Tax Parcel 200004517313900, 1101 Swanson Rd., SW LTS 3-4 SWINNNEY SWANSON RD SHPLT NOT DONE YET, SWANSON SPRAY & MFG INC, C/O FRANKIE SWINNEY, 1551 SWANSON RD, PALOUSE, WA; 76 acres.

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)

Original & 1st copy - Ecology. 2nd copy - owner. 3rd copy - driller

Proposed Use: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

Type of Work: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Dog ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Littled

Dimensions: Diameter of well 8 inches, drilled 205 ft.
Depth of completed well 205 ft.

Construction Details

Casing: ☐ Welded ☐ Diam. from 1ft to 205 ft.
Installed: ☐ Liner installed ☐ Diam. from 25 ft to 205 ft.
☐ Threaded ☐ Diam. From to ft.

Perforations: ☐ Yes ☐ No
Type of perforator used: SAW

Size of perfor 1/8 in., by 12 in. and no. of perfor 120, from 125 ft to 205 ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location

Manufacturer's Name: 

Type: Diam. Slot size from to ft.
Diam. Slot size from to ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand

Materials placed from to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 36 ft.
Material used in seal: BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No
Type of water: Depth of strata

Method of sealing strata off

Pump: Manufacturer's Name

Type: H.P.

Water Levels: Land-surface elevation above mean sea level ft.
Static level 27 ft below top of well Date 7/30/13
Artesian pressure lbs. per square inch Date

Artesian water is controlled by (cap, valve, etc.)

Well Tests: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield: gal.min. with ft. drawdown after hrs.
Yield: gal.min. with ft. drawdown after hrs.
Yield: gal.min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test

Water test gal.min. with ft. drawdown after hrs.
Artiast water at 15.1 g/m in. with stem set at 200 ft. for 1 hrs.
Artiast flow Date

Temperature of water 55 Was a chemical analysis made? ☐ Yes ☐ No

Well Construction Certification: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller Engineer Trainee Name (Print) TED WRIGHT
Driller/Engineer/Trainee Signature

Driller or trainee License No. 0653

IF TRAINEE: Driller's License No.
Driller's Signature

ECY 050-1-20 (Rev 06/07) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
BRIAN SYMS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 617173  Elev (ft): 2480 ±10  Depth (ft): 345  7.5’ Quad: Albion

Latitude: 46.762325°  Longitude: -117.158833°  decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 28, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
602 Whelan Road, Pullman, Wash.; on north side of road, about 0.5 mi east of State Route 27

Location Method:
Location is for well house, on west side of house; Whitman County Assessor; Google Earth imagery; topographic map; WA DOE database misspelled last name as "Sums;" site visit March 27, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden Clay, light brown</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt Priest Rapids Member Basalt of Lolo Basalt</td>
<td>5</td>
</tr>
<tr>
<td>Grande Ronde Basalt NZ magnetostratigraphic unit(?) Sentinel Bluffs Member(?) Basalt, weathered, soft Basalt</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>147</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit(?) Basalt, red Basalt</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>258</td>
</tr>
<tr>
<td></td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>334</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515282290, 602 WHELAN RD PULLMAN, NW PT NW1/4, SYMS, BRIAN/ANNETTE; 2530 S GRAND AVE, PULLMAN WA; 3.0 acres; one story residence built in 1960.

Above left, low well house is to left of twin pine trees on west side of house.

References Cited:
**WATER WELL REPORT**

**Construction/Decommission ("X" in circle)**
- Decommission ORIGINAL INSTALLATION
- Notice of Intent Number 35813D

**PROPOSED USE:**
- ☑ Domestic
- ☑ Industrial
- ☑ Municipal
- ☑ DeWater
- ☑ Irrigation
- ☑ Test Well
- ☑ Other

**TYPE OF WORK:** Owner's number of well (if more than one)
- ☑ New well
- ☑ Reconditioned
- Method: ☑ Dug
- ☑ Bored
- ☑ Driven
- ☑ Diamond Drilled

**DIMENSIONS:**
- Diameter of well 8 inches, drilled 845 ft.
- Depth of completed well 345 ft.

**CONSTRUCTION DETAILS**
- Casing: ☑ Welded 8" Diam. from 1/ft to 20 ft.
- Installed: ☑ Liner installed 8" Diam. from 15 ft to 345 ft.
- ☑ Threaded 8" Diam. From 15 ft to 345 ft.

**Perforations:**
- ☑ Yes ☐ No

**Type of perforator used:**
- SAW

**SIZE of perfs 1/8 in. by 12 in. and no. of perfs 90 from 285 ft to 345 ft.**

**Screens:**
- ☑ Yes ☑ No ☐ K-Pac

**Manufacturer's Name:**
- Location

**Type:**
- Model No.

**Gravel/Filter packed:**
- ☑ Yes ☑ No

**Materials placed from 15 ft to 345 ft.**

**Surface Seal:**
- ☑ Yes ☑ No

**To what depth? 20 ft.**

**Material used in seal:**
- BENTONITE

**Did any strata contain unsuitable water?**
- ☑ Yes ☑ No

**Type of water?**
- Depth of strata

**Method of sealing strata off:**

**PUMP:**
- Manufacturer's Name
- Location
- Type: H.P.

**WATER LEVELS:**
- Land-surface elevation above mean sea level __________ ft.
- Static level 251 ft. below top of well Date 6/19/08
- Artesian pressure __________ lbs. per square inch Date __________
- Artesian water is controlled by (cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? ☑ Yes ☑ No If yes, by whom?

<table>
<thead>
<tr>
<th>Yield</th>
<th>Water Level</th>
<th>Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>Water Level</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>__________</td>
</tr>
</tbody>
</table>

**Date of test:**

**Well test:**
- gal/min. with __________ ft. drawdown after __________ hrs.

**Airtest:**
- 25 gal/min. with stem set at __________ ft for __________ hrs.

**Artesian flow:**
- __________ p.g. per date

**Temperature of water:**
- __________

- Was a chemical analysis made? ☑ Yes ☑ No

**CURRENT**

**Notice of Intent No. W219593**

**Unique Ecology Well ID Tag No.**
- AHR750

**Property Owner Name:**
- BRIAN SYMS

**Well Street Address:**
- 602 WHELAN RD

**City:**
- PULLMAN

**County:**
- WHITMAN

**Location:**
- 1/4-1/4 Sec 28 Twn 15N R 45 EWM 0
- Or WWM

**Lat/Long:**
- Lat Deg __________ Lat Min/Sec __________
- Long Deg __________ Long Min/Sec __________

**Tax Parcel No. (Required):**
- 2-0000-45-15-28-2290

**CONSTRUCTION OR DECOMMISSION PROCEDURE**

**Formation:**
- Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAY LIGHT BROWN STIFF</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>5</td>
<td>106</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>106</td>
<td>147</td>
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<tr>
<td>BASALT STRONG BLACK</td>
<td>147</td>
<td>214</td>
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<td>BASALT STRONG BLACK</td>
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<td>BASALT STRONG BLACK</td>
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<td>327</td>
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<tr>
<td>BASALT STRONG BLACK</td>
<td>327</td>
<td>334</td>
</tr>
<tr>
<td>BASALT STRONG BLACK</td>
<td>334</td>
<td>345</td>
</tr>
</tbody>
</table>

**Drilling Company:**
- MCHERSON & WRIGHT DRILLING

**Address:**
- 2246 BURRELL

**City, State, Zip:**
- LEWISTON, ID, 83501

**Contractor's Registration No.:**
- MCRPHWD135N1

**Date:**
- 8/15/09

**Start Date:**
- 6/16/08

**Completed Date:**
- 6/19/08

**Driller/Engineer/Trainee Signature:**
- TED WRIGHT

**Driller or trainee license No.:**

**IF TRAINEE: Driller's License No.:**

**Driller's Signature:**

**ECC 050-1-20 (Rev 06/08)**

If you need this document in an alternate format, please call the Water Resources Program at 360-407-6400.

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Syringa Mobile Home Park Well 4

[Drilled in 1979]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: NA Elev (ft): 2641 Depth (ft): 280 7.5’ Quad: Moscow East

Latitude: 46.741770° Longitude: -116.945753° decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 10, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
4600 Robinson Park Road, Syringa Mobile Home Park, Space 47, Moscow, Idaho; on north side of road

Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006); Latah County Assessor; Google Earth imagery; topographic map

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td>Sediments of Bovill</td>
<td>0 – 32</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>32 – 74</td>
<td></td>
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</tr>
<tr>
<td>Gravel, with clay</td>
<td>74 – 146</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown, orange</td>
<td>146 – 165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>165 – 201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>Granite</td>
<td>201 – 280</td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Crosthwaite (1975, table 1, p. 11) lists three wells at Syringa Trailer Court (wells 39N 05W 10abc1 drilled in 1966 to depth of 147 ft, 39N 05W 10abd1 drilled in 1967 to depth of 210 ft, and 39N 05W 10abd2 year drilled not identified to depth of 600 ft) but only provided a log for the second well, Syringa Trailer Court 2. A fourth well, Syringa Mobile Home Park well 4, was drilled in 1979 to a depth of 280 ft. And, Magar E. Magar drilled three more wells May 1 and May 11, 1994 and August 30, 1995, respectively (Magar E. Magar wells 1, 2, and 3).

Latah County Tax Parcel RP39N05W100440, owner is MAGAR, MAGAR E; 4600 ROBINSON PARK RD; 30.28 AC TAX #3588 N 1/2 NE, 1.96 AC TAX #3813; 10 39 S.

References Cited:


1. WELL OWNER

Name: Synamal Home  Inc.
Address: 2011 Ray Ave, ID 83742
Owner's Permit No: 87-79-N-25

2. NATURE OF WORK

☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other

4. METHOD DRILLED

☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION

Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other

Thickness  Diameter  From  To

Was casing drive shoe used?  ☐ Yes  ☐ No
Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No

How perforated?  ☐ Factory  ☐ Knife  ☐ Torch

Number of perforations  inches by  inches

Well screen installed?  ☐ Yes  ☐ No

Manufacturer's name

Type  Model No.

Diameter  Slot size  Set from  feet to  feet

Gravel packed?  ☐ Yes  ☐ No  Size of gravel

Placed from  feet to  feet

Surface seal depth  feet  Material used in seal:  ☐ Cement grout

Sealing procedure used:  ☐ Slurry pit  ☐ Temp, surface casing

Method of joining casing:  ☐ Threaded  ☐ Welded  ☐ Solvent weld

Describe access port

6. LOCATION OF WELL

Sketch map location must agree with written location.

Subdivision Name
Lot No.  Block No.

County: SN

7. WATER LEVEL

Static water level  feet below land surface.
Flowing?  ☐ Yes  ☐ No  G.P.M. flow
Artesian closed-in pressure  p.s.i.
Controlled by:  ☐ Valve  ☐ Cap  ☐ Plug
Temperature  °F, Quality  

8. WELL TEST DATA

☐ Pump  ☐ Bailer  ☐ Air  ☐ Other

Discharge G.P.M.
Pumping Level
Hours Pumped

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole No.</th>
<th>Material</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-02</td>
<td>BROWN CLAY</td>
<td></td>
</tr>
<tr>
<td>02-04</td>
<td>SMALL CLAY</td>
<td></td>
</tr>
<tr>
<td>04-06</td>
<td>BROWN CLAY</td>
<td></td>
</tr>
<tr>
<td>06-08</td>
<td>BROWN CLAY</td>
<td></td>
</tr>
<tr>
<td>08-10</td>
<td>ORANGE CLAY</td>
<td></td>
</tr>
<tr>
<td>10-12</td>
<td>TAN CLAY</td>
<td></td>
</tr>
<tr>
<td>12-14</td>
<td>BROWN CLAY</td>
<td></td>
</tr>
<tr>
<td>14-16</td>
<td>SAND &amp; GRAVEL</td>
<td></td>
</tr>
<tr>
<td>16-18</td>
<td>REDEPOSITED CHAMITE</td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td>MEDIUM HARD CHAMITE</td>
<td></td>
</tr>
<tr>
<td>20-22</td>
<td>HARD CHAMITE</td>
<td></td>
</tr>
</tbody>
</table>

10. Work started  9/14/79  finished  9/24/79

11. DRILLERS CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Synamal Drilling
Firm No: 356
Address: 1011 Ray Ave, ID 83742

Signed by (Firm Official)  1/24/79
and (Operator)  1/24/79

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
BEA TELFORD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 20, 2018

Well Log ID: D0035367  Elev (ft): 2810 ±10  Depth (ft): 305  7.5’ Quad: Viola

Latitude: 46.844683°  Longitude: -117.009408° decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 6 , T. 40 N , R. 5 W

Well Address and (or) Other Location Information:
Loess Lane (off Chaney Road), Viola, Idaho; on south side of Loess Lane (street number not yet assigned)

| Location Method: | Location is for well, in field (no house yet); Latah County Assessor; Google Earth imagery; topographic map; driller reported incorrect Township; site visit March 21, 2018 |

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 9</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill(?)</td>
<td></td>
</tr>
<tr>
<td>[Driller reported decomposed granite]</td>
<td>9 – 54</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>54 – 305</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP019000000010; owner now is CUTLER, SHERI; no property address for parcel; THATUNA HILLS SUBDIVISION, LOT 1 (11.79 AC); 6 40 5.

Well is south of Loess Lane
Bea Telford was the previous owner based on Latah County Web page accessed January 17, 2018.

References Cited:
### IDAHO DEPARTMENT OF WATER RESOURCES
#### WELL DRILLER'S REPORT

1. **WELL TAG NO.** D 0035367  
   **DRILLING PERMIT NO.** 23931  
   Other IDWR No. 

2. **OWNER:**  
   **Name:** BEA TELFORD  
   **Address:** PO BOX 441  
   **City:** BORING  
   **State:** OR  
   **Zip:** 97009

3. **LOCATION OF WELL by legal description:**  
   Sketch map location must agree with written location.

   ![Location Map]

4. **USE:**  
   - [X] Domestic  
   - [ ] Municipal  
   - [ ] Monitor  
   - [ ] Irrigation  
   - [ ] Thermal  
   - [ ] Injection  
   - [ ] Other  

5. **TYPE OF WORK:** check all that apply  
   (Replacement etc.)  
   - [X] New Well  
   - [ ] Modify  
   - [ ] Abandonment  
   - [ ] Other

6. **DRILL METHOD:**  
   - [X] Air Rotary  
   - [ ] Cable  
   - [ ] Mud Rotary  
   - [ ] Other

7. **SEALING PROCEDURES:**  
<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>0-20</td>
<td>DRY</td>
</tr>
</tbody>
</table>

   - [ ] Was drive shoe used?  
   - [X] Y N  
   - [ ] Shoe Depth(s) 20

   - [ ] Was drive shoe seal tested?  
   - [X] Y N  
   - [ ] How? 300 PSI

8. **CASING/LINER:**  
   - **Diameter**  
     | From | To  | Gauge | Material |
     |------|-----|-------|----------|
     | 8    | +1  | 20    | 1/4 STEEL|
     | 6    | 15  | 305   | 200 PVC  |

   - **Length of Headpipe**
   - **Length of Tailpipe**

9. **PERFORATIONS/SCREENS:**  
   - [X] Perforations Method **SAW**  
   - [ ] Screens  
   - [ ] Screen Type

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Number</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>245</td>
<td>305</td>
<td>1/8</td>
<td>90</td>
<td>6</td>
<td>PVC</td>
</tr>
</tbody>
</table>

10. **STATIC WATER LEVEL OR ARTESIAN PRESSURE:**  
    - 143 ft. below ground  
    - Artesian pressure lb.  
    - Depth flow encountered ft.  
    - Describe access port or control devices: **WELL CAP**

11. **WELL TESTS:**  
    - **Yield gal./min.**  
    - **Drawdown**  
    - **Pumping Level**  
    - **Time**  
    - 2 1/2  
    - 300  
    - 1 HR

    - **Water Temp.** 54  
    - **Bottom hole temp.**

    - **Water Quality test or comments:**

12. **LITHOLOGIC LOG:**  
    (Describe repairs or abandonment)  
    | Bore | From | To  | Remarks: Lithology, Water Quality & Temperature | Y | N |
    |------|------|-----|-----------------------------------------------|---|---|
    | 14   | 0    | 2   | SOIL                                          |   |   |
    | 14   | 2    | 9   | CLAY                                          |   |   |
    | 14   | 9    | 20  | GRANITE DECOMPOSED                           |   |   |
    | 8    | 20   | 54  | GRANITE DECOMPOSED                           |   |   |
    | 8    | 54   | 89  | GRANITE BLACK & WHITE                        |   |   |
    | 8    | 89   | 127 | GRANITE BLACK & WHITE                        |   |   |
    | 8    | 127  | 174 | GRANITE DECOMPOSED BROWN                     |   |   |
    | 8    | 174  | 225 | GRANITE BLACK & WHITE                        |   |   |
    | 8    | 225  | 234 | GRANITE DECOMPOSED BROWN                     |   |   |
    | 8    | 234  | 269 | GRANITE BLACK & WHITE                        |   |   |
    | 8    | 269  | 283 | GRANITE DECOMPOSED BROWN                     | X |   |
    | 8    | 283  | 305 | GRANITE BLACK & WHITE                        |   |   |

13. **DRILLER'S CERTIFICATION:**  
    (We certify that all minimum well construction standards were complied with at the time the rig was removed.)

    **Company Name:** MCPHERSON & WRIGHT DRILLING  
    **No.** 0376

    **Firm Official:** [Signature]  
    **Date:** 9/15/2004

    **Driller or Operator:** [Signature]  
    **Date:** 9/15/2004

---

**FORWARD WHITE COPY TO WATER RESOURCES**
BRUCE TENWICK WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 10, 2016; November 9, 2017

Well Log ID: 810061  Elev (ft): 2570 ±10  Depth (ft): 230  7.5’ Quad: Pullman

Latitude: 46.658324  Longitude: -117.180719  decimal degrees (WGS84)

SE ¼, NW ¼, NW ¼, Sec. 32, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
2701 Staley Road, Pullman, Wash., on north side of road

Location Method:
Location is for only house in NW¼, NW¼, sec. 32; Whitman County Assessor; Google Earth imagery; topographic map; tax parcel number incorrect on driller’s report. Site visit (November 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 26</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>26 – 51</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>51 – 55</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>55 – 215</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand and clay, green</td>
<td>215 – 225</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>225 – 230</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004514322290, 2701 STALEY RD, NW PT NW 1/4, owners are TENWICK, BRUCE/MARYLEE; 1½ story residence built in 1890.

MaryLee Tenwick died April 3, 2016; Bruce Tenwick is her husband, and family home is 2701 Staley Road (Kimball Funeral Home and Crematory, 2016). See also Moscow-Pullman Daily News (2016).

References Cited:

WATER WELL REPORT

Construction/Decommission ("x" in circle)

PROPOSED USE:  ☑ Domestic  ☑ Industrial  ☑ Municipal
☐ DeWater ☑ Irrigation  ☑ Test Well  ☑ Other

TYPE OF WORK:  Owner's number of well (if more than one)   
☐ New well ☑ Reconditioned  Method ☑ Doug  ☑ Bored  ☑ Driven
☐ Deepened ☑ Cable  ☑ Rotary  ☑ Jetted

DIMENSIONS: Diameter of well 8 inches, drilled 230 ft
Depth of completed well 230 ft

CONSTRUCTION DETAILS

Casing  ☑ Welded  Dia from 10-1 to 20 ft
Installed:  ☑ Non-liner installed  Dia from 14 ft to 230 ft
☐ Threaded  Dia from 10-1 to 20 ft

Perforations: ☑ Yes ☑ No
Type of perforator used SAW
SIZE of perfor 18 in by 12 in and no of perfor 60 from 190 ft to 230 ft

Screens: ☑ Yes ☑ No  ☑ K-Pac  Location

Manufacturer's Name

Model No

Diam Slot size from  ft to  ft

Diam Slot size from  ft to  ft

Gravel/Fiber packed: ☑ Yes ☑ No  Size of gravel/sand

Materials placed from  ft to  ft

Surface Seal: ☑ Yes ☑ No  To what depth 30 ft

Material used in seal

Did any strata contain unusable water? ☑ Yes ☑ No

Type of water?  Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type H.P.

WATER LEVELS: Land-surface elevation above mean sea level  5 ft

Static level 5 ft below top of well Date 8/24/11

Artesian pressure  lbs per square inch Date

Artesian water is controlled by  (cap, valve, etc)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☑ Yes ☑ No If yes, by whom?

Yield  gal/min with  ft drawdown after  hrs

Yield  gal/min with  ft drawdown after  hrs

Yield  gal/min with  ft drawdown after  hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test 8/23/11

Bailer test  gal/min with  ft drawdown after  hrs

Arter 15 gal/min with stem set at 225 ft for  hrs

Artesian flow  gpm Date

Temperature of water 53 Was a chemical analysis made? ☑ Yes ☑ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Driller  ☑ Engineer  ☑ Trainee

Driller/Engineer/Trainee Signature

Driller or trainee License No 0532

IF TRAINEE Driller's License No

Driller's Signature

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872
Persons with hearing loss can call 711 for Washington Relay Service Persons with a speech disability can call 877-833-6341

The Department of Ecology does NOT Warranty the Data and/or this Report on this Well Report.

CURRENT

Notice of Intent No. 272976

Unique Ecology Well ID Tag No AHR7776

Water Right Permit No __________

Property Owner Name BRUCE TENWICK

Well Street Address 2701 STALEY RD

City PULLMAN  County WHITMAN

Location NW1/4-1/4 NW1/4 Sec 32 Twn 16N R 45E FWM ☑
(s, t, r Still REQUIRED)

Lat/Long Lat Deg_____ Lat Min/Sec_____

Long Deg_____ Long Min/Sec_____

Tax Parcel No. (Required) 20000451432291

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation Describe the color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information (USE ADDITIONAL SHEETS IF NECESSARY)

MATERIAL FROM TO

CLAY BROWN 0 26

BASALT HARD 26 51

BASALT VASCULAR 51 55

BASALT HARD 55 215

SAND & CLAY GREEN 215 225

BASALT HARD 225 230

12 SEP -4 AG 38

Start Date 8/11/11 Completed Date 8/24/11
CAY TENWICK WELL 2

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: NA Elev (ft): 2674 Depth (ft): 62 7.5’ Quad: Viola

Latitude: 46.756973° Longitude: -117.003918° decimal degrees (WGS84)

Location Method:
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 164, well sample 36); Latah County Assessor; Google Earth imagery; topographic map

Well Address and (or) Other Location Information:
2xxx U.S. 95 North, Moscow, Idaho; north of town, on west side of road, opposite a mobile home park

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 – 25</td>
</tr>
<tr>
<td>Clay, white</td>
<td>25 – 34</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>34 – 47</td>
</tr>
<tr>
<td>Sand</td>
<td>47 – 50</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>50 – 62</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N05W060080, owner now is SCOTT, DENNIS M; HWY 95 N; 3.24 AC TAX #7866 LOT 1, 6 39 5.

Mr. Cay A. Tenwick died in 1987 (Find A Grave, 2018).

References Cited:


WELL DRILLER’S REPORT

State law requires that this report be filed with the Director, Department of Water Administration within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Gay Tenwick
Address: Route 2 Moscow, Idaho 83843
Owner’s Permit No.: 87-76-N-10

2. NATURE OF WORK

□ New well  □ Deepened  □ Replacement
□ Abandoned (describe method of abandoning)

3. PROPOSED USE

□ Domestic  □ Irrigation  □ Test  □ Other (specify type)
□ Municipal  □ Industrial  □ Stock  □ Waste Disposal or Injection

4. METHOD DRILLED

□ Cable  □ Rotary  □ Dug  □ Other

5. WELL CONSTRUCTION

Diameter of hole: 8 inches  Total depth: 62 feet
Casing schedule:  □ Steel  □ Concrete

Thickness Diameter From To
250 inches  8" inches  above  feet   59 feet

Was a packer or seal used? □ Yes  □ No
Perforated? □ Yes  □ No
How perforated?  □ Factory  □ Knife  □ Torch
Size of perforation: _______ inches by _______ inches

Number of perforations  From To

Well screen installed? □ Yes  □ No
Manufacturer’s name:
Type: _______ Model No.: _______
Diameter: _______ Slot size: _______ Set from _______ feet to _______ feet
Diameter: _______ Slot size: _______ Set from _______ feet to _______ feet
Gravel packed? □ Yes  □ No  Size of gravel: _______
Placed from _______ feet to _______ feet

Surface soil depth: 20 feet
Material used in soil: □ Cement grout
□ Pudding clay  □ Well cuttings
Sealing procedure used: □ Sherry pit  □ Temporary surface casing
□ Overbore to soil depth

6. LOCATION OF WELL

Sketch map location must agree with written location.

Subdivision Name: _______
Lot No.: _______ Block No.: _______
County: Latah
NE ¼ SE ¼ Sec.: 6 T. 39 N/S. R. 5 E/W

7. WATER LEVEL

Static water level: 26 feet below land surface
Flowing? □ Yes  □ No  G.P.M. flow: _______
Temperature: _______ F. Quality: _______
Artesian closed-in pressure: _______ p.s.i.
Controlled by: □ Valve  □ Cap  □ Plug

8. WELL TEST DATA

□ Pump  □ Bailer  □ Other
Discharge G.P.M.: _______ Draw Down: _______ from bottom
Hours Pumped: _______

9. LITHOLOGY LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth From</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0 3</td>
<td>Black dirt</td>
</tr>
<tr>
<td>&quot;</td>
<td>3 25</td>
<td>Lt brown clay</td>
</tr>
<tr>
<td>&quot;</td>
<td>25 34</td>
<td>White clay-granite</td>
</tr>
<tr>
<td>&quot;</td>
<td>47 50</td>
<td>Lt yellow clay-granite</td>
</tr>
<tr>
<td>&quot;</td>
<td>48 50</td>
<td>Granite, sand</td>
</tr>
<tr>
<td>9</td>
<td>50 62</td>
<td>Sand, gravel</td>
</tr>
</tbody>
</table>

003403

10. Work started: 8-2-76  finished: 9-9-76

11. DRILLERS CERTIFICATION

Firm Name: Don Town Well Drilling  Firm No.: 155
Address: Rt 4 Box 429 Moscow, Id  Date: 10-1-76

Signed by (Firm Official): Don Town
(Operator): _______

USE ADDITIONAL SHEETS IF NECESSARY  FORWARD THE WHITE COPY TO THE DEPARTMENT
ERIK THOMPSON WELL

Geologic Interpretation of Water Well Driller’s Log By

Well Log ID: 166415   Elev (ft): 2535 ±10   Depth (ft): 340   7.5’   Quad: Albion

Latitude: 46.788725   Longitude: -117.158492   decimal degrees (WGS84)

Well Address and (or) Other Location Information:
601 Reid Road, Pullman, Wash., on north side of road

Location Method:
Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 10 (Bush and Garwood, 2005 [2006]). Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, brown</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>2 – 41</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>41 – 148</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>148 – 149</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>149 – 201</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>201 – 210</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>210 – 289</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
</tbody>
</table>
Basalt, porous   289 – 317
Basalt, hard     317 – 333
Basalt, weathered 333 – 340

Comments:

Grande Ronde determinations made solely by elevation and thickness comparisons to DOE Banner Road Well where Conrey and others (2013) made stratigraphic determinations.

Whitman County Tax Parcel 200004515162901, 601 REID RD, PULLMAN; NW 2 AC; owner is THOMPSON, ERIK SCOTT. 1½ story residence built in 1989.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Erick Thompson
Address: 110 Myrtle, Pullman, Wash

LOCATION OF WELL: County: Whitman
Ne NE Sec 16 T 15 N R 45 W

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (If more than one)...
New well ☐ Method: Dug ☐ Bored ☐
Deepended ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 1/2 inches.
Drilled... 340 ft. Depth of completed well... 340 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from + 1 ft. to 41 ft.
Threaded ☐ " Diam. from... ft. to... ft.
Welded ☐ " Diam. from... ft. to... ft.

Perforations: Yes ☐ No ☐
Type of perforator used:
Size of perforations... in. by... in.
Perforations from... ft. to... ft.
Perforations from... ft. to... ft.
Perforations from... ft. to... ft.

Screens: Yes ☐ No ☐
Manufacturer's Name:
Type:... Model No.:
Diam. Slot size... ft. to... ft.
Diam. Slot size... ft. to... ft.

Gravel packed: Yes ☐ No ☐
Size of gravel:
Gravel placed from... ft. to... ft.

Surface seal: Yes ☐ No ☐ To what depth? 41 ft.
Material used in seal: Cement
Did any strata contain unusable water? Yes ☐ No ☐
Type of water... Depth of strata...
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type:... HP:

(8) WATER LEVELS:
Land-surface elevation above mean sea level... ft.
Static level... 210 ft. below top of well Date: 6-17-88
Artesian pressure... lbs. per square inch Date:
Artesian water is controlled by... (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal/min. with... ft. drawdown after... hrs.
"... 150 g.p.m. Airtest"
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test:

Ball test... gal/min. with... ft. drawdown after... hrs.
Artesian flow... g.p.m. Date:
Temperature of water... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and
show thickness of aquifers and the kind and nature of the material in each
stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silt - Brown</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Clay - Tan</td>
<td>2</td>
<td>41</td>
</tr>
<tr>
<td>Basalt - Gray - Hard</td>
<td>41</td>
<td>149</td>
</tr>
<tr>
<td>Basalt - Gray - Hard</td>
<td>149</td>
<td>261</td>
</tr>
<tr>
<td>Basalt - Black - Porous</td>
<td>261</td>
<td>289</td>
</tr>
<tr>
<td>Basalt - Gray - Thk</td>
<td>289</td>
<td>317</td>
</tr>
<tr>
<td>Basalt - Gray - Thk</td>
<td>317</td>
<td>333</td>
</tr>
<tr>
<td>Basalt - Westerly Bluff</td>
<td>333</td>
<td>340</td>
</tr>
</tbody>
</table>

DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

Work started: 6-13, 1988 Completed: 6-17-88

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

McPherson & Bright Drilling
2940 S. 10th Street

[Signed] JOE WRIGHT
(Well Driller)

License No. 0529 Date: 7-11-88

(USE ADDITIONAL SHEETS IF NECESSARY)
G.D. THOMPSON WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 15, 2016

Well Log ID: 152836  Elev (ft): 2430 ±10  Depth (ft): 105  Quad: Albion

Latitude: 46.844667  Longitude: -117.149908  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
11132 Parvin Road, Palouse, Wash., on north side of road, east of Clark Road

Location Method:
Located at house; Whitman County Assessor; Google Earth imagery; topographic map; Albion quadrangle Well 2 of Bush and Garwood (2005 [2006]). Site visit (9/19/2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay</td>
<td>2</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>5</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>84</td>
</tr>
<tr>
<td>Basalt</td>
<td>86</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>90</td>
</tr>
<tr>
<td>Sand</td>
<td>94</td>
</tr>
</tbody>
</table>

Comments:
Whitman County Tax Parcel 200004516287590, 11132 PARVIN RD, PT E1/2 OF W1/2 THOMPSON-PARVIN SHRT PLT, now owned by THOMPSON, SCOTT/ANN, 3.6 acres.

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: G.O. Thompson

(2a) LOCATION OF WELL: County: Whitman

(2b) STREET ADDRESS OF WELL (or nearest address)

(3) PROPOSED USE: ☐ Domestic □ Irrigation □ Industrial □ Municipal □ Test Well □ Other □

(4) TYPE OF WORK: Owner's number of well (if more than one)
☐ Abandoned □ New well ☐ Reconditioned □ Deepened □ Drilled
☐ Dug □ Bored □ Rotated □ Jetted

(5) DIMENSIONS: Diameter of well in inches:
Drilled _______ feet. Depth of completed well _______ ft.

(6) CONSTRUCTION DETAILS:
Casing installed: ☐ Yes ☐ No
☐ Diam. from _______ ft. to _______ ft.
☐ Diam. from _______ ft. to _______ ft.
☐ Diam. from _______ ft. to _______ ft.

Perforations: ☐ Yes ☐ No
Type of perforator used:
☐ Size of perforations _______ in. by _______ in.
☐ perforations from _______ ft. to _______ ft.
☐ perforations from _______ ft. to _______ ft.
☐ perforations from _______ ft. to _______ ft.

Screens: ☐ Yes ☐ No
Manufacturer's Name:
Type _______ Model No _______
☐ Diam _______ Slot size _______ ft. to _______ ft.
☐ Diam _______ Slot size _______ ft. to _______ ft.

Gravel packed: ☐ Yes ☐ No
Size of gravel _______
Gravel placed from _______ ft. to _______ ft.

Surface seal: ☐ Yes ☐ No To what depth _______ ft.
Material used in seal:
Did any strata contain unsuitable water? ☐ Yes ☐ No
Type of water:
Depth of strata _______ ft.

Screws:

(7) PUMP:
Manufacturer's Name:
Type _______ H.P. _______

(8) WATER LEVELS:
Land-surface elevation above mean sea level _______ ft.
Static level _______ ft. below top of well Date 8-30-94
Artesian pressure _______ lbs. per square inch Date
Artesian water is controlled by _______

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield: _______ gal./min. with _______ ft. drawdown after _______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time _______ Water Level _______ Time _______ Water Level _______ Time _______ Water Level _______

Date of test _______ 

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL: FROM TO

Sediment: _______ 0 5

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

McPHERSON & WRIGHT DRILLING
2246 Burrell
Lewiston, Idaho 83501
(208) 743-7295

(Signed) _______ License No. _______ 0523

Contractor's REGISTRATION No. _______ 185-M-1 Date 9-23-94

(USE ADDITIONAL SHEET IF NECESSARY)
VAN THOMPSON WELL 1

[DRILLED 1989]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018


Latitude: 46.900201° Longitude: -116.99079° decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 17, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
5285 U.S. Highway 95, Viola, Idaho; on west side of highway

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; driller incorrectly(?) recorded NE¼, NE¼, Section 17 (which has no residence in the adjacent Van Thompson parcel no. RP41N05W170037); site visit March 23, 2018 — well not observed from road

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Overburden</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 23</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>23 – 180</td>
</tr>
<tr>
<td>Argillite</td>
<td>180 – 230</td>
</tr>
</tbody>
</table>

*Precambrian

*The basalt of Lolo overlies gray-black argillite, and the contact between basalt and underlying argillite is difficult to determine.
Comments:

Two other wells were drilled in same area for Van Thompson (well 2 on September 21, 2002, with yield of 1.5 gpm; well 3 on September 30, 2002, with yield of 3 gpm). This well, Van Thompson well 1, yielded 10 gpm.

Latah County Tax Parcel RP41N05W170907, owner is THOMPSON, VAN; 5285 HWY 95 N; 4.64 AC TAX #4689; NWNE, 17 41 5.

References Cited:
STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL OWNER
Name: VAN THOMPSON
Address: Box 366, Pocatello, WA 99161
Owner’s Permit No.: 87-89-N-13-1

2. NATURE OF WORK
87-89-N-13-1
☑ New well  ☐ Deepened  ☐ Replacement
☐ Well diameter increase  ☐ Abandoned (describe abandonment procedures such as
materials, plug depths, etc. in lithologic log)

3. PROPOSED USE
☑ Domestic  ☐ Irrigation  ☐ Test  ☐ Municipal
☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection
☐ Other (specify type)

4. METHOD DRILLED
☐ Rotary  ☐ Air  ☐ Hydraulic  ☐ Reverse rotary
☐ Cable  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Casing schedule: ☐ Steel  ☐ Concrete  ☐ Other

 Thickness  Diameter  From  To
 inches  inches  feet  feet

Was casing drive shoe used?  ☐ Yes  ☐ No
Was a packer or seal used?  ☐ Yes  ☐ No
Perforated?  ☐ Yes  ☐ No
How perforated?  ☐ Factory  ☐ Knife  ☐ Torch  ☐ Gun
Size of perforation inches by inches
Number  From  To  perforations feet  feet

Well screen installed?  ☐ Yes  ☐ No
Manufacturer’s name
Type  Model No.
Diameter of Slot size from feet to feet
Diameter of Slot size from feet to feet
Gravel packed?  ☐ Yes  ☐ No  ☐ Size of gravel
Placed from feet to feet
Surface seal depth 31  ☐ Material used in seal:  ☐ Cement grout
Sealing procedure used:  ☐ Puddling clay  ☐ Slurry pit  ☐ Tamp. surface casing
Method of joining casing:  ☐ Threaded  ☐ Welded  ☐ Solvent
Described access port
☐ Cemented between strata

6. LOCATION OF WELL
Sketch map location must agree with written location.

County  LAHAIN
NE 4 1/4 Sec.  T. 31 N. 4 S. 1/2 W.

7. WATER LEVEL
Static water level 110 feet below land surface.
Flowing?  ☐ Yes  ☐ No  ☐ G.P.M. flow
Artesian closed-in pressure p.s.i.
Controlled by:  ☐ Valve  ☐ Cap  ☐ Plug
Temperature °F.  ☐ Quality
Describe artesian or temperature zones below:

8. WELL TEST DATA
☐ Pump  ☐ Baller  ☐ Air  ☐ Other
Discharge G.P.M.  Pumping Level  Hours Pumped

100 G.P.M. AIR TEST

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore</th>
<th>Depth</th>
<th>Material</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>32</td>
<td>36</td>
<td>Yes</td>
</tr>
<tr>
<td>52</td>
<td>190</td>
<td>160</td>
<td>No</td>
</tr>
</tbody>
</table>

RECEIVED
NORTHERN REGION 1991

JAN 2 4 1991

10. Work started 9-14-88 finished 9-15-89

11. DRILLERS CERTIFICATION
We certify that all minimum well construction standards were
complied with at the time the rig was removed.

Firm Name  McGlashen Well Drilling
Address  8446 Bozeman
Date  01-17-91

Signed by (Firm Official)  McGlashen
and (Operator)  Ted Edelson

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
VAN THOMPSON WELL 2

[DRILLED SEPTEMBER 21, 2002]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D22391   Elev (ft): 2620 ±10   Depth (ft): 455   Quad: Potlatch

Latitude: 46.900241°   Longitude: -116.990797°   decimal degrees (WGS84)

 theoretical ¼, NW ¼, NE ¼, Sec. 17, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
5285 U.S. Highway 95, Viola, Idaho; on west side of highway

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map; driller incorrectly(?) recorded NE¼, NE¼, Section 17 (which has no residence in the adjacent Van Thompson parcel no. RP41N05W170037); site visit March 23, 2018 — well not observed from road

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Clay</td>
<td>1 – 13</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>13 – 133</td>
</tr>
<tr>
<td>*Precambrian</td>
<td></td>
</tr>
<tr>
<td>Quartzite</td>
<td>133 – 455</td>
</tr>
</tbody>
</table>
Comments:

Two other wells were drilled in same area for Van Thompson (well 1 in 1989, with yield of 10 gpm; well 3 on September 30, 2002, with yield of 3 gpm). This well, Van Thompson well 2, yielded 1.5 gpm.

Latah County Tax Parcel RP41N05W170907, owner is THOMPSON, VAN; 5285 HWY 95 N; 4.64 AC TAX #4689; NWNE, 17 41 5.

References Cited:
11. WELL TESTS:

<table>
<thead>
<tr>
<th>Yield gal/min.</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
<td></td>
<td>405</td>
<td>1 HR</td>
</tr>
</tbody>
</table>

Water Temp. 55°F
Water Quality test or comments: Bottom hole temp.
Water Temp.

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>1</td>
<td>SOIL</td>
<td>Y</td>
<td>N</td>
</tr>
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<td>CLAY BROWN</td>
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<td>N</td>
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<td>13</td>
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<td>BASALT WEATHERED</td>
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<td>N</td>
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<tr>
<td>8</td>
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<td>BASALT WEATHERED</td>
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<td>N</td>
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<td>8</td>
<td>133</td>
<td>455</td>
<td>ARGELITE SOFT</td>
<td>X</td>
<td>N</td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION:

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCPPHERSON & WRIGHT DRILLING

Firm Official: [Signature] Date: 3/17/2003
Driller or Operator: [Signature] Date: 3/17/2003
VAN THOMPSON WELL 3

[DRILLED SEPTEMBER 30, 2002]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: D22599   Elev (ft): 2620 ±10   Depth (ft): 330   Quad: Potlatch

Latitude: 46.899596°   Longitude: -116.990881°   decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 17, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
5285 U.S. Highway 95, Viola, Idaho; on west side of highway

Location Method:
Location is for assumed well house, along driveway and south of residence; Latah County Assessor; Google Earth imagery; topographic map; driller incorrectly(?) recorded NE¼, NE¼, Section 17 (which has no residence in the adjacent Van Thompson parcel no. RP41N05W170037); site visit March 23, 2018

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th></th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>From – To</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 20</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>20 – 24</td>
</tr>
<tr>
<td>Basalt</td>
<td>24 – 49</td>
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<tr>
<td>Basalt, weathered</td>
<td>49 – 55</td>
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<td>Latah Formation</td>
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<td>Vantage Member(?)</td>
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<td>Clay</td>
<td>55 – 113</td>
</tr>
<tr>
<td>Precambrian</td>
<td></td>
</tr>
<tr>
<td>Argillite, soft, fractured</td>
<td>113 – 330</td>
</tr>
</tbody>
</table>
Comments:

Two other wells were drilled in same area for Van Thompson (1989, with yield of 10 gpm; September 21, 2002, with yield of 1.5 gpm). This well, Van Thompson well 3, yielded 3 gpm.

Latah County Tax Parcel RP41N05W170907, owner is THOMPSON, VAN; 5285 HWY 95 N; 4.64 AC TAX #4689; NWNE, 17 41 5.

Above, white well house is at left, along driveway; home is at right.

References Cited:
1. WELL TAG NO. D 0022599
DRILLING PERMIT NO. 784 247
Other IDWR No.

JUN 09 2003
IDWR/North

2. OWNER:
Name: VAN THOMPSON
Address: 5285 HWY 95
City: VIOLA
State: ID Zip: 83872

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. USE:
X Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

5. TYPE OF WORK; check all that apply
(Replacement etc.)
X New Well ☐ Modify ☐ Abandonment ☐ Other

6. DRILL METHOD:
X Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES:
Seal/Filter Pack | AMOUNT | METHOD
---|---|---
BENTONITE | 0 20 9 | DRY

Was drive shoe used? X Y ☐ N Shoe Depth(s) 20
Was drive shoe seal tested? X Y ☐ N How? 300 PSI

8. CASING/LINER:
<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
<th>Casing</th>
<th>Liner</th>
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<th>Threaded</th>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>305</td>
<td>200</td>
<td>PVC</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Length of Headpipe: 
Length of Tailpipe:

9. PERFORATIONS/SCREENS:
X Perforations Method SAW
☐ Screens Screen Type

From | To | Slot Size | Number | Diameter | Material | Casing | Liner |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>205</td>
<td>305</td>
<td>1/8</td>
<td>150</td>
<td>6</td>
<td>PVC</td>
<td>☐</td>
<td>X</td>
</tr>
</tbody>
</table>

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
157 ft. below ground
Artesian pressure lb.
Depth flow encountered devices: WELL CAP

11. WELL TESTS:
Yield gal./min. | Drawdown | Pumping Level | Time | Water Temp. | Bottom hole temp.
---|---|---|---|---|---
3 | 290 | 1 HR | 55 | Depth first Water Encounter: 305

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Bore Dia</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Water Quality test or comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>0</td>
<td>2</td>
<td>BASALT WEATHERED</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>20</td>
<td>CLAY</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>20</td>
<td>24</td>
<td>BASALT WEATHERED</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>24</td>
<td>49</td>
<td>BASALT MEDIUM GRAY</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>49</td>
<td>55</td>
<td>BASALT WEATHERED</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>113</td>
<td>CLAY</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>113</td>
<td>305</td>
<td>ARGELITE SOFT</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>305</td>
<td>330</td>
<td>ARGELITE FRACTURED</td>
<td></td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION:
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCPHERSON & WRIGHT DRILLING No. 0376
Firm Official: Date: 3/17/2003
Driller or Operator: Date: 3/17/2003

FORWARD WHITE COPY TO WATER RESOURCES 41 5W 17
LARRY THONNEY WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: 169813      Elev (ft): 2490 ±10      Depth (ft): 315      7.5’
Quad: Moscow West

Latitude: 46.728688°      Longitude: -117.109162° decimal degrees (WGS84)

⅛, SE ⅛, NW ⅛, Sec. 2, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
State Route 270, Pullman, Wash.; on north side of highway

Location Method:
Location is for well (latitude and longitude from Candel (2014, p. 166, sample C); Whitman County Assessor; Google Earth imagery; topographic map; driller recorded incorrect ⅛ and ¾-¾ Section subdivisions

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>2 – 118</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>118 – 123</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>123 – 216</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>216 – 236</td>
</tr>
<tr>
<td>Basalt</td>
<td>236 – 315</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514022469, 6202 SR 272, NW PT SE N OF HWY, owners are THONNEY, LARRY & PHYLLIS; 20.0 acres; 1½ story residence built in 1899.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Larry Honney
Address: 2638 Moscow Pullman Road

(2a) LOCATION OF WELL: Whitman

(3) PROPOSED USE: Domestic Irrigation DeWater Test Well Other

(4) TYPE OF WORK: New well Reconditioned Borehole

(5) DIMENSIONS: Diameter of well: 8 1/2 inches.
Depth of completed well: 315 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: Yes Dia. from 4 ft. to 20 ft.
Welded liner installed: Yes Dia. from 4 ft. to 20 ft.
Perforations: Yes Type of perforator used:
Size of perforations:
Screens: Yes Manufacturer's Name:

(7) PUMP: Manufacturer's Name:

(8) WATER LEVELS:
Static level: 12 ft. below top of well:
Artesian pressure:
Artesian water is controlled by:

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom?
Yield:

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MCPHERSON & WRIGHT DRILLING
2246 Burrell
Lewiston, Idaho 83501
(208) 743-7295

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

License No. 0523
Dwll Driller

(USE ADDITIONAL SHEETS IF NECESSARY)
Well Log ID: D0072248  Elev (ft): 2770 ±10  Depth (ft): 400  Quad: Viola

Latitude: 46.8433°  Longitude: -117.0098°  decimal degrees (WGS84)

Location Method:
Location is for well, in field; latitude and longitude from driller’s report; Latah County Assessor; Google Earth imagery; topographic map; site visit March 21, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From — To</td>
</tr>
<tr>
<td>Sand</td>
<td>0 — 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3 — 28</td>
</tr>
<tr>
<td>Clay and sand, brown</td>
<td>28 — 38</td>
</tr>
<tr>
<td>Clay and sand, brown</td>
<td>38 — 50</td>
</tr>
<tr>
<td>Sand, brown and white</td>
<td>50 — 115</td>
</tr>
<tr>
<td>Sand and clay, weathered granite(?)</td>
<td>115 — 170</td>
</tr>
<tr>
<td>*Idaho Batholith</td>
<td></td>
</tr>
<tr>
<td>Granite, black and white</td>
<td>170 — 400</td>
</tr>
</tbody>
</table>

*Contact between sediments of Bovill, weathered granite and hard granite difficult to determine from driller’s report
Comments:
Latah County Tax Parcel RP0190000000060; owner is THORNE, MARK E; THATUNA HILLS SUBDIVISION, LOT 6 (14.97 AC); 6 40 5.

References Cited:
1. WELL TAG NO. D 0073248

2. OWNER:
   Name: Mark Thorne
   Address: 40 Box 607
   City: Harvard
   State: ID
   Zip: 83834

3. WELL LOCATION:
   Wp: 40 North
   Rge: 5 East
   Sec: 23
   Govt Lot: 1
   County: Latah
   Lat: 46° 30.598' N (Deg. and Decimal minutes)
   Long: 117° 0.588' W (Deg. and Decimal minutes)
   Address of Well Site: 1/2 mile on Cheney Rd. on the right
   City: Viola
   Lot: Blk 1 Sub. Name:

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation □ Thermal □ Injection
   □ Other

5. TYPE OF WORK:
   □ New well □ Replacement well □ Modify existing well
   □ Abandonment □ Other

6. DRILL METHOD:
   □ Air Rotary □ Mud Rotary □ Cable □ Other

7. SEALING PROCEDURES:
   Seal material: Pentonite
   From (ft): 0
   To (ft): 38
   Quantity (lbs or ft³): 15 sacks
   Top pour: yes

8. CASING/LINER:
   Diameter (nominal): 6" + 2.50
   Material: Steel
   Length: 250 ft
   Gauge or Schedule: 4½
   20 400 200 PVC

9. PERFORATIONS/Screens:
   Perforations: Y
   □ N Method: saw cut
   Manufactured screen: Y
   □ N Type:

   Method of installation:
   From (ft): 42
   To (ft): 60
   Slot size: 1"
   Number/ft: 6
   Diameter: 6"
   Material: Steel
   Gauge or Schedule: 250

   From (ft): 300
   To (ft): 400
   Diameter: 4½
   Material: PVC
   Gauge or Schedule: 200

10. FILTER PACK:
    Filter Material: • Y
    From (ft): •
    To (ft): •
    Quantity (lbs or ft³): •
    Placement method: •

11. FLOWING ARTESIAN:
    Flowing Artesian? Y
    Artesian Pressure (PSIG): 15
    Describe control device:

12. STATIC WATER LEVEL and WELL TESTS:
    Depth first water encountered (ft): 53
    Static water level (ft): 15
    Water temp. (°F): 49
    Bottom hole temp. (°F): •
    Describe access port:

    Well test:
    Drawdown (feet): 400
    Discharge or yield (gpm): 4
    Test duration (minutes): 60
    Test method:
    Pump □ Baller □ Air □ Flowing artesian

    Water quality test or comments:

13. LITHOLOGIC LOG and/or repairs or abandonment:
    | Bore Diam (in) | From (ft) | To (ft) | Remarks, lithology or description of repairs or abandonment, water temp. |
    |---------------|-----------|---------|-------------------------------------------------|
    | 10 0 3       | 0 3       | 3       | Dirt                                            |
    | 10 3 3       | 3 3       | 3       | Brown clay                                      |
    | 6 3 3 3      | 3 6       | 3 3     | Mud (light granite)                             |
    | 6 3 3 3      | 3 3 3 3   | 3 3     | Mud (brown granite)                             |
    | 6 3 3 3      | 3 3 3 3   | 3       | Mud granite                                     |
    | 6 3 3 3      | 3 3 3 3   | 3       | Black granite                                   |
    | 6 3 3 3      | 3 3 3 3   | 3       | Black granite                                   |
    | 6 3 3 3      | 3 3 3 3   | 3       | Black granite                                   |

14. DRILLER'S CERTIFICATION:
    I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

    Company Name: Bucklin Oilfield Co. No: 709
    *Principal Driller:
    Date: 12-8-16
    *Driller:
    Date: 10-6-16
    *Operator I:
    Date: 2016
    *Signature of Principal Driller and rigid operator are required.
JIM THORSTEN WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 15, 2016

Well Log ID: 406984       Elev (ft): 2600 ±20       Depth (ft): 384       7.5’
Quad: Moscow West

Latitude: 46.718042       Longitude: -117.104301       decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 11, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1305 Sunshine Road, Pullman, Wash., on northwest side of road

Location Method:
Located at house; Whitman County Tax Assessor; Google Earth imagery, topographic map. Site visit (September 18, 2016), did not see well from road going up the hill (north of house).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 30</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 33</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>From 176</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 190</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 201</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 260</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 292</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004514111692, 1305 SUNSHINE RD, 4B THORSTEN SHPLT #1, owners are FAIRHURST, DOUGLAS/KINDRA; 7.29 acres; grantors were THORSTEN, JAMES/TERESA on 06/22/15.

References Cited:
WATER WELL REPORT RECEIVED

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle) JAN 26 2005
Construction Decommission
ORIGINAL CONSTRUCTION Notice of Intent Number 169027

PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
DeWater [ ] Irrigation [ ] Test Well [ ] Other [ ]

TYPE OF WORK: Owner's number of well (if more than one)
[ ] New Well [ ] Reconditioned [ ] Method: Dug [ ] Bored [ ] Driven [ ]
[ ] Deepened [ ] Cable [ ] Rotary [ ] Jetted [ ]

DIMENSIONS: Diameter of well 8 inches, drilled ft.
Depth of completed well 38 1/4 ft.

CONSTRUCTION DETAILS
Casing: [ ] Welded [ ] Installed: [ ] Drilled installed
8 ft. Diam. from + 1 ft. to 3 7/8 ft.
2 ft. Diam. from - 8 ft. to 3 7/8 ft.

Perforations: [ ] Yes [ ] No
Type of perforator used Ream
SIZE of perf. 3/4 in. by 1/4 in. and no. of perf. from 36 1/4 ft to 38 1/4 ft.

Screens: [ ] Yes [ ] No [ ] K-Pac Location
Manufacturer's Name
Type: [ ] Model No.
Diam. Slot Size from ft. to ft.
Diam. Slot Size from ft. to ft.

Gravel/Filter packed: [ ] Yes [ ] No [ ] Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: [ ] Yes [ ] No [ ] To what depth 38 ft.
Materials used in seal [ ] Bentonite

Did any strata contain unusable water? [ ] Yes [ ] No
Type of water: [ ] Depth of strata

PUMP: Manufacturer's Name
Type: [ ] H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 34 1/4 ft. below top of well Date 10/11/64
Artesian pressure lbs per square inch Date
Artesian water is controlled by
(cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level.
Was a pump test made? [ ] Yes [ ] No If yes, by whom?
Yield: gal/min. with ft. drawdown after hrs.
Yield: gal/min. with ft. drawdown after hrs.
Yield: gal/min. with ft. drawdown after hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Bailer test gal/min. with ft. drawdown after hrs.
Artesian flow p.p.m. Date
Temperature of water [ ] Was a chemical analysis made? [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[ ] Driller [ ] Engineer [ ] Trainee Name (Print): Roger Witt
Driller/Engineer/Trainee Signature
Driller or Trainee License No. 0623

If trainee, licensed driller's
Signature and License no.

Drilling Company "WITT WELL DRILLING"
Address 691 South Grade Rd
City, State, Zip Julietta ID. 83535
Contractor's Registration No. "WITW002587" Date 11/2/04

ECY 050-1-20 (Rev 4/01)

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL FROM TO
overburden 0 30
soft basalt 30 33
basalt firm 33 174
Black Shale 174 190
SOFT BASALT 190 201
basalt firm 201 260
SOFT BASALT 260 292
basalt firm 292 384

DEPT. OF ECOLOGY

Start Date 10/1/64 Completed Date 10/11/64

Drilling Company WITT WELL DRILLING
Address 691 South Grade Rd
City, State, Zip Julietta ID. 83535
Contractor's Registration No. WITW002587 Date 11/2/04

ECY 050-1-20 (Rev 4/01)
**LARRY TODD WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 30, 2018

Well Log ID: **D0076299**  Elev (ft): **2730 ±10**  Depth (ft): **340**  7.5’ Quad: Robinson Lake

Latitude: **46.787850°**  Longitude: **-116.964000°**  decimal degrees (WGS84)

¼,  SE ¼,  SE ¼,  Sec. 21,  T. 40 N,  R. 5 W

**Well Address and (or) Other Location Information:**  
1010 Schultz Road, Moscow, Idaho; on north side of road

**Location Method:**  
Location is for well, using latitude and longitude from driller’s report; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>19</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>260</td>
</tr>
<tr>
<td>*Idaho Batholith(?)</td>
<td></td>
</tr>
<tr>
<td>Granite, gray</td>
<td>330</td>
</tr>
</tbody>
</table>

*Difficult to pick contact between sediments of Bovill and granite*
Comments:

Latah County Tax Parcel RP40N05W219501, owner is TODD, LARRY E; 1010 SCHULTZ RD, 10 AC TAX #3953 SESE, 21 40 5.

References Cited:
IDaho Department of Water Resources
WELL Driller's Report

1. WELL TAG NO. D 00-76299

Drilling Permit No. 8384208

Water right or injection well □

2. OWNER:

Name: Harry Joel

Address: 1010 Schultz Rd.

City: Moscow

State: ID

Zip: 83843

3. WELL LOCATION:

Twp. 21 North □ South □ Rge. 5 East □ West □

Sec. 1/4

1/4 1/4 1/4

Govt. Lot County Latah

Lat. 47° 27.1' (Deg. and Decimal minutes)

Long. 116° 57.840' (Deg. and Decimal minutes)

Address of Well Site: 1010 Schultz Rd.

City: Moscow

Lot: □ Blk: □ Sub. □ Name:

4. USE:

Domestic □ Municipal □ Monitor □ Irrigation □ Thermal □ Injection □ Other

5. TYPE OF WORK:

New well □ Replacement well □ Modify existing well □ Abandonment □ Other

6. DRILL METHOD:

Air Rotary □ Mud Rotary □ Cable □ Other

7. SEALING PROCEDURES:

Seal material: Bantliner D 38 160 sacks top pour

Hole Plug:

8. CASING/LINER:

Diameter (nominal) From (ft) To (ft) Gauge/Schedule Material 6' 2' -153 250 Steel 4 1/2 20 3HD 200 PVC

Was drive shoe used? Y □ N Shoe Depth(s): 153

9. PERFORATIONS/SCREENS:

Perforations: Y □ N Method: skill saw

Manufactured screen □ Y □ N Type:

Method of installation:

From (ft) To (ft) Slot size Number of (nominal) Diameter Material Gauge or Schedule 300 3HD 16 Scotch 5 1/2 PVC 200

Length of Headpipe _________ Length of Tailpipe _________

10. FILTER PACK:

Filter Material From (ft) To (ft) Quantity (lbs or ft²) Placement method

11. FLOWING ARTESIAN:

Flowing Artesian? Y □ N Artesian Pressure (PSIG) ________

Describe control device ________

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 315. Static water level (ft) 20

Water temp. (°F) 50° Bottom hole temp. (°F) 60°

Describe access port ________

Well test:

<table>
<thead>
<tr>
<th>Drawdown (feet)</th>
<th>Discharge or yield (gpm)</th>
<th>Test duration (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3HD 20</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Test method:

<table>
<thead>
<tr>
<th>Pump</th>
<th>Stiller</th>
<th>Air</th>
<th>Flowing artesian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space</td>
<td>Space</td>
<td>Space</td>
<td>Space</td>
</tr>
</tbody>
</table>

Water quality test or comments: ________

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in.) From (ft) To (ft) Remarks, lithology or description of repairs or abandonment, water temp. Water

RECEIVED

November 3, 2017

IDWR/NORTH

Completed Depth (Measurable):

Date Started: 10/27/17 Date Completed: 10/28/17

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: Britt Ulenkott Drilling Co. No. 709

*Principal Driller: [Signature] Date 10/30/17

*Driller: [Signature] Date 10/30/17

*Operator II: [Signature] Date

Operator I: [Signature] Date

* Signature of Principal Driller and rig operator are required.
CLINT TOWNSEND WELL 2
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: D0033964  Elev (ft): 2704  Depth (ft): 220  Quad: Robinson Lake

Latitude: 46.780564°  Longitude: -116.975827°  decimal degrees (WGS84)

⅛, SW ⅛, NW ⅛, Sec. 28, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3200 Foothill Road, Moscow, Idaho; on east side of road, at end of long driveway

Location Method:
Location is for well; latitude, longitude and elevation from Candel (2014, p. 141 identifies original owner of well #27 as Clint Townsend and p. 164 lists new owner’s name as "Fouchachon"), which plots over garage; Latah County Assessor; Google Earth imagery; topographic map; driller recorded incorrect Section

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td>From — To</td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>0 — 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, brown and tan</td>
<td></td>
<td>2 — 90</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td></td>
<td>90 — 100</td>
</tr>
<tr>
<td>*Gravel(?), granite</td>
<td></td>
<td>100 — 125</td>
</tr>
<tr>
<td>Clay</td>
<td></td>
<td>125 — 156</td>
</tr>
<tr>
<td>Clay and sand</td>
<td></td>
<td>156 — 210</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td></td>
<td>210 — 220</td>
</tr>
</tbody>
</table>

*Possibly quartzite boulders
Comments:
Latah County Tax Parcel RP40N05W284100, owner now is FOUCACHON, FRANCIS L; 3200 FOOTHILL RD; 4.86 AC TAX #6640 SWNW, 28 40 5.

References Cited:
IDAH0 DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 33964
   DRILLING PERMIT NO. 8/9/1/3
   Other IDWR No.

2. OWNER
   Name Clint Townsend
   Address P O Box 9321
   City Moscow
   State ID 83843

3. LOCATION OF WELL by legal description:
   Sketch map location must agree with written location.

4. USE:
   □ Domestic □ Municipal □ Monitor □ Irrigation
   □ Thermal □ Injection □ Other

5. TYPE OF WORK: check all that apply (Replacement etc.)
   □ New Well □ Modify □ Abandonment □ Other

6. DRILL METHOD:
   □ Air Rotary □ Cable □ Mud Rotary □ Other

7. SEALING PROCEDURES
   SEAL/PACK \ MATERIAL \ FROM \ TO \ AMOUNT \ METHOD
   Bentonite Granules 0 60 15 Sacks Overbore Poured

8. CASING/LINER:
   Diameter From To Gauge Material Casing Liner Welded Threaded
   8 +2 156 250 Steel □ □ □
   4 -10 220 160 PSI PVC □ □ □

9. PERFORATIONS/SCREENS
   Perforations Method
   □ Screens □ Screen Type □ 20 Slot
   □ 210 220 □ 20 □ 4 PVC

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    15 ft. below ground Artesian pressure — lb.
    Depth flow encountered 175 ft. Describe access port or control devices: Well Cap

11. WELL TESTS:
    □ Pump □ Baller □ Air □ Flowing Artesian
    Yield gal/min. Drawdown Pumping Level Time
    5
    Water Temp. 52
    Water Quality test or comments: Cool & Clear

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water
    Depth Inlet Water Encounter 175
    Bare Dia From To Remarks: Lithology, Water Quality & Temperature Y N
    10 0 2 Dirt X
    10 2 15 Brown Clay X
    10 15 60 Tan Clay X
    10 60 90 Brown Clay X
    10 90 100 Coarse Sand X
    10 100 125 Broken Granite Boulders X
    10 125 156 Tan Clay X
    8 156 175 Soft Granite X
    8 175 210 Medium Granite - Tan X
    8 210 220 Salt & Pepper Granite X

13. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name Stuvenuea Vessey Drilling Firm No. 545
    Firm Official Date 7-12-04
    Driller or Operator Date 7-12-04

FORWARD WHITE COPY TO WATER RESOURCES

1727
FLOYD TRAIL WELL 2

[DRILLED IN 1969]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

Well Log ID: NA
Elev (ft): 2642
Depth (ft): 188
7.5’
Quad: Moscow East

Latitude: 46.745028°
Longitude: -116.973346°
decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 4, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1375 Mountain View Road, Moscow, Idaho; on north side of road

Location Method:
Location is for well (latitude, longitude and elevation from Fairley and others, 2006); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow and brown</td>
<td>3</td>
</tr>
<tr>
<td>Clay, white</td>
<td>79</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>88</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>95</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>125</td>
</tr>
</tbody>
</table>

1728
Comments:

Latah County Tax Parcel RP39N05W046923, owner now is TRAIL, THOMAS F; 1375 MTN VIEW RD; 5.47 AC TAX #3794 SESW; 4 39 5.

References Cited:

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

**WELL OWNER:**

- **Name:** Floyd Irlad
- **Address:** 833 S. Main St.

**Owner's Permit No.:** 87-29-N-6

**NATURE OF WORK** (check):
- Replacement well
- New well
- Deepened
- Abandoned

**Water is to be used for:** Domestic use

**METHOD OF CONSTRUCTION:**
- Rotary
- Cable
- Other

**CASING SCHEDULE:**
- Threaded
- Welded

**Diam. from to ft. to ft.**
- "Diam. from ft. to ft."
- "Diam. from ft. to ft."
- "Diam. from ft. to ft."

**Thickness of casing:** Steel

**MATERIAL:**
- Concrete
- Wood
- Other

**PERFORATED?**
- Yes
- No

**Type of perforator used:**

**Size of perforations:**
- " by "

**CONSTRUCTION:**
- Well gravel packed
- Size of gravel
- Size of gravel placed from ft. to ft. Surface seal provided? Yes
- To what depth? 18 ft.

**Material used in seal:**
- Loose gravel
- Building clay

**Did any strata contain usable water:**
- Yes
- No

**Type of water:**
- Depth of strata

**Surface casing used:**
- Yes
- No

**Cemented in place:**
- Yes
- No

**Locate well in section:**

<table>
<thead>
<tr>
<th>Sec.</th>
<th>T. 39 N.</th>
<th>R. 5 E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>34</td>
<td>S. 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EAST 1160'</th>
<th>NORTH 5330' (8.308 mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCATION OF WELL:</td>
<td>County</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FEET</th>
<th>MATERIAL</th>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Work dirt</td>
<td>No</td>
</tr>
<tr>
<td>2.3</td>
<td>Yellow clay</td>
<td>Yes</td>
</tr>
<tr>
<td>30</td>
<td>Brown clay</td>
<td>Yes</td>
</tr>
<tr>
<td>45.5</td>
<td>White clay</td>
<td>Yes</td>
</tr>
<tr>
<td>79</td>
<td>Black</td>
<td>Yes</td>
</tr>
<tr>
<td>86</td>
<td>Brown clay</td>
<td>Yes</td>
</tr>
<tr>
<td>107</td>
<td>Blue clay</td>
<td>Yes</td>
</tr>
<tr>
<td>147</td>
<td>Blue, gray, light red</td>
<td>Yes</td>
</tr>
<tr>
<td>152</td>
<td>Blue, gray, light red</td>
<td>Yes</td>
</tr>
<tr>
<td>161</td>
<td>Hard, dark red</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**DEPTH MATERIAL**

**WATER**

**FROM TO**

<table>
<thead>
<tr>
<th>FEET</th>
<th>YES OR NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Work started:** Jan. 7, 1969
**Work finished:** July 26, 1969

**Well Driller's Statement:** This well was drilled under my supervision and this report is true to the best of my knowledge.

**Name:** E. A. Irland

**Address:** Butte, Montana

**License No.:** 13
**Date:** 3-6-69

**Signed by:** Non Town

**USGS**
**FLOYD TRAIL WELL 4**

[DRILLED IN 1984]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 14, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft): 2683</th>
<th>Depth (ft): 150</th>
<th>7.5’</th>
<th>Quad: Moscow East</th>
</tr>
</thead>
</table>

Latitude: 46.748638°  Longitude: -116.977481°  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 4, T. 39 N, R. 5 W

**Well Address and (or) Other Location Information:**
1310 (formerly 2057?) Youmans Lane, Moscow, Idaho; at north end of lane

**Location Method:**
Location is for well (latitude, longitude and elevation from Fairley and others, 2006, which is 0.5 mi southwest of location provided in Candel, 2014, well 21); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>From 0 To 3</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow and brown</td>
<td>From 3 To 72</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>From 72 To 94</td>
</tr>
<tr>
<td>Sand</td>
<td>From 94 To 95</td>
</tr>
<tr>
<td>Sand and clay</td>
<td>From 95 To 105</td>
</tr>
<tr>
<td>Clay, white</td>
<td>From 105 To 115</td>
</tr>
<tr>
<td>Clay, white, wood</td>
<td>From 115 To 116</td>
</tr>
<tr>
<td>Clay, black, wood</td>
<td>From 116 To 126</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>From 126 To 137</td>
</tr>
<tr>
<td>Clay, gray</td>
<td>From 137 To 140</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 140 To 150</td>
</tr>
</tbody>
</table>

1731
Comments:

Latah County Tax Parcel RP39N05W045903, owner now is TRAIL, DAVID M FAMILY TRUST; 1310 YOUUMANS LN; 1.14 AC TAX #3063 NWSW; .11 AC TAX #3618 NWSW; .09 AC TAX #6000, 4 39 5.

References Cited:


STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Water Resources within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name: Floyd Trail
Address: 2057 Yumane Lane Moscow, ID 83843
Owner's Permit No.: 87-84-N-4

2. NATURE OF WORK

□ New well □ Deepened □ Replacement
□ Abandoned (describe method of abandoning)

3. PROPOSED USE

□ Domestic □ Irrigation □ Test □ Municipal
□ Industrial □ Stock □ Waste Disposal or Injection
□ Other
(specify type)

4. METHOD DRILLED

□ Rotary □ Air □ Hydraulic □ Revere rotary
□ Cable □ Dug □ Other

5. WELL CONSTRUCTION

Casing schedule: □ Steel □ Concrete □ Other
□ Casing Thickness □ Diameter
250 inches 8 inches + 140 feet 120 feet
75 feet 75 feet
Was casing drive shoe used? □ Yes □ No
Was a packer or seal used? □ Yes □ No
Perforated? □ Yes □ No
□ Factory □ Knife □ Torch
Size of perforation □ inches by □ inches
1/8 inches by 2/8 inches
□ Perforations from □ To
4113 4113
□ Perforations down □ To
hole perforator
75 feet 120 feet
□ Well screen installed? □ Yes □ No
Manufacturer's name
Type
□ Diameter □ Slot size
□ Diameter □ Slot size
□ Gravel packed? □ Yes □ No □ Size of gravel
□ Placed from □ to □ feet
□ Surface seal depth
□ Material used in seal: □ Cement grout
Bentonite □ Pudding clay □ Well cuttings
□ Sealing procedure used: □ Slurry pit □ Temp. surface casing
□ Method of joining casing: □ Threaded □ Welded □ Solvent
□ Cemented between strata
□ Describe access port
Well seal with port

6. LOCATION OF WELL

Sketch map location must agree with written location.

N
W
S
County
Latah
□ Subdivision Name
□ Lot No. □ Block No.

7. WATER LEVEL

Static water level 61 feet below land surface.
□ Flowing? □ Yes □ No
G.P.M. flow
Artesian closed-in pressure □ p.s.i.
□ Controlled by: □ Valve □ Cap □ Plug
□ Temperature □ F. □ Quality

8. WELL TEST DATA

□ Pump □ Bailer □ Air □ Other

<table>
<thead>
<tr>
<th>Discharge G.P.M.</th>
<th>Pumping Level</th>
<th>Hours Pumped</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. LITHOLOGIC LOG

| Hole | Depth From | Depth To | Material | Water
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>3</td>
<td>0</td>
<td>Black dirt</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>0</td>
<td>Yellow clay</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>70</td>
<td>0</td>
<td>Lt. brown clay</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>90</td>
<td>70</td>
<td>Lt. br., clay, sand, granite</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>95</td>
<td>90</td>
<td>Sand, clay, 1 gal.</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>105</td>
<td>95</td>
<td>White clay, granite</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>115</td>
<td>105</td>
<td>White clay, wood</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>116</td>
<td>115</td>
<td>Black clay, wood</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>126</td>
<td>116</td>
<td>Brown clay</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>127</td>
<td>126</td>
<td>Lt. gray clay</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>140</td>
<td>127</td>
<td>Rock</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Work started 6-20-84 finished 1-12-84

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Don Town Well Drill Firm No. 55
Address: 2380 Moscow Rd. Date: 8-27-84
Moscow, Idaho 83843
Signed by (Firm Official) Don Town

(Operator) 1733

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT
RICHARD TUCK WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 15, 2016

Well Log ID: NA Elev (ft): 2669.9 Depth (ft): 160 7.5’ Quad: Robinson Lake

Latitude: 46.769756 Longitude: -116.963143 decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 33, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
3051 W Twin Road, Moscow, Idaho, on north side of road; well is just north of road, east of pond, and southwest of long driveway

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile, "Tuck/Burns" well); Latah County Assessor; Google Earth imagery; topographic map.

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil and clay</td>
<td>From 0 – To 20</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand and clay</td>
<td>20 – 35</td>
</tr>
<tr>
<td>Clay</td>
<td>35 – 105</td>
</tr>
<tr>
<td>Clay and rock</td>
<td>105 – 125</td>
</tr>
<tr>
<td>Clay, dark</td>
<td>125 – 132</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>132 – 155</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>155 – 160</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP018640000020, 3051 W WEST TWIN RD; owner now is George Leonard Burns; LOT 2, TUCK SUBDIVISION, SW¼, NE¼, NE¼, sec. 33.

Note: Mr. Tuck's property is the adjacent parcel to the north, Latah County Tax Parcel RP018640000010, 3071 WEST TWIN RD; owner is TUCK, RICHARD; LOT 1, TUCK SUBDIVISION, NW¼, NE¼, NE¼, sec. 33 (outlined in blue below).

References Cited:
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. DRILLING PERMIT NO. 8795-N-18 - 600

Other IDWR No.

2. OWNER:
Name: Richard Buck
Address: 1052 W. Main Rd
City: Moscow
State: ID Zip: 83203

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

4. PROPOSED USE:
[ ] Domestic [ ] Municipal [ ] Monitor [ ] Irrigation
[ ] Thermal [ ] Injection [ ] Other

5. TYPE OF WORK:
[ ] New Well [ ] Modify or Repair [ ] Replacement [ ] Abandonment

6. DRILL METHOD:
[ ] Mud Rotary [ ] Air Rotary [ ] Cable [ ] Other

7. SEALING PROCEDURES

<table>
<thead>
<tr>
<th>SEAL/FILTER PACK</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonite</td>
<td>80 lbs</td>
<td>Shoveling</td>
</tr>
</tbody>
</table>

Was drive shoe used? [ ] Y [ ] N
Shoe Depth(s): 18 ft.
Was drive shoe seal tested? [ ] Y [ ] N
How?

8. CASING/LINER:

Length of Headpipe __________
Length of Tailpipe __________

9. PERFORATIONS/SCREENS
[ ] Perforations Method
[ ] Screens Screen Type

From | To | Slot Size | Number | Diameter | Material | Casing | Liner |
|-----|----|-----------|--------|----------|----------|--------|-------|

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
8 ft. below ground
Artesian pressure 20 lb.

Depth flow encountered ________ ft. Describe access port or control devices: NENE 33 40 N 50

11. WELL TESTS:
[ ] Pump [ ] Bailie [ ] Air [ ] Flowing Artesian

<table>
<thead>
<tr>
<th>Yield gpm</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>0</td>
<td>80'</td>
<td>1/2 hr</td>
</tr>
</tbody>
</table>

Water Temp. __________
Bottom hole temp. __________
Water Quality test or comments: __________

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

<table>
<thead>
<tr>
<th>Bore Dia.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 0 30</td>
<td>Top</td>
<td>Drift</td>
<td>Clay</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>8 30</td>
<td>Sand &amp; Clay</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 55</td>
<td>165</td>
<td>Shale</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 105</td>
<td>Rock &amp; Clay</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 125</td>
<td>Drift &amp; Clay</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 132</td>
<td>Basalt</td>
<td>Flooded</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 135</td>
<td>Basalt</td>
<td>Pounds</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. DRILLER'S CERTIFICATION
[ ] We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: Well Well Drilling
Firm No. 58

Firm Official: Earl E. Well
Date: Apr 10-95

Supervisor or Operator: Norvell Graham
Date: Apr 10-95
(Signature if Permitted Official or Operator)

FORWARD WHITE COPY TO WATER RESOURCES
ROBERT TUTTLE WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 7, 2018

Well Log ID: NA Elev (ft): 2650 ±10 Depth (ft): 220 7.5’ Quad: Potlatch

Latitude: 46.914035° Longitude: -116.999689° decimal degrees (WGS84)

¼, NW ¼, NW ¼, Sec. 8, T. 41 N, R. 5 W

Well Address and (or) Other Location Information:
1010 North River Road, Palouse, Wash., on north side of road

Location Method:
Location is for well, north of driveway to geodesic dome house; Latah County Assessor; Google Earth imagery; topographic map; site visit March 26, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Loess, clay, yellow</td>
<td>2 – 60</td>
</tr>
<tr>
<td>Weathered basalt, clay, gray</td>
<td>60 – 64</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>64 – 220</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP41N05W083148, owners now are TUTTLE, ROBERT Y TRUSTEES; 1010 N RIVER RD, NWNW, 8 41 5.

Well is at edge of lawn and cut field, just to the left of large pine trees


References Cited:

Moscow-Pullman Daily News, 2017, Obituary–Robert Young 'Bob' Tuttle, 98, of Potlatch: Moscow-
5a62-95c7-14569b5296c4.html.
1. WELL OWNER
Name: Robert Tuttle
Address: Route 1 Box 65 Palouse, WA 99161
Owner's Permit No.: 87-29-N-27

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Other (specify type)
☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection

4. METHOD DRILLED
☐ Cable  ☐ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches
Total depth: 220 feet
Casing schedule: ☑ Steel  ☐ Concrete

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 inches</td>
<td>0</td>
<td>2</td>
<td>Black dirt x</td>
</tr>
<tr>
<td>6 inches</td>
<td>2</td>
<td>61</td>
<td>Yellow clay x</td>
</tr>
<tr>
<td>6 inches</td>
<td>61</td>
<td>81</td>
<td>Blue clay x</td>
</tr>
<tr>
<td>6 inches</td>
<td>81</td>
<td>127</td>
<td>Med. hard basalt 5 gal x</td>
</tr>
<tr>
<td>6 inches</td>
<td>127</td>
<td>153</td>
<td>Hard basalt x</td>
</tr>
<tr>
<td>6 inches</td>
<td>153</td>
<td>155</td>
<td>Soft basalt 2 gal x</td>
</tr>
<tr>
<td>6 inches</td>
<td>155</td>
<td>212</td>
<td>Hard basalt x</td>
</tr>
<tr>
<td>6 inches</td>
<td>212</td>
<td>213</td>
<td>Soft basalt x</td>
</tr>
<tr>
<td>6 inches</td>
<td>213</td>
<td>220</td>
<td>Hard basalt x</td>
</tr>
</tbody>
</table>

6. LOCATION OF WELL
Sketch map location must agree with written location.

N
W

Subdivision Name:  
Lot No.: Block No.:  
County: Latah

7. WATER LEVEL
Static water level: 114 feet below land surface.
Flowing? ☑ Yes  ☐ No  G.P.M. flow:  
Temperature: 80°F. Quality: 
Artesian closed-in pressure: 5 p.s.i.
Controlled by: ☑ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☐ Other
Discharge: G.P.M. Drawdown Hours Pumped:

9. LITHOLOGIC LOG


11. DRILLERS CERTIFICATION
Firm Name: Don Town Well Drilling  Firm No.: 355
Address: Rt. 4 Box 429 Moscow, ID  Date: 8-15-79
Signed by (Firm Official)  (Operator)
DAVE UBERUAGA WELL

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, August 11, 2016

Well Log ID:  616645  Elev (ft):  2620 ±10  Depth (ft):  450  Quad:  Moscow West

Latitude:  46.718150  Longitude:  -117.107704  decimal degrees (WGS84)

¼,  NW ¼,  NE ¼,  Sec. 11,  T. 14 N,  R. 45 E

Well Address and (or) Other Location Information:
1613 Sunshine Road, Pullman, Wash., on northwest side of road, halfway up long lane (that continues to top of hill) and on northwest (uphill) side; white well house is next to (northeast of) electrical boxes and north of the concrete driveway apron to dark blue house

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map; property straddles NW¼ and NE¼ of sec. 11; PLSS subdivision incorrect on driller’s report. Site visit (April 14, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow brown</td>
<td>0  –  54</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>54  –  203</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>203 – 211</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>211 – 224</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>224 – 292</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>292 – 327</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>327 – 341</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>341 – 421</td>
</tr>
</tbody>
</table>
Basalt, weathered  421 – 432
Basalt, red  432 – 439
Basalt, hard  439 – 450

Comments:

Other wells in the Sunshine Road area show an interbed between the Lolo and Grande Ronde; no interbed was noted in this log.

Whitman County Tax Parcel 200004514116692, 1613 SUNSHINE RD, LOT 2 TODOROVICH SHRT PLT, owner is UBERUAGA, DAVID (and probably SHELLEY JONES), 5.77 acres.

Left, white well house is to right, along horizon

References Cited:
WATER WELL REPORT

PROPOSED USE:  ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner’s number of well (if more than one)
☐ New well ☐ Reconditioned Method ☐ Dr. ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well ___ inches, drilled 450 ft.
Depth of completed well 450 ft.

CONSTRUCTION DETAILS

Casing: ☑ Welded ___ ft. Diam. from ___ ft. to ___ ft.
Installed: ☑ Liner installed ___ ft. Diam. from ___ ft. to ___ ft.
☐ Threaded ___ ft. From ___ ft. to ___ ft.

Perforations: ☑ Yes ☑ No

Type of perforator used
☐ SAW

SIZE of pervs 1/8 in. by 12 in. and no. of pervs 90 from 390 ft. to 450 ft.

Screen: ☑ Yes ☑ No ☐ K-Pac

Manufacturer’s Name ____________________________ Location ____________________________

Type ____________________________ Model No. ____________________________
Diam. ___ ft. Slot size from ___ ft. to ___ ft.
Diam. ___ ft. Slot size from ___ ft. to ___ ft.

Material placed from ___ ft. to ___ ft.

Gravel/Filter packed: ☑ Yes ☑ No Size of gravel/sand

Surface Seal: ☑ Yes ☑ No To what depth? ___ ft.

Material used in seal
☐ BENTONITE

Did any strata contain unusable water? ☑ Yes ☑ No

Type of water ____________________________ Depth of strata

Method of sealing strata ____________________________

PUMP: Manufacturer’s Name ____________________________

Type: ____________________________ H.P. ____________________________

WATER LEVELS: Land-surface elevation above mean sea level ___ ft.
Static level 381 ft. below top of well Date 7/23/07
Artesian pressure ___ lbs. per square inch Date ____________________________
Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☑ Yes ☑ No If yes, by whom?
Yield: ___ gal/min. with ___ ft. drawdown after ___ hrs.
Yield: ___ gal/min. with ___ ft. drawdown after ___ hrs.
Yield: ___ gal/min. with ___ ft. drawdown after ___ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test: ___ gal/min. with ___ ft. drawdown after ___ hrs.

Airest: 20 gal/min. with stem set at ___ ft. for ___ hrs.

Artesian flow ___ g.p.m. Date ____________________________

Temperature of water ___ Was a chemical analysis made? ☑ Yes ☑ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (first) TED WRIGHT
Driller/Engineer/Trainee Signature ____________________________

Driller or trainee License No. _________

IF TRAINEE: Driller’s License No. ____________________________
Driller’s Signature ____________________________

ECY 06/1-20 (Rev 06/08) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6600.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
UDC PROPERTIES WELL 1

(UTZMAN DEVELOPMENT COMPANY LLC WELL 1)

[DRILLED IN 2002]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 17, 2016

Well Log ID: D0022602
Elev (ft): 2630 ±10
Depth (ft): 235
Quad: Viola

Latitude: 46.766842
Longitude: -117.020891
decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 31, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1297 O’Donnell Road, Moscow, Idaho; on southwest side of road

Location Method:
Location is for large building (about 130 ft by 70 ft) along driveway; Latah County Assessor; Google Earth imagery. Moscow-Pullman Daily News (2002) provided location map of property (which corresponds to the tax parcel). Site visits (April 14, 2016 and November 18, 2016).

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation and Latah Formation (sediments of Bovill)</td>
<td>Clay, tan</td>
<td>0 – 64</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt</td>
<td>64 – 145</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
<td>145 – 160</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>160 – 195</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
<td>195 – 210</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay, wood</td>
<td>210 – 220</td>
</tr>
<tr>
<td></td>
<td>Clay</td>
<td>220 – 235</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP40N05W314041; 1297 O'DONNELL RD; owner is now WINDY FARMS LLC; 40 AC GOVT LOT 2 and LOT 3.

Glen G. Utzman was the manager and registered agent for UDC Properties LLC (Idaho Secretary of State, 2015) and is the same for Windy Farms LLC (Idaho Secretary of State, 2016).

References Cited:


1. WELL TAG NO. D 00 22 60 X 781451

2. OWNER:
   Name: UDC Properties
   Address: 1080 S 74th St
   City: Moscow
   State: ID
   Zip: 83704

3. LOCATION OF WELL by legal description:
   Twp: 40 N 60 E 1/2
   Sec: 5
   Ref: N 1/4
   Gov't Lot: 1/4
   County: Latah
   Lat: 47.9123
   Long: -116.9867
   Address of Well Site: 1297 O'Donnell Rd
   City: Moscow

4. USE:
   [X] Domestic  [ ] Municipal  [ ] Monitor  [ ] Irrigation
   [ ] Thermal  [ ] Injection  [ ] Other

5. TYPE OF WORK
   [X] New Well  [ ] Modify  [ ] Abandonment  [ ] Other

6. DRILL METHOD:
   [X] Air Rotary  [ ] Cable  [ ] Mud Rotary  [ ] Other

7. SEALING PROCEDURES
   Seal Material: Bentonite
   From: 0
   To: 60
   Weight / Volume: 550
   Seal Placement Method: Top Pour

8. CASING/LINER:
   Diameter: 8"
   From: 195
   To: 215
   Gauge: 6.2"
   Material: 250 Steel
   Casing: L
   Liner: L
   Welded: T
   Threaded: L
   Length of Headpipe
   Length of Tailpipe
   Packer: Y
   KN Type

9. PERFORATIONS/SCREENS PACKER TYPE
   Perforation Method: Circular Saw
   Screen Type & Method of Installation:

10. FILTER PACK
    Filter Material
    From: 195
    To: 215
    Weight / Volume
    Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
    Depth below ground: 30
    Artesian pressure: 0 lb.
    Depth flow encountered: 40 ft.
    Describe access port or control devices: Top of casing

12. WELL TESTS:
    Yield: 13 gal/min.
    Drawdown
    Pumping Level
    Time

13. LITHOLOGIC LOG:
    (Describe repairs or abandonment)
    Water
    Bone Dia.
    From
    To
    Remarks: Lithology, Water Quality & Temperature
    Y
    N
    12-0-6 1 TAM CLAY
    8 6-110 Med Blk Bklt
    2 134-145 Hard Blk Bklt
    7 134-150 Soft Blk Bklt
    2 134-160 Hard Clay Bklt
    2 210-220 Soft Blk Bklt
    2 220-230 Clay

14. DRILLER'S CERTIFICATION
    We certify that all minimum well construction standards were complied with at the time the rig was removed.
    Company Name: Lakenhead Drilling
    Firm No.: 125
    Principal Driller: Brett Lakenhead
    Date: 7-21-02
    Driller or Operator II:
    Date: 7-21-02
    Operator I: Brett Lakenhead
    Principal Driller and Rig Operator Required: 745
    Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November, 2016

Well Log ID: D0035239
Elev (ft): 2690 ±10
Depth (ft): 372
Quad: Viola

Latitude: 46.764365
Longitude: -117.019526
decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 31, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1221 O’Donnell Road, Moscow, Idaho; the house is actually on the northwest side of Clairmont Road (which runs along the southeastern edge of the tax parcel)

Location Method:
Located at unfinished house; Latah County Assessor; Google Earth imagery. Moscow-Pullman Daily News (2002) provides a location map of property (which corresponds to the tax parcel). PLSS subdivision incorrect on driller’s report. Site visit (November 18, 2016); house number displayed, but did not see well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>130</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
</tr>
<tr>
<td>Clay(?)</td>
<td>264</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>295</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
</tbody>
</table>
Clay 310 – 370
Sand 370 – 372

Comments:

1This would include loess and sediments of Bovill.
2Driller reported shale.

Latah County Tax Parcel RP40N05W314041; 1297 O’DONNELL RD; owner is now WINDY FARMS LLC; 40 AC GOVT LOT 2 and LOT 3.

Glen G. Utzman was the manager and registered agent for UDC Properties LLC (Idaho Secretary of State, 2015) and is the same for Windy Farms LLC (Idaho Secretary of State, 2016).

References Cited:


IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. 35239
DRILLING PERMIT No. 619 564
Water Right or Injection Well No. 1748

2. OWNER:
Name: L. D. C. Properties, LLC
Address: P.O. Box 84977
City: Moscow
State: ID
Zip: 83843

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 40 N, North
Rge. 5, East
Sec. 31, NW 1/4, N 1/4, W 1/4
Govt. Lot
County: Latah
Lat: 47° N
Long: 116° W
Address of Well Site: 1297 O'Connell Rd.
City: Moscow
Lt. Bk., Sub. Name

4. USE:
☐ Domestic
☐ Municipal
☐ Monitor
☐ Irrigation
☐ Thermal
☐ Injection
☐ Other

5. TYPE OF WORK: check all that apply
☐ New Well
☐ Modify
☐ Abandonment
☐ Other
☐ Replacement etc.

6. DRILL METHOD:
☐ Air Rotary
☐ Cable
☐ Mud Rotary
☐ Other

7. SEALING PROCEDURES
Seal Material From To Weight / Volume Seal Placement Method
Bentonite 0 133 300 lbs. Dry

8. CASING/LINER:
Diameter From To Gauge Material Casing Liner Welded Threaded
8 +1 133 1500 Steel ☑ ☑
6 -2 250 306 250 Steel ☑ ☑
4 -12 350 350 PVC ☑

Length of Headpipe
Length of Tailpipe

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method: 30 7/32
Screen Type & Method of Installation

10. FILTER PACK
Filter Material From To Weight / Volume Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
40 ft. below ground
Artesian pressure lb
Depth flow encountered ft. Describe access port or control devices:

12. WELL TESTS:
Yield gal./min. Drawdown Pumping Level Time
approx 100 32 1 Hr

Water Temp. Bottom hole temp.
Water Quality test or comments:

13. LITHOLOGIC LOG: (Describe repairs or abandonment)
Bore Dia. From To Remarks: Lithology, Water Quality & Temperature
Y N
10 0 1 130 oceenburden
10 133 133 basalt, firm
8 133 247 basalt, firm
8 247 360 grey shale
8 360 644 basalt, firm
8 644 685 clay
8 685 955 basalt, firm
8 955 305 frac, basalt
6 305 305 basalt, firm
6 310 320 clay
6 320 322 sand

14. DRILLER'S CERTIFICATION
We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: Witt Well Drilling
Firm No.: 58
Principal Driller: Roger Witt
Date: 8/11/04
Driller or Operator II
Date:

Operator I
Date
Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II.

FORWARD WHITE COPY TO WATER RESOURCES
UNIONTOWN CITY WELL 2

[DRILLED IN 2005]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 17, 2016

Well Log ID: 417146    Elev (ft): 2590 ±10    Depth (ft): 420    7.5’

Quad: Uniontown

Latitude: 46.536470    Longitude: -117.087417  decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 7, T. 12 N, R. 46 E

Well Address and (or) Other Location Information:
W Church Street, Uniontown, Wash., Holzer Park, on north side of street; between High Street and Montgomery Street

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map; Anderson Map Company (1910); Lot 11, Block 2, per driller’s report. Site visit (April 10, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, silty</td>
<td>0 – 31</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Asotin Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>31 – 42</td>
</tr>
<tr>
<td>Basalt, with clay seams</td>
<td>42 – 48</td>
</tr>
<tr>
<td>Basalt, red</td>
<td>48 – 83</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>83 – 91</td>
</tr>
<tr>
<td>*Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>91 – 184</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>184 – 212</td>
</tr>
<tr>
<td>Basalt, hard, with fractures in places</td>
<td>212 – 313</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Basalt and sand</td>
<td>313 – 325</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
</tbody>
</table>

1749
R2 magnetostratigraphic unit(?)

| Basalt       | 325 – 420 |

Comments:

*Contact between Asotin and Lolo was estimated.

Whitman County Tax Parcel 200004612071900, 1 acre, owner is UNIONTOWN.

References Cited:

State of Washington

Water Well Report

Washington Water Right Permit No: G3-23255

(1) Owner: TOWN OF UNIONTOWN
Address: 110 S MONTGOMERY UNIONTOWN WA 99179

(2) Location of Well: County WHITMAN
Street Address of Well: LOT 11 BLOCK 2

(3) Proposed Use: MUNICIPAL

(4) Type of Work: NEW WELL
Previous Tag No. Owner's number of well (if more than one):
Drilling Method: ROTARY

(5) Dimensions
Diameter of well: 10 inches
Drilled: 420 feet
Depth of completed well: 420 feet

(6) Construction Details
Casing Installed

WELDED

Diameter

From

+2

To

332

Perforations

 Screens

Type of Perforator Used

Screen Type:

K-Pac Location:

Gravel/Filter packed

Size of gravel/sand:

Material placed from:

ft. to

Surface seal used

To what depth:

332 ft.

Did any strata contain unusable water?

Type of water:

HIGH NITRATES

Depth of strata:

75'-200'-315'

Method of sealing strata off:

CEMENTED CASI

(7) Pump

Pump Manufacturer:

Pump Type:

H.P.

(8) Water Levels

Land-surface elevation above mean sea level:

ft.

Static level:

47 Date:

Artesian Pressure:

Date:

Artesian water is controlled by:

(9) Well Tests

Was a pump Test performed?

Yield

Drawdown

Pumping Level

Hours

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time

Level

Time

Level

Time

Level

B Test: gal per min drawdown after

Air test gal/min: 200+ gal per min

Artesian flow gpm:

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

Construction

Drive Shoe

Decommission

Ring Bit

From

To

Remarks: Lithology, Water Quality, Temperature

Start Date: 6/6/2005

Completed: 7/14/2005

Well Construction Certification
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name: LOUIE HANNER

License No.: 1472

Trainee Name: H20 Well Service, Inc.

License No.: 1472

Drilling Company: (Licensed Driller/Engineer)

Address: 582 W. Hayden Ave, Hayden Lake, ID 83835

Contractor's Registration No: H20WES101DW Date: 07/15/05

1751
**UNIVERSITY OF IDAHO WELL 1**

(UI WELL 1)

[DRILLED IN 1920]

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, March 18, 2016

<table>
<thead>
<tr>
<th>Well Log ID</th>
<th>Elev (ft)</th>
<th>Depth (ft)</th>
<th>Quad</th>
<th>Location Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>2601</td>
<td>330</td>
<td>Moscow West</td>
<td></td>
</tr>
</tbody>
</table>

Latitude: 46.727088  Longitude: -117.012383  decimal degrees (WGS84)

SE ¼, NE ¼, NW ¼, Sec. 18, T. 39 N, R. 5 W

**Well Address and (or) Other Location Information:**

University Avenue, Moscow, Idaho, on north side; west of Campus Drive; believed to be on south side of the new Idaho Commons Building (875 S Line Street).

**Location Method:**

Latitude and longitude approximated from Smith (1958, index map), Jones and Ross (1972, fig. 3, well 18ba1), and Crosthwaite (1975, fig. 5); elevation from Smith (1958); “northwest of the intersection of University Ave. and Line Street” (University of Idaho and City of Moscow, 1968); Latah County Assessor; Google Earth imagery; topographic map

**GEOLOGIC UNITS — DESCRIPTION**

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>FROM (ft)</th>
<th>TO (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latah Formation</td>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0 – 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand (reported as quicksand)</td>
<td>36 – 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, white, wood</td>
<td>40 – 98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo(?)</td>
<td>Basalt, hard</td>
<td>98 – 305</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>305 – 320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>320 – 330</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Log from Crosthwaite (1975).

*Elevation of the bottom of this basalt does not correspond to elevation of the bottom of nearby Wanapum flow in either the University of Idaho well 2 or the University of Idaho well 7 (Aquaculture well).

Saddle Mountains Basalt was identified in foundations of nearby McClure Hall (810 W 7th Street) and Morrill Hall (820 Idaho Avenue) on campus, but no evidence was noted in this log. Core from shallow holes in the parking lot south of the new Hampton Music Building (1010 Blake Avenue) was personally observed by John Bush (circa 1998) to contain weathered pieces of scoria interpreted to belong to the basalt of Lewiston Orchards (which occurs beneath McClure Hall).

Latah County Tax Parcel RPM00000183850, owner is UNIVERSITY OF IDAHO, PART OF NW 1/4 18 39 5.

References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.

### 39N-5W-16ddl. Eldon Bingman

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt, black</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Clay, yellow, and sand</td>
<td>13</td>
<td>33</td>
</tr>
<tr>
<td>Clay, white</td>
<td>8</td>
<td>41</td>
</tr>
<tr>
<td>Clay, black</td>
<td>2</td>
<td>43</td>
</tr>
<tr>
<td>Clay, brown, and wood</td>
<td>12</td>
<td>55</td>
</tr>
<tr>
<td>Clay, gray, and wood</td>
<td>11</td>
<td>66</td>
</tr>
<tr>
<td>Clay, hard, water</td>
<td>135</td>
<td>205</td>
</tr>
<tr>
<td>Basalt, soft, water</td>
<td>9</td>
<td>214</td>
</tr>
</tbody>
</table>

### 39N-5W-16dd2. J. M. Atkinson

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil, soft</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Clay, gray, soft</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Clay, brown, soft</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>7</td>
<td>32</td>
</tr>
<tr>
<td>Clay, brown, soft</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>Granite, Decomposed</td>
<td>9</td>
<td>69</td>
</tr>
<tr>
<td>Basalt, medium hard</td>
<td>21</td>
<td>90</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>58</td>
<td>148</td>
</tr>
<tr>
<td>Basalt, medium hard</td>
<td>10</td>
<td>158</td>
</tr>
<tr>
<td>Basalt, hard, water</td>
<td>2</td>
<td>160</td>
</tr>
</tbody>
</table>

### 39N-5W-17ddl. Everett Hagen

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, yellow</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Granite, decomposed</td>
<td>76</td>
<td>87</td>
</tr>
<tr>
<td>Quartz</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>Granite, decomposed</td>
<td>157</td>
<td>247</td>
</tr>
</tbody>
</table>

### 39N-5W-17daal. Sunset Memorial Gardens

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil, black, soft</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Clay, light gray, sticky</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>Clay, light brown, with small gravel</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>Clay, yellow, with small gravel, water</td>
<td>10</td>
<td>39</td>
</tr>
<tr>
<td>Gravel, coarse, with yellow clay</td>
<td>14</td>
<td>53</td>
</tr>
<tr>
<td>Clay, light brown, with wood</td>
<td>16</td>
<td>69</td>
</tr>
<tr>
<td>Clay, dark brown</td>
<td>13</td>
<td>82</td>
</tr>
</tbody>
</table>

### 39N-5W-17daal--Continued

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, blue</td>
<td>5</td>
<td>87</td>
</tr>
<tr>
<td>Basalt, dark brown, broken, decomposed</td>
<td>4</td>
<td>91</td>
</tr>
<tr>
<td>Basalt, black, very dense, hard</td>
<td>163</td>
<td>254</td>
</tr>
<tr>
<td>Basalt, broken, and clay, blue</td>
<td>18</td>
<td>272</td>
</tr>
<tr>
<td>Clay, light green, sticky</td>
<td>6</td>
<td>278</td>
</tr>
<tr>
<td>Clay, light yellow with basalt chips</td>
<td>5</td>
<td>281</td>
</tr>
<tr>
<td>Clay, green</td>
<td>76</td>
<td>354</td>
</tr>
<tr>
<td>Clay, light brown, and sand</td>
<td>17</td>
<td>371</td>
</tr>
<tr>
<td>Clay, light brown, sticky</td>
<td>38</td>
<td>409</td>
</tr>
<tr>
<td>Clay, blue, sticky</td>
<td>5</td>
<td>414</td>
</tr>
<tr>
<td>Clay, chocolate brown</td>
<td>33</td>
<td>447</td>
</tr>
<tr>
<td>Granite sand, light gray, decomposed</td>
<td>66</td>
<td>513</td>
</tr>
<tr>
<td>Clay, chocolate brown, sticky</td>
<td>37</td>
<td>550</td>
</tr>
<tr>
<td>Basalt, black</td>
<td>2</td>
<td>552</td>
</tr>
</tbody>
</table>

Well backfilled to 508 feet

### 39N-5W-17ddcl. Frank Bennett

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Clay</td>
<td>73</td>
<td>75</td>
</tr>
<tr>
<td>Basalt</td>
<td>30</td>
<td>105</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>5</td>
<td>110</td>
</tr>
<tr>
<td>Basalt</td>
<td>17</td>
<td>127</td>
</tr>
<tr>
<td>Clay, brown, some wood</td>
<td>3</td>
<td>130</td>
</tr>
<tr>
<td>Basalt</td>
<td>10</td>
<td>140</td>
</tr>
<tr>
<td>Granite, decomposed</td>
<td>160</td>
<td>500</td>
</tr>
</tbody>
</table>

### 39N-5W-18badl. University of Idaho #1

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>Quick sand</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Clay, white</td>
<td>35</td>
<td>75</td>
</tr>
<tr>
<td>Clay, white, soft, driftwood</td>
<td>23</td>
<td>98</td>
</tr>
<tr>
<td>Lava rock, very hard</td>
<td>207</td>
<td>305</td>
</tr>
<tr>
<td>Sand, rock, soft, very porous</td>
<td>15</td>
<td>320</td>
</tr>
<tr>
<td>Clay, blue, lava mud</td>
<td>10</td>
<td>350</td>
</tr>
</tbody>
</table>

### 39N-5W-20addl. Eddie Tout

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granite, decomposed, caving</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Granite</td>
<td>196</td>
<td>295</td>
</tr>
</tbody>
</table>

1756 -51-
UNIVERSITY OF IDAHO WELL 2
(UI Well 2)
[Drilled in 1951]
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, March 15, 2016

Well Log ID: NA       Elev (ft): 2557.4
Depth (ft): 354        Quad: Moscow West
7.5'

Latitude: 46.731353    Longitude: -117.017201
decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 7, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
Stadium Drive, Moscow, Idaho, probably in middle of road (now paved over and well house
demolished post-2007); north of Paradise Creek Street

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016,
Monitoring_Wells_WGS84 shapefile); Opatz (2007), Crosthwaite (1975), Smith (1958); Latah
County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLeIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>0</td>
</tr>
<tr>
<td>Clay and gravel</td>
<td>17</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>29</td>
</tr>
<tr>
<td>Basalt, vesicular, glassy</td>
<td>65</td>
</tr>
<tr>
<td>[No sample?]</td>
<td>110</td>
</tr>
<tr>
<td>Basalt, vesicular, glassy</td>
<td>118</td>
</tr>
<tr>
<td>Basalt</td>
<td>125</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>142</td>
</tr>
<tr>
<td>Basalt</td>
<td>145</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>174</td>
</tr>
</tbody>
</table>
Latah Formation

Vantage Member

<table>
<thead>
<tr>
<th>Description</th>
<th>Depth Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, gray, some silt and small quartzite pebbles</td>
<td>183 – 195</td>
</tr>
<tr>
<td>Sand, coarse-grained</td>
<td>195 – 214</td>
</tr>
<tr>
<td>Sand, with gravel</td>
<td>214 – 222</td>
</tr>
<tr>
<td>Sand, gray, silty</td>
<td>222 – 245</td>
</tr>
<tr>
<td>Silt, gray, some sand</td>
<td>245 – 258</td>
</tr>
<tr>
<td>Sand, gray, silty</td>
<td>258 – 270</td>
</tr>
<tr>
<td>Clay, various colors</td>
<td>270 – 348</td>
</tr>
<tr>
<td>Sand, silty, some basalt and argillite pebbles</td>
<td>348 – 354</td>
</tr>
</tbody>
</table>

Comments:

The description of the Lolo suggests that the flow consists of several lobes or flow units at this locality.

Opatz (2007) completed a thesis focused primarily on this well. He reported:
Usage of well UI #2 ended on October 12, 1964; Well UI #2 remained unused for nearly 45 years. For a several-year period leading up to 2004, the University of Idaho discussed plans to extend Stadium Drive to State Highway 8, but to do so would have required the formal abandonment and sealing of well UI #2. The UI #2 pump house is directly in the way of the proposed road extension project.

Latah County Tax Parcel RPM000000076610, owner is UNIVERSITY OF IDAHO.
References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.
<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, brown.</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Clay and gravel.</td>
<td>25</td>
<td>47</td>
</tr>
<tr>
<td>Gravel</td>
<td>7</td>
<td>54</td>
</tr>
<tr>
<td>Clay and gravel.</td>
<td>31</td>
<td>85</td>
</tr>
<tr>
<td>Clay, white.</td>
<td>23</td>
<td>108</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>2</td>
<td>110</td>
</tr>
<tr>
<td>Clay, brown.</td>
<td>50</td>
<td>160</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>7</td>
<td>167</td>
</tr>
<tr>
<td>Basalt</td>
<td>13</td>
<td>180</td>
</tr>
<tr>
<td>Clay, black.</td>
<td>4</td>
<td>184</td>
</tr>
<tr>
<td>Basalt</td>
<td>200</td>
<td>384</td>
</tr>
<tr>
<td>Sand</td>
<td>12</td>
<td>396</td>
</tr>
<tr>
<td>Sandstone</td>
<td>17</td>
<td>413</td>
</tr>
<tr>
<td>Clay, sticky</td>
<td>4</td>
<td>417</td>
</tr>
<tr>
<td>Clay, sandy.</td>
<td>17</td>
<td>434</td>
</tr>
<tr>
<td>Clay, grey, sticky</td>
<td>47</td>
<td>481</td>
</tr>
<tr>
<td>Shale</td>
<td>3</td>
<td>484</td>
</tr>
<tr>
<td>Clay, brown, sticky.</td>
<td>128</td>
<td>612</td>
</tr>
<tr>
<td>Basalt, black.</td>
<td>38</td>
<td>650</td>
</tr>
<tr>
<td>Basalt, gray</td>
<td>41</td>
<td>691</td>
</tr>
<tr>
<td>Clay, brown, sticky.</td>
<td>49</td>
<td>799</td>
</tr>
<tr>
<td>Clay, broken</td>
<td>42</td>
<td>821</td>
</tr>
<tr>
<td>Sand, cement</td>
<td>30</td>
<td>851</td>
</tr>
<tr>
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<td>67</td>
<td>918</td>
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<tr>
<td>Clay, gray</td>
<td>32</td>
<td>950</td>
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<tr>
<td>Basalt</td>
<td>8</td>
<td>958</td>
</tr>
<tr>
<td>Basalt with clay</td>
<td>189</td>
<td>1154</td>
</tr>
<tr>
<td>Basalt, black, dense</td>
<td>104</td>
<td>1258</td>
</tr>
<tr>
<td>Basalt, gray, hard</td>
<td>45</td>
<td>1303</td>
</tr>
<tr>
<td>Clay, sticky</td>
<td>10</td>
<td>1315</td>
</tr>
<tr>
<td>Clay, sandy.</td>
<td>55</td>
<td>1358</td>
</tr>
<tr>
<td>Clay, sticky</td>
<td>23</td>
<td>1391</td>
</tr>
<tr>
<td>Clay, grey, sandy.</td>
<td>67</td>
<td>1458</td>
</tr>
</tbody>
</table>

39N-5W-7cdcl. University of Idaho #2

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay, yellow.</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Clay, blue, and gravel.</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Basalt, vesicular.</td>
<td>36</td>
<td>65</td>
</tr>
<tr>
<td>Basalt, vesicular, and basalt glass</td>
<td>45</td>
<td>110</td>
</tr>
<tr>
<td>Basalt, vesicular, and basalt glass</td>
<td>7</td>
<td>118</td>
</tr>
<tr>
<td>Basalt</td>
<td>17</td>
<td>125</td>
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<tr>
<td>Basalt, vesicular.</td>
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<td>145</td>
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<tr>
<td>Basalt</td>
<td>29</td>
<td>174</td>
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<tr>
<td>Basalt, vesicular.</td>
<td>2</td>
<td>183</td>
</tr>
<tr>
<td>Clay, gray, and silt</td>
<td>12</td>
<td>195</td>
</tr>
<tr>
<td>Clay, grey, and silt, some small quartzite pebbles</td>
<td>12</td>
<td>207</td>
</tr>
<tr>
<td>Sand, quartz, coarse</td>
<td>7</td>
<td>214</td>
</tr>
<tr>
<td>Quartz sand, gravel, some argillite pebbles</td>
<td>8</td>
<td>222</td>
</tr>
<tr>
<td>Sand, quartz</td>
<td>8</td>
<td>230</td>
</tr>
<tr>
<td>Sand, gray, granitic, with silt</td>
<td>15</td>
<td>245</td>
</tr>
<tr>
<td>Silt, gray, some sand.</td>
<td>13</td>
<td>258</td>
</tr>
<tr>
<td>Sand, gray, granitic, and silt</td>
<td>12</td>
<td>270</td>
</tr>
<tr>
<td>Clay, chocolate to dark blue, carbonaceous</td>
<td>40</td>
<td>310</td>
</tr>
<tr>
<td>Clay, greenish gray</td>
<td>25</td>
<td>335</td>
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<tr>
<td>Claystone, gray, partially cemented</td>
<td>5</td>
<td>340</td>
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<tr>
<td>Clay, brown and greenish gray</td>
<td>8</td>
<td>348</td>
</tr>
<tr>
<td>Granitic sand and silt, some clay and pebbles of basalt, and argillite</td>
<td>3</td>
<td>351</td>
</tr>
<tr>
<td>Granitic sand and silt, some green clay and basalt pebbles</td>
<td>2</td>
<td>353</td>
</tr>
<tr>
<td>Granitic sand, silt, and clay</td>
<td>1</td>
<td>354</td>
</tr>
</tbody>
</table>

(Extracted from Crosthwaite, 1975)
Figure 1.1 Location map of study area. The city of Moscow is located in the northwest portion of the state of Idaho in the region known as the Palouse. The University of Idaho Campus is located on the southwest side of Moscow. The campus borders US Highway 95 to the east and State Highway 8 to the north. The UI2 well house is on the corner of Stadium Dr. and Paradise Creek St. B-B' represents the location of the cross section shown in Figure 2.6. C-C' represents the cross section shown in Figure 3.10.
GEOLLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS</th>
<th>DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>No description</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td></td>
<td>18</td>
<td>97</td>
</tr>
<tr>
<td>Basalt</td>
<td></td>
<td>97</td>
<td>177</td>
</tr>
<tr>
<td>Basalt with silt</td>
<td></td>
<td>177</td>
<td>190</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand, fine to very fine grained</td>
<td></td>
<td>190</td>
<td>280</td>
</tr>
<tr>
<td>Silt, sandy</td>
<td></td>
<td>280</td>
<td>350</td>
</tr>
<tr>
<td>Clay, silty</td>
<td></td>
<td>350</td>
<td>390</td>
</tr>
<tr>
<td>Silt, sandy</td>
<td></td>
<td>390</td>
<td>470</td>
</tr>
<tr>
<td>Clay, silty</td>
<td></td>
<td>470</td>
<td>497</td>
</tr>
</tbody>
</table>
Grande Ronde Basalt
   R2 magnetostratigraphic unit
      Meyer Ridge Member
         Basalt 497 – 580
   Latah Formation
      Sediments of Moscow
         Clay, silt 580 – 610
Grande Ronde Basalt
   R2 magnetostratigraphic unit
      Wapshilla Ridge Member
         Basalt 610 – 631
   Latah Formation
      Sediments of Moscow
         Silt 631 – 650
Grande Ronde Basalt
   R2 magnetostratigraphic unit
      Mount Horrible Member(?)
         Basalt, fine-grained, glassy 650 – 750
   N1 magnetostratigraphic unit
      Cold Spring Ridge Member(?)
         Basalt, silty sandstone 750 – 837
   Latah Formation
      Sediments of Moscow
         Clay 837 – 889
Grande Ronde Basalt
   N1 magnetostratigraphic unit
      Cold Spring Ridge Member
         Basalt 889 – 1196
   Latah Formation
      Sediments of Moscow
         Clay, sandy in places 1196 – 1322
Prebasalt rock
   *Granite(?) 1322 – 1336

Comments:

*The question mark on the granite is to remind the reader that coarse sediment in the Moscow area is difficult to distinguish from ground-up well chips of granite.

Driller’s well report provided footages for basalt and sediment intervals but no description for most units encountered. Stratigraphic picks from saved basalt chips by Conrey and Crow (2014). Descriptions
of sedimentary units are from saved well chip samples provided by Mr. Elmer Johnson, Water Systems Manager, University of Idaho.

Pumphouse 3 (UI Building Number 70) was occupied in 1955 (University of Idaho, 2016).

Latah County Tax Parcel RPM00000072412, owner is UNIVERSITY OF IDAHO, 24 AC SWNW-2, 7 39 5.

References Cited:

WELL LOG AND REPORT TO THE
STATE RECLAMATION ENGINEER OF IDAHO
624840

Owner. University of Idaho
Address. Moscow, Idaho

Driller. Chas. Jungmann Drilling Co.
Address. P.O. Box 423
Lic. No. 206

Location of Well: SW 1/4 NW 1/4 Sec. 7, T. 39 N., R. 10 W., E./W. Idaho County, and N/S, and E/W from
Corner of

Size of Drilled Hole. 24 x 20 x 16 x 12
Total depth of Well. 1336

Give depth of standing water from surface. 256
Water Temp. 62° F.

On pumping test delivery was 2400 g.p.m. or c.f.s. Drawdown was 7 feet.

Size of pump and motor used to make the test. 14" Bovens, 10" Column - Twin 671 GMC Diesels

Length of time pumped during check was 24 hr., 0 minutes.

If flowing well, give flow in c.f.s. or g.p.m. and shut in pressure.

If flowing well, describe control works.

(TYPE AND SIZE OF VALVE, ETC.) 24" 94.62

Water will be used for. University of Idaho
Weight of casing per linear foot. 20 lb. 75 60

Thickness of casing. 3/8"
Casing material. Black Steel
E.G., PIPE, CONCRETE, WOOD.

Diameter, length and location of casing. 24" 1011, 20" 508 1, 16" 890 3, 12" 1289 4
(CASING 12" IN DIAMETER AND UNDER GIVE INSIDE DIAMETER; CASING OVER 12" IN DIAMETER GIVE OUTSIDE DIAMETER.)

Number and size of perforations. 12 " Casing - 3/8" x 6" located 1200-1285 feet to feet from surface of ground.

Other perforations. 16" Casing - 4 around 3/8" x 6" 660 1 775

Date of commencement of well. 7-9-62
Date of completion of well. 9-14-63

Type of well rig. 36 L. Bucyrus Erie

CASING RECORD

<table>
<thead>
<tr>
<th>DIAM.</th>
<th>CASING FROM FEET</th>
<th>TO FEET</th>
<th>LENGTH</th>
<th>&quot;REMARKS&quot;: SEALS, GROUTING, ETC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24&quot;</td>
<td>0</td>
<td>101</td>
<td>101</td>
<td>Grouted</td>
</tr>
<tr>
<td>20&quot;</td>
<td>0</td>
<td>508</td>
<td>508</td>
<td>Grouted</td>
</tr>
<tr>
<td>16&quot;</td>
<td>0</td>
<td>890</td>
<td>890</td>
<td>Grouted</td>
</tr>
<tr>
<td>12&quot;</td>
<td>870</td>
<td>1289</td>
<td>419</td>
<td></td>
</tr>
</tbody>
</table>

GENERAL INFORMATION-Pumping Test, Quality of Water, Etc.

Iron 1.3, P. P., M., Total Hardness 98 P. P., M.

...
## WELL LOG

<table>
<thead>
<tr>
<th>From Feet</th>
<th>To Feet</th>
<th>Type of Material</th>
<th>Drilling Time</th>
<th>Water-bearing Formation to Date</th>
<th>Casing</th>
<th>Drilled For Water or Gas No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>13</td>
<td>Top Soil</td>
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<td></td>
</tr>
<tr>
<td>18</td>
<td>97</td>
<td>Broken Basalt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>166</td>
<td>Basalt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>497</td>
<td>Sedimentary</td>
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<tr>
<td>597</td>
<td>580</td>
<td>Basalt</td>
<td></td>
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</tr>
<tr>
<td>580</td>
<td>610</td>
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<td>631</td>
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<td>837</td>
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<td>1253</td>
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<tr>
<td>1253</td>
<td>1322</td>
<td>Sedimentary</td>
<td></td>
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</tr>
<tr>
<td>1322</td>
<td>1336</td>
<td>Granite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time is not listed for drilling above formations because of the complexities of drilling. This is one of the toughest areas in which to drill a well.

If more space is required use Sheet No. 2

## WELL DRILLERS STATEMENT

This well was drilled under my jurisdiction and the above information is true and correct to the best of my knowledge and belief.

Signed: Shas. Jungmann Drilling Co.

By:

Dated: June 23, 1964

License No.: 996 - 61
(Extracted from Conrey and Crow, 2014)
Stratigraphy of the Columbia River Basalt

<table>
<thead>
<tr>
<th></th>
<th>Magnetic polarity unit**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weissenfels Ridge member</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids member</td>
<td>PRL</td>
</tr>
<tr>
<td>Roza member</td>
<td></td>
</tr>
<tr>
<td>Frenchman Springs member</td>
<td></td>
</tr>
<tr>
<td>Eckler Mountain member</td>
<td></td>
</tr>
<tr>
<td><strong>Sentinel Bluffs unit</strong></td>
<td>SF</td>
</tr>
<tr>
<td>Slack Canyon unit</td>
<td></td>
</tr>
<tr>
<td>Field Springs unit</td>
<td></td>
</tr>
<tr>
<td>Winter Water unit</td>
<td></td>
</tr>
<tr>
<td>Umtanum unit</td>
<td></td>
</tr>
<tr>
<td>Ortley unit</td>
<td></td>
</tr>
<tr>
<td>Armstrong Canyon unit</td>
<td></td>
</tr>
<tr>
<td><strong>Meyer Ridge unit</strong></td>
<td>MR</td>
</tr>
<tr>
<td>Grouse Creek Unit</td>
<td></td>
</tr>
<tr>
<td>Wapshilla Ridge unit</td>
<td>WR, WRH, WRL</td>
</tr>
<tr>
<td>Mt. Horrible unit</td>
<td></td>
</tr>
<tr>
<td>China Creek unit</td>
<td></td>
</tr>
<tr>
<td>Downey Gulch unit</td>
<td></td>
</tr>
<tr>
<td><strong>unnamed High-Si unit</strong></td>
<td>HS</td>
</tr>
<tr>
<td>Center Creek unit</td>
<td></td>
</tr>
<tr>
<td>Rogersburg unit</td>
<td></td>
</tr>
<tr>
<td><strong>Teepee Butte unit</strong></td>
<td>TB</td>
</tr>
<tr>
<td>Buckhorn Springs unit</td>
<td></td>
</tr>
</tbody>
</table>

(Extracted from Conrey and Crow, 2014)
### Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, January 9, 2017

**Well Log ID:** NA

**Elev (ft):** 2553.15

**Depth (ft):** 734

**Quad: Mosco West**

**Latitude:** 46.73512

**Longitude:** -117.024933 decimal degrees (WGS84)

### Well Address and (or) Other Location Information:

285 Farm Road, Moscow, Idaho, on west side of road

### Location Method:

Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Latah County Assessor; Google Earth imagery; topographic map

### GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLeGIC UNIT</th>
<th>DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>No description</td>
<td>From 0 To 25</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Priest Rapids Member</td>
<td>From 25 To 190</td>
</tr>
<tr>
<td></td>
<td>Basalt of Lolo</td>
<td>No description</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
<td>No description</td>
</tr>
<tr>
<td>1Grande Ronde Basalt</td>
<td>R2 magnetostratigraphic unit</td>
<td>No description</td>
</tr>
<tr>
<td></td>
<td>Meyer Ridge Member</td>
<td>No description</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Sediments of Moscow</td>
<td>No description</td>
</tr>
</tbody>
</table>
Grande Ronde Basalt
R2 magnetostratigraphic unit

Mount Horrible member(?)

No description

678 – 734

Comments:

1Conrey and Crow (2014) analyzed two samples from this unit; their data (Stephen P. Reidel, written commun., November 14, 2016) show that the unit belongs to the Meyer Ridge Member.

2Conrey and Crow (2014) infer this unit to be Mount Horrible.

No driller’s report with drill log was located. The footages of the units were estimated from illustrations by Conrey and Crow (2014) and Fiedler (2009, p. 38). Well was modified in 1999 (to a depth of 734 ft).

Latah County Tax Parcel RPM00000120195, owner is UNIVERSITY OF IDAHO.
References Cited:


11. WELL TESTS:
- Yield gal/min.
- Drawdown
- Pumping Level
- Time

Water Temp.
Bottom hole temp.
Water Quality test or comments:
Depth first Water Encountered

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Date Diag.</th>
<th>From</th>
<th>To</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Liner + Seals Top + Button was installed to repair split in 10" casing from approx. 350 to 546 ft. and sealed top of 10" existing liner at 587 ft.

INCLOSED IS DETAILED SKETCH OF REPAIR

13. DRILLER'S CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name: HOLMAN DRILLING CORP, Firm No. 108
Firm Official: Donald A. Holman, Date: JUNE 16, 1999
and
Supervisor or Operator: Donald A. Holman, Date: JUNE 16, 1999

(Sign once if Firm Official & Operator)
Figure 10. Comparison of open hole or screened zones and geology for wells used in this study. Cased (black) and open (blue cross hatch) sections of the wells next to a simplified geology.
Extracted from Conrey and Crow (2014).
University of Idaho well 4 is the fifth column from the left (UI4).
### Stratigraphy of the Columbia River Basalt

<table>
<thead>
<tr>
<th>Saddle Mountains basalt</th>
<th>Weissenfels Ridge member</th>
<th>Magnetic polarity unit**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Priest Rapids member</td>
<td>PRL</td>
</tr>
<tr>
<td></td>
<td>Roza member</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frenchman Springs member</td>
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<td>Wanapum basalt</td>
<td>Sentinel Bluffs unit</td>
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</tr>
<tr>
<td></td>
<td>Slack Canyon unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field Springs unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Winter Water unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Umtanum unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ortley unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Armstrong Canyon unit</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde basalt</td>
<td>Meyer Ridge unit</td>
<td>MR</td>
</tr>
<tr>
<td></td>
<td>Grouse Creek Unit</td>
<td>GC</td>
</tr>
<tr>
<td></td>
<td>Wapshilla Ridge unit</td>
<td>WR, WRH, WRL</td>
</tr>
<tr>
<td></td>
<td>Mt. Horrible unit</td>
<td>MH</td>
</tr>
<tr>
<td></td>
<td>China Creek unit</td>
<td>CH</td>
</tr>
<tr>
<td></td>
<td>Downey Gulch unit</td>
<td>DG</td>
</tr>
<tr>
<td></td>
<td>unnamed High-Si unit</td>
<td>HS</td>
</tr>
<tr>
<td></td>
<td>Center Creek unit</td>
<td>CC</td>
</tr>
<tr>
<td></td>
<td>Rogersburg unit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Teepee Butte unit</td>
<td>TB</td>
</tr>
<tr>
<td></td>
<td>Buckhorn Springs unit</td>
<td>I</td>
</tr>
</tbody>
</table>

---

**Palouse Basin CRB units**

- **N1 Grande Ronde**
- **China Creek is the deepest unit known beneath Moscow**

(Extracted from Conrey and Crow, 2014)
UNIVERSITY OF IDAHO WELL 7
(UI WELL 7)

[DRILLED IN 1993]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, February 18, 2016

Well Log ID: NA Elev (ft): 2610 Depth (ft): 349 Quad: Moscow West

Latitude: 46.729713 Longitude: -117.027828 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
1856 W 6th Street, Moscow, Idaho, University of Idaho Aquaculture Research Laboratory, on south side of street

Location Method:
Location and elevation from Kopp (1994, p. 34); Latah County Assessor; Google Earth imagery; topographic map. Site visit (August 28, 2015).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0 – 15</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, medium brown, silty</td>
<td>15 – 70</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken, weathered with clay</td>
<td>70 – 81</td>
</tr>
<tr>
<td>Basalt</td>
<td>81 – 140</td>
</tr>
<tr>
<td>Basalt, yellow seams</td>
<td>140 – 148</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>148 – 235</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sandstone, siltstone, sand, wood</td>
<td>235 – 349</td>
</tr>
</tbody>
</table>
Comments:

Shallow test holes (40 ft) drilled about 2,000 ft to the east along Perimeter Drive encountered white and brown clay beds showing that the thick clay beds in UI well 7 belong to the sediments of Bovill. (The test holes were drilled by students in 1998 as part of a class exercise.)

Kopp (1994) reported on UI well 7 and two other wells (UI wells 5 and 6) close by (within about 150 ft), also at the Aquaculture Research Lab site. His report noted three important conclusions: (1) water production from coarse sediments far exceeds that from fractured basalt, (2) the Vantage tends to have its coarsest zones at the top and clay beneath, and (3) recharge is suspected to be from the east along mountain fronts.

Latah County Tax Parcel RPM00000129605, owner is UNIVERSITY OF IDAHO.

References Cited:
1. WELL OWNER
   UNIVERSITY OF IDAHO WELL #7
   Address
   Moscow, Idaho 83844-1231
   Drilling Permit No. R7-91-N-2-2-000
   Water Right Permit No. 87-7-7/4

2. NATURE OF WORK
   New well ○ Deepened ○ Replacement
   Well diameter increase ○ Modification
   Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9)

3. PROPOSED USE
   Domestic ○ Irrigation ○ Monitor
   Industrial ○ Stock ○ Waste Disposal or Injection
   Other ○ (specify type)

4. METHOD DRILLED
   X Rotary ○ X Air ○ Auger ○ Reverse rotary
   ○ Cable ○ Mud ○ Other ○ (backhoe, hydraulic, etc)

5. WELL CONSTRUCTION
   Casing schedule:
   Thickness Diameter From To
   +250 inches +15 inches +1 feet +15 feet
   +250 inches +15 inches +1.3 feet +70 feet
   +250 inches +10 inches +2.0 feet +284 feet
   Was casing drive shoe used? ○ Yes ○ No
   Was a packer or seal used? ○ Yes ○ No
   Perforated? ○ Yes ○ No
   How perforated? ○ Factory ○ Knife ○ Torch ○ Gun
   Size of perforation? ○ inches by ○ inches
   Number perforations feet from To
   Number perforations feet from To
   Number perforations feet from To
   Well screen installed? ○ Yes ○ No
   Manufacturer ○ Cook ○ Type Stainless Steel
   Top packer or Headpipe 233 to 286
   Bottom of Tailpipe 349
   Diameter Slotted size Set from Set to
   Diameter Slotted size Set from Set to
   Gravel packed? ○ Yes ○ No ○ Size of gravel
   Placed from feet to feet
   Surface seal depth ○ Material used in seal ○ Cement grout
   Bentonite ○ Puddling clay
   Sealing procedure used: ○ Slurry pit
   ○ Temp. surface casing ○ Overbore to seal depth
   Method of joining casing: ○ Threaded ○ Welded
   ○ Solvent Weld ○ Cemented between strata
   Hole Plug 3/8 55 BAGS
   Describe access port

6. LOCATION OF WELL
   Sketch map location must agree with written location.
   Subdivision Name
   Lot No. Block No.
   County LATAH
   Address

7. WATER LEVEL
   Static water level 183 feet below land surface.
   Flowing? ○ Yes ○ No G.P.M. flow
   Artesian closed-in pressure p.s.i.
   Controlled by: ○ Valve ○ Cap ○ Plug
   Temperature ○ FF ○ Quality
   Describe artesian or temperature zones below

8. WELL TEST DATA
   ○ Pump ○ Bailer ○ X Air ○ Other
   Discharge G.P.M. Pumping Level Hours Pumped
   200+

9. LITHOLOGIC LOG
   | Bore E | Depth From | Material |
   | Water | Yes | No |
   | 0 | 5 | CLAY MED BROWN | X |
   | 10 | 15 | CLAY MED BROWN | X |
   | 12 | 70 | 81 BASALT BROWN/CLAY & SAND | X |
   | 12 | 81 | 140 BASALT DARK GRAY MEDIUM | X |
   | 12 | 140 | 148 BASALT FRACTURED W/YELLOW/SEMS | X |
   | 12 | 148 | 235 BASALT DARK GRAY | X |
   | 12 | 235 | 260 S:1:3 STONE BROWN W/SAND | X |
   | 12 | 260 | 307 SAND W/WOOD W/H COURSE | X |
   | 12 | 307 | 315 STONE GRAY MED HARD | X |
   | 12 | 315 | 340 SAND MED COURSE | X |
   | 12 | 340 | 349 SAND STONE HARD | X |
   | NOTE: 10" 2-K PACKER SET AT 283' TO 285' |
   | 36' OF 5" CASTING W/Screens |
   | 14" CASING REMOVED |
   | 16" SURFACE PIPE REMOVED |

10. Work started 04/15/93 Finished 05/04/93

11. DRILLER'S CERTIFICATION
   We certify that all minimum well construction standards were complied with at the time the rig was removed.
   Firm Name H2O WELL SERVICE Firm No. 8448
   Address 582 E HAYDEN AVE Date 05/04/93
   Signed by Drilling Supervisor and
   Operator (If different than the Drilling Supervisor)
HYDROGEOLOGY OF THE UPPER AQUIFER OF THE PULLMAN-MOSCOW BASIN AT THE UNIVERSITY OF IDAHO AQUACULTURE SITE

A thesis
Presented in Partial Fulfillment of the Requirements for the Degree of Master of Science with a Major in Hydrology in the College of Graduate Studies University of Idaho

by
William Paul Kopp

January 1994

Major Professor: Dale R. Ralston, Ph.D.
Figure 2.3 Generalized East-West geologic cross-section through the Moscow area.
Modified from Lin (1967), Jones and Ross (1972), and Barker (1979).
Figure 2.4 is a north-south geologic cross-section constructed through the Aquaculture site and adjacent areas. The Aquaculture Laboratory facility sits on a small hill that consists of a thick deposit of Palouse loess. The loess and associated alluvial deposits cover the entire study area with no outcrops of bedrock. The thickness of the Palouse Formation in this area is highly variable, ranging from 13 to 17 feet at the UIGRS up to about 75 feet at the Aquaculture well site. The formation consists of fine-grained, dark-brown loess and silty clay in the upper section, in the intermediate section of gray clay, and mixed clay and medium to coarse sand and gravel in the basal section. Locally, one or more of these materials may be absent.

Li (1991) reported that the basalt section in the Wanapum at the UIGRS consists of a single flow, the Lolo flow of the Priest Rapid Member of the Wanapum Basalt. The upper contact of the Wanapum Basalt forms an undulating surface that ranges in elevation from about 2532 feet (AMSL) at the UIGRS to between 2546 and 2560 feet (AMSL) at the Aquaculture well site. The base of the flow is located at an elevation of 2343 feet (AMSL) at the UIGRS and between 2370 to 2379 feet (AMSL) at the Aquaculture wells. The total thickness is 167 to 190 feet. The thickness varies notably over short distances. At well UI No. 7 the thickness is 167 feet, whereas 122 feet to the south at well UI No. 6 the basalt is
Figure 2.4  GENERALIZED NORTH-SOUTH GEOLOGIC CROSS SECTION THROUGH THE AQUACULTURE SITE AND THE ADJACENT AREAS
190 feet thick. At the UIGRS only the INEL well fully penetrates the Lolo flow.

Li (1991) described two types of interflow structures in the Lolo flow. He based his observations on outcrops at a highway department rock quarry located about five miles west of the UIGRS. The structures are: 1) thick columnar sections with alternating entablature and colonnade in the lower section and hackly entablature in the upper section; and 2) dense massive dark-gray basalt lacking distinct flow tops and vesicular zones. The upper one-third of the Lolo flow contains oxidized flow tops with large frothy blocks and abundant sub-horizontal conchoidal fractures. Examination of drill hole cuttings from wells at the Aquaculture site indicate similar features.

Underlying the Lolo flow is a thick section of sediments. Although geologically correlative with the Latah formation, this layer is hydrologically regarded as part of the Wanapum Basalt aquifer system (upper aquifer). This sediment layer is wide-spread in the eastern part of the Pullman-Moscow Basin, but generally pinches out to the west of Moscow. All three Aquaculture wells (UI No.'s 5, 6 and 7) were bottomed in the upper one-third of this sediment unit. Drill logs from wells UI No. 3 and Moscow No. 6 and No. 9 show this layer to be up to 300 feet thick to the east and north of the study area. Well UI No. 5 penetrated only the upper seven feet of the sediments. Wells UI No. 6 and No. 7 penetrated 111 and
113 feet of sediments, respectively. At the Aquaculture site, the top of the sediments is an olive-brown poorly cemented sandstone-siltstone layer ranging from 17 to 31 feet thick. Underlying this layer is 40 to 76 feet of light-tan, fine-to-medium-grained, unconsolidated silt and sand. The sand grades downward into a 2 to 6 foot-thick layer of poorly to moderately consolidated siltstone and sandstone. A two-foot layer of light and dark-gray thinly laminated siltstone is present in well UI No. 7 at the top of this sandstone layer. The siltstone facies is not present in well UI No. 6, 122 feet to the south of well UI No. 7. Underlying the siltstone-sandstone layer are 40 to 50 feet of the same unconsolidated sand and silt described above this layer. The last nine feet in well UI No. 7 encountered a hard, compact, moderately consolidated siltstone-sandstone layer with apparent low permeability.

The sand-silt material consists mostly of angular, glassy quartz grains with abundant tan sub-rounded feldspar grains. Abundant biotite, minor muscovite and minor amounts of a vitreous yellow mineral (sphene or olivine?) make up the accessory minerals. Dark-brown fragments of wood are locally abundant within the sand-silt layer. Variable amounts of light-tan to dark-brown clay are present in most of these sediment layers. Much of the clay-sized fraction was lost in the drill hole sampling, making an estimate of the actual clay content difficult to determine.
The underlying stratigraphy of the sediment unit below the bottom of well UI No. 6 (elevation 2268 feet AMSL) can only be inferred from the few other deep wells that are located several thousands of feet to the north and east of the Aquaculture site. Logs from these wells indicate a higher percentage of clay within the lower two-thirds of this unit.

The Grande Ronde Basalt underlies the sediment unit. At least three sections of Grande Ronde Basalt separated by interbedded sediments are indicated in logs from deep wells in this part of the basin. On the basis of logs from these other wells, the crystalline basement is estimated to lay at a depth of about 1400 feet below the Aquaculture site.

REGIONAL HYDROGEOLOGY

Ground water comes from three separate hydrostratigraphic units in the Pullman-Moscow Basin. These are: 1) the loess and shallow alluvial sediments; 2) the basalt and associated interbeds; and 3) the crystalline basement rocks. The shallow unconfined aquifer in the loess probably was an important source of groundwater during the early years of development in the basin, but is now used only as a source for small domestic and stock wells. The loess and shallow alluvial deposits yield up to 30 gallons per minute to wells in the basin (Baines, 1992). Static water levels generally range from surface to a depth of 60 feet, but may be deeper.
Figure 3.1 General plan of the Aquaculture site and UIGRS showing location of wells.
DESCRIPTION OF WELL UI NO. 7

Based on the favorable results obtained from test well UI No. 6, a second, production well was drilled at the Aquaculture site in mid-April, 1993. This well referred to as UI No. 7 is located approximately 20 feet to the south of well UI No. 5. The well construction and log for the geology and hydrology for this well are shown in figure 3.4.

The geology of well UI No. 7 consists of light-to-medium brown loess from the collar of the hole to a depth of 72 feet. No significant ground water is present in this formation. The Lolo basalt is encountered from 72 feet to 239 feet. Water-bearing fractured zones are present in the basalt at 110 to 121 feet, 180 to 195 feet and from 200 to 239 feet. A water yield estimated at 50 to 80 gallons per minute is posted in the drillers log for the zone at 180 to 195 feet. From 239 feet to the bottom of the hole at 350 feet, the well penetrates the sediment interbed underlying the Lolo flow. The upper 31 feet of this section consists of poorly consolidated medium-tan, fine-grained sandstone. Underlying this layer is a 40-foot section of fine-to-medium grained unconsolidated sand. At 310 to 312 feet the hole penetrates a light-gray, thinly laminated, well-consolidated siltstone. The siltstone grades sharply downward into a thin layer of medium-grained sandstone. No water occurs in this siltstone-sandstone layer, and the unit forms a low permeability
WELL LOG FOR UI NO. 7

GEOLoGY
0 To 72 Ft. PAUeUSE FORMATION 0 To 38 Ft. CLAY LOESS, Med-Brown
38 To 50 Ft. LOESS & SAND, Mixed GRAVEL
54 To 72 Ft. SAND & Silt, Unconsolidated, G7-12m
72 To 230 Ft. WAPAPU BASALT 72 To 83 Ft. BASALT, Weathered, Pressured Veinseta
83 To 100 Ft. BASALT, Mixed Vesicles
100 To 110 Ft. BASALT, Hard, Massive
1110 To 121 Ft. BASALT, Veinseta, Pressured Water-bearing
1210 To 180 Ft. BASALT, Hard, Massive

230 To 350 Ft. WAPAPU SEDIMENTS
230 To 270 Ft. SEDIMENT, Pounded Fine-Grained, Permeable
270 To 310 Ft. SAND, Unconsolidated Fine To Medium Grained, Light-Gray
G7 & Feldspar Rich, Water-bearing
310 To 350 Ft. SAND/SILTSTONE
350 To 390 Ft. Siltstone/Sandstone

ELEVATION
2617 (In Feet) 0
DEPBoTH
2567 -50 0 To 88 Ft. 10-Inch DRILL HOLE & Steel CASING
2517 -100 0 To 88 Ft. BENTONITE SURFACE SEAL
2467 -150 0 To 85 Ft. 10-Inch DRILL HOLE & Steel CASING
2417 -200 0 To 85 Ft. Steel CASING
2367 -250 213 To 350 Ft. 10-Inch DRILL HOLE
2317 -300 203 To 301 Ft. 10 In. Steel Wire Screen
2267 -350 251 To 304 Ft. Steel Wire Screen

HYDROLOGY
G To 88 Ft. CLAY LOESS, Med-Dark Brown

Figure 3.4 Geology and well completion log for well UI No. 7.
Aquitard between two thick sand layers. A second section of unconsolidated sand is present below the siltstone-sandstone aquitard. This sand layer has a minimum thickness of 36 feet and continues to the bottom of the well. Both sand layers are highly water-bearing although no estimate of the flow rate for either aquifer is on the drillers log.

UI No. 7 is drilled as a 14-inch diameter hole from surface to a depth of 69 feet. From 69 to 273 feet the hole is 12 inches in diameter. The lower section of the drill hole from 273 to 350 feet is 10 inches in diameter. A 10-inch outside diameter steel casing is installed in the well from land surface to a depth of 285 feet.

The well screen assembly is at a depth of 280 to 348 feet. A 10-foot section of 6-inch mild steel casing blank is installed at the top of the well screen assembly at 280 to 290 feet. Two sections of 6-inch 304 stainless steel wire wrap telescoping well screen are emplaced below the casing blank. The upper section of well screen consists of a 10.5-foot-long section of 20 slot screen at 290.5 to 301 feet. This screen is open in the upper sand aquifer. A 17-foot section of blank casing separates the two screened intervals. The lower section of well screen is at a depth of 318 to 339 feet, and consists of a 21-foot long section of 30 slot screen. This section of well screen is open in the lower sand aquifer. A nine-foot section of blank mild steel casing with a bottom plate seal is attached to the lower section of well screen.
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 15, 2016

Well Log ID: NA  Elev (ft): 2615  Depth (ft): 493  Quad: Moscow East

Latitude: 46.725569  Longitude: -116.955465  decimal degrees (WGS84)

NE ¼, SW ¼, NW ¼, Sec. 15, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
1025 Plant Science Road, Moscow, Idaho, University of Idaho nursery, on south side of road; north of ID 8 (Troy Highway). Dark green, cement-block well/pump house is near sheds.

Location Method:
Location is for well house; Latah County Assessor; Google Earth imagery; topographic map; Crosthwaite (1975, fig. 5). Site visit (April 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Silt</td>
<td>0 – 20</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Sand, coarse</td>
<td>20 – 30</td>
</tr>
<tr>
<td>Clay, sandy, light gray to dark gray</td>
<td>30 – 80</td>
</tr>
<tr>
<td>Clay, silty, dark brown</td>
<td>80 – 105</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, dark</td>
<td>105 – 283</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow, red, blue</td>
<td>283 – 325</td>
</tr>
<tr>
<td>Sand, with clay and silt</td>
<td>325 – 360</td>
</tr>
<tr>
<td>Clay, silty, brown to red</td>
<td>360 – 410</td>
</tr>
</tbody>
</table>
Sand, with clay and silt 410 – 420
Clay, sandy, brown 420 – 470
Sand, coarse, quartzose 470 – 480
Clay, sandy, brown 480 – 488
Sand, coarse grained, quartz rich, 10 percent basalt fragments, 20 percent siltstone(?), rounded to subrounded, moderately well sorted 488 – 493

Comments:

Chips for this well were provided by Mr. Elmer Johnson, Water Systems Manager, University of Idaho. John Bush examined them and revised the description provided by Smith (1958) and Crosswaite (1975) for the 488–493 ft interval. According to Gill (1998) the well is capable of producing 400 gallons per minute (gpm); concrete plug at 273 ft (Smith, 1958) would indicate all water is from the basalt.

The pumphouse (UI Building Number 138) was occupied in 1956 (University of Idaho, 2016).

Latah County Tax Parcel RP39N05W152425, 3751 PARKER RD, owner is UNIVERSITY OF IDAHO.
References Cited:


Smith, H.L., 1958, Well logs: Moscow, Idaho, City of Moscow Engineer’s Office drawing, scale 1:480.

### 39N-5W-15dcl. Elk's Golf Course #3

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
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<tr>
<td>Topsoil</td>
<td>2</td>
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</tr>
<tr>
<td>Clay, gray, soft</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Clay, white, soft, and sand, fine</td>
<td>28</td>
<td>40</td>
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<tr>
<td>Clay, white, soft, and sand</td>
<td>5</td>
<td>45</td>
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<tr>
<td>Clay, brown, soft</td>
<td>6</td>
<td>51</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>94</td>
<td>145</td>
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<td>Basalt, broken, and clay</td>
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<td>168</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>8</td>
<td>176</td>
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<td>Clay, white and brown</td>
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<td>185</td>
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<tr>
<td>Clay, white</td>
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<td>188</td>
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<td>Clay, tan</td>
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<td>200</td>
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<td>Clay, brown, sandy</td>
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<td>254</td>
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<td>Clay, gray, sandy, water</td>
<td>16</td>
<td>270</td>
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### 39N-5W-15dbbl. Oscar Nelson

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<td>30</td>
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<td>Clay, white</td>
<td>60</td>
<td>90</td>
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<td>Clay, brown, with wood, water</td>
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<td>Basalt, very hard, water</td>
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### 39N-5W-15dbbl. John Eldridge

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<td>86</td>
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<tr>
<td>Basalt</td>
<td>91</td>
<td>177</td>
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<td>Scoria, porous, water</td>
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<td>179</td>
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<td>Basalt</td>
<td>7</td>
<td>186</td>
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### 39N-5W-15dbb2. Cliff Latham

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<td>Clay</td>
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<tr>
<td>Gravel</td>
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<tr>
<td>Sand and clay</td>
<td>56</td>
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<tr>
<td>Basalt, black</td>
<td>42</td>
<td>126</td>
</tr>
<tr>
<td>Scoria, porous, water</td>
<td>16</td>
<td>142</td>
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<tr>
<td>Basalt, black, water</td>
<td>14</td>
<td>156</td>
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### 39N-5W-16acal. Tom Mitzimberg

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<td>Sand</td>
<td>4</td>
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<td>Clay, gray</td>
<td>11</td>
<td>50</td>
</tr>
<tr>
<td>Clay, white</td>
<td>5</td>
<td>55</td>
</tr>
<tr>
<td>Granite, decomposed</td>
<td>8</td>
<td>63</td>
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Extracted from Crosthwaite (1975, p. 46).
Introduction

The following report summarizes the results from my investigation of the Elk’s Golf Course water wells. The four wells currently at the Elks include:

- Well 1 (by house) - pump pulled and backfilled with sand or slurry to a depth of 41’ below surface,
- Well 2 (by highway) - pump was pulled Feb. 11, 1998 - only well with a detailed well log (see Appendix A), this well was used as the observation well for the aquifer test
- Well 3 (by creek) - the only well presently used for irrigation, this well was used as the pumping well for the aquifer test and
- Well 4 (by driveway) - present drinking water well.

Currently, the wells do not produce adequate water to irrigate the course during the 60 to 120 days of hot weather each summer. Present capacity is thought to be approximately 100 gallons per minute (gpm) from Well 3. Improvements in course irrigation and construction of a larger reservoir (northeast of present course) will result in a required capacity of nearly 300 gpm during the summer months.

Purpose

The purpose of my investigation is to provide information on the hydrogeologic characteristics of the aquifer below the Elk’s Golf Course. This information will enable Dr. John Bond, P.G., to determine what course of action needs to be taken to increase the present pumping capacity at the Elk’s. Wells 2 and 3 are completed in the Wanapum Basalt formation; this formation is characterized as a confined aquifer offering good water bearing capability. Reviewing other local wells completed in the Wanapum shows that the well at the University of Idaho Farm (1/4 mile west) is capable of producing 400 gallons per minute (gpm), the old Moscow Cemetery Well was capable of producing nearly 800 gpm and City of Moscow Wells 2 and 3, each produce 1000 gpm. The wells in the Wanapum Basalt tend to have high concentrations of iron (Fe) and Manganese (Mn) which is not a problem for irrigation.

(Extracted from Gill, 1998)
**WILLIAM VENOSDEL WELL 1**

**[DRILLED IN 1980]**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, May 14, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2663</th>
<th>Depth (ft):</th>
<th>78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quad:</td>
<td>Moscow East</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Latitude: **46.745203°**  
Longitude: **-116.975467°**  
decimal degrees (WGS84)

| ¼, SW ¼, SW ¼, Sec. 4 | T. 39 N | R. 5 W |

**Well Address and (or) Other Location Information:**  
1275 Mountain View Road, Moscow, Idaho; on north side of road

**Location Method:**  
Location is for well (latitude, longitude and elevation from Candel, 2014, p. 163, well sample 1); Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown and yellow</td>
<td>2 – 65</td>
</tr>
<tr>
<td>Clay, sand, and gravel</td>
<td>65 – 78</td>
</tr>
</tbody>
</table>

1799
Comments:
Latah County Tax Parcel RP39N05W046573, owner is VENOSDEL, WILLIAM JAMES; 1275 MTN VIEW RD; 4.37 AC TAX #4873; 0.73 AC TAX #6887; 4395.

References Cited:
1. WELL OWNER
Name: William Venosdel
Address: 544 N. Washington, Moscow, ID 83843
Owner's Permit No.: 87-20-N-ID

2. NATURE OF WORK
☐ New well  ☐ Deepened  ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☐ Domestic  ☐ Irrigation  ☐ Test  ☐ Other (specify type)
☐ Municipal  ☐ Industrial  ☐ Stock  ☐ Waste Disposal or Injection

4. METHOD DRILLED
☐ Cable  ☐ Rotary  ☐ Dug  ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches  Total depth: 78 feet
Casing schedule: ☑ Steel  ☑ Concrete

<table>
<thead>
<tr>
<th>Thickness inches</th>
<th>Diameter inches above 2ft</th>
<th>Total depth feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>8</td>
<td>78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

Was casing drive shoe used? ☑ Yes  ☐ No
Was a packer or seal used? ☑ Yes  ☐ No
Perforated? ☑ Yes  ☐ No
How perforated? ☑ Factory  ☐ Knife  ☐ Torch
Size of perforation:  inches by  inches

Number of perforations from feet to feet
perforations to feet
perforations to feet

Well screen installed? ☑ Yes  ☐ No
Manufacturer's name:

0054005

6. LOCATION OF WELL
Sketch map location must agree with written location.

7. WATER LEVEL
Static water level: 57 ft below land surface.
Flowing? ☑ Yes  ☐ No  G.P.M. flow
Temperature: 60°F.  Quality:
Artesian closed-in pressure:  p.s.i.
Controlled by: ☑ Valve  ☐ Cap  ☐ Plug

8. WELL TEST DATA
☐ Pump  ☐ Bailer  ☐ Other
Discharge G.P.M.: 15
Drawdown:
Hours Pumped:

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth</th>
<th>Material</th>
<th>Water Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>0</td>
<td>2 Black dirt</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>2</td>
<td>12 Yellow clay</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>12</td>
<td>17 Dark brown clay</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>17</td>
<td>30 Yellow clay</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>20</td>
<td>65 Lt brown clay</td>
<td>x</td>
</tr>
<tr>
<td>&quot;</td>
<td>65</td>
<td>78 Lt clay, sand &amp; gravel</td>
<td>x</td>
</tr>
</tbody>
</table>

10. Work started: 7-28-80  finished: 8-2-80

11. DRILLERS CERTIFICATION
Firm Name: Don Town Well Drilling  Firm No.: 115
Address: Rt 4 Box 429, Moscow, ID 83843  Date: 8-26-80
Signed by (Firm Official)  83843
(Operator)  //  //

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT
**VIOLA CITY WELL 1**

[Drilled in 1984]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 17, 2016

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2685 ±10</th>
<th>Depth</th>
<th>350</th>
<th>Quad:</th>
<th>Viola</th>
</tr>
</thead>
</table>

Latitude: 46.836516  Longitude: -117.039585  decimal degrees (WGS84)

**NE ¼,  NW ¼,  SW ¼,  Sec. 1,  T. 40 N,  R. 6 W**

**Well Address and (or) Other Location Information:**
Viola Road, Viola, Idaho, on south side of road; well is on south side of well house and just east of the Washington-Idaho state line.

**Location Method:**
Location is for well; Latah County Assessor; Google Earth imagery; topographic map. Site visit (August 30, 2015)

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 4</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>4 – 30</td>
</tr>
<tr>
<td>Sand, with clay and mica</td>
<td>30 – 110</td>
</tr>
<tr>
<td>Sand, with clay</td>
<td>110 – 144</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>144 – 145</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>145 – 342</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, tan, coarse-grained</td>
<td>342 – 350</td>
</tr>
</tbody>
</table>
Comments:

The granite noted on driller’s report from 30–110 ft is interpreted as sand with clay. Granite in this area cannot overlie the basalt and sand. The Lolo flow is more than 200 ft thick here, suggesting it is near constricting valley walls of the pre-basalt rocks which caused it to thicken from an average of 160 ft in thickness to the west.

Latah County Tax Parcel RP40N06W015431, owner is VIOLA WATER & SEWER DISTRICT, 0.3 AC GOVT LOT 6, 1 40 6.

References Cited:
**STATE OF IDAHO**
**DEPARTMENT OF WATER RESOURCES**

**WELL DRILLER’S REPORT**
State law requires that this report be filed with the Director, Department of Water Resources, within 30 days after the completion or abandonment of the well.

### 1. WELL OWNER
- **Name:** Viola Water & Sewer District
- **Address:** Viola Post Office
- **Owner’s Permit No.:** 87-84-N-2

### 2. NATURE OF WORK
- New well
- Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

### 3. PROPOSED USE
- Domestic
- Irrigation
- Test
- Municipal
- Industrial
- Stock
- Waste Disposal or Injection
- Other

### 4. METHOD DRILLED
- XX Rotary
- Air
- Hydraulic
- Reverse rotary
- Dug
- Other

### 5. WELL CONSTRUCTION
- Casing schedule: XX Steel
- Other
- Thickness: 250 inches 10 inches + 1.5 feet 145 feet
- Diameter: 250 inches 8 inches + 2.0 feet 335 feet

### 6. LOCATION OF WELL
- Sketch map location must agree with written location.

### 7. WATER LEVEL
- Static water level: 140 feet below land surface.
- Flowing: Yes
- G.P.M. flow
- Artesian closed-in pressure: p.s.i.
- Controlled by: Valve
- Cap
- Plug
- Temperature: °F.
- Quality
- Describe artesian or temperature zones below.

### 8. WELL TEST DATA
- | Discharge G.P.M. | Pumping Level | Hours Pumped |
- |---------------|---------------|--------------|
- | 115           | 283.8         | 4.0          |

### 9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Bore Diam.</th>
<th>Depth From</th>
<th>Material</th>
<th>Water Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>14&quot;</td>
<td>0</td>
<td>Top soil; brown</td>
<td>x</td>
</tr>
<tr>
<td>14&quot;</td>
<td>4</td>
<td>Clay, hard, brown &amp; tan</td>
<td>x</td>
</tr>
<tr>
<td>14&quot;</td>
<td>30</td>
<td>110 Granite, decomposed, soft</td>
<td>x</td>
</tr>
<tr>
<td>14&quot;</td>
<td>110</td>
<td>144 Sand, clay, decomposed granite, quartzite</td>
<td>XX</td>
</tr>
<tr>
<td>14&quot;</td>
<td>144</td>
<td>145 Basalt, gray, fractured</td>
<td>x</td>
</tr>
<tr>
<td>10&quot;</td>
<td>145</td>
<td>1170 Basalt, hard, black</td>
<td>x</td>
</tr>
<tr>
<td>10&quot;</td>
<td>170</td>
<td>274 Basalt, gray, hard</td>
<td>x</td>
</tr>
<tr>
<td>10&quot;</td>
<td>274</td>
<td>342 Basalt, gray, medium</td>
<td>x</td>
</tr>
<tr>
<td>10&quot;</td>
<td>342</td>
<td>350 Sand, tan, course w/water</td>
<td>XX</td>
</tr>
</tbody>
</table>

No PVC Liner Installed
10" Drive shoe Installed

### 10. Work started: 5/24/84 finished: 6/12/84

### 11. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

- **Firm Name:** PONDEROSA DRILLING
- **Firm No.:** 228
- **Address:** 6010 Broadway
- **Date:** 6/12/84
- **Signed by:** (Firm Official) W. Scott Barrett
- (Operator) Keith Vermillion

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
**BRYAN WACKER WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, February 7, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>436216</th>
<th>Elev (ft):</th>
<th>2550 ±10</th>
<th>Depth (ft):</th>
<th>178</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Albion</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Latitude:</th>
<th>46.756271°</th>
<th>Longitude:</th>
<th>-117.144536°</th>
<th>decimal degrees (WGS84)</th>
</tr>
</thead>
</table>

| ¼, NW ¼, SE ¼, Sec. 28, T. 15 N, R. 45 E |

**Well Address and (or) Other Location Information:**
1601 Kitzmiller Road, Pullman, Wash.; on south side of road (west of Eagle Lane)

**Location Method:**
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; driller’s report switched ¼-¼ with ¼ section; site visit March 27, 2018 — well not observed

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 51</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>51 – 177</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, black</td>
<td>177 – 178</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515284290, 1601 KITZMILLER RD, PULLMAN 99163, SE1/4 NW1/4 LT A OF AGRI-AC #2, owners are WACKER, BRYAN/KARINE; 30.0 acres; 2 story residence built in 2006.

Above left, plat map is titled "J.J. Streibick Agricultural Acres No. 2" parcel (label highlighted in yellow); Above right, photo of home (red with silo at 1601 Kitzmiller Road), viewed from Warren Road.

References Cited:
**WATER WELL REPORT**

**Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller**

**Construction/Decommission ("x" in circle)** 193624

<table>
<thead>
<tr>
<th>PROPOSED USE:</th>
<th>Domestic</th>
<th>Industrial</th>
<th>Municipal</th>
<th>DeWater</th>
<th>Irrigation</th>
<th>Test Well</th>
<th>Other</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>TYPE OF WORK:</th>
<th>Owner's number of well (if more than one)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New Well</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIMENSIONS:</th>
<th>Diameter of well</th>
<th>8 inches, gridded</th>
<th>178 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth of completed well</td>
<td>128 ft.</td>
<td></td>
</tr>
<tr>
<td>CONSTRUCTION DETAILS</td>
<td>Casing:</td>
<td>Welded</td>
<td>8&quot; Diam. from 1 ft. to 57 ft.</td>
</tr>
<tr>
<td></td>
<td>Installed:</td>
<td>Liner installed</td>
<td>Diam. from ft. to ft.</td>
</tr>
<tr>
<td></td>
<td>Perforations:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Type of perforator used</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIZE of perfs. in. by in. and no. of perfs. from ft. to ft.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Screens:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Manufacturer's Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type</td>
<td>Model No.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diam.</td>
<td>Slot Size</td>
<td>from</td>
</tr>
<tr>
<td></td>
<td>Diam.</td>
<td>Slot Size</td>
<td>from</td>
</tr>
<tr>
<td></td>
<td>Gravel/Filter packed:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Materials placed from</td>
<td>to ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface Seal:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Materials used in seal</td>
<td>Bentonite</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Did any strata contain usable water:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Type of water:</td>
<td>Depth of strata</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method of sealing strata off</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| PUMP: | Manufacturer's Name |
|       | Type: | H.P. |

| WATER LEVELS: | Land-surface elevation above mean sea level | ft. |
|               | Static level | 144 | ft. below top of well |
|               | Date | 7/15/65 |
|               | Artesian pressure | lbs. per square inch |
|               | Date |
|               | Artesian water is controlled by (cap, valve, etc.) |

| WELL TESTS: | Drawdown is amount water level is lowered below static level. |
|             | Was a pump test made: | Yes | No |
|             | If yes, by whom? |
|             | Yield: | gal./min. with ft. drawdown after hrs. |
|             | Yield: | gal./min. with ft. drawdown after hrs. |
|             | Yield: | gal./min. with ft. drawdown after hrs. |
|             | Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level) |
|             | Time | Water Level | Time | Water Level |
|             | Date of test |
|             | Date | |
|             | Date | | |
|             | Date | | |
|             | Temperature of water | Was a chemical analysis made: | Yes | No |

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller / Engineer / Trainee Name (Print) Roger Witt

Driller or Trainee License No. 0623

Drilling Company: WittWell Drilling

Address: 2691 S.E. 37th Grade Rd

City, State, Zip: Julietta, Id. 83535

Contractor's Registration No. WIT003588; Date 8/1/05

Ecology is an Equal Opportunity Employer. ECY 050-1-20 (Rev 4/01)
LES AND SHELBY WAGNER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 17, 2016

Well Log ID: 616900  Elev (ft): 2580 ±10  Depth (ft): 230  Quad: Viola

Latitude: 46.873109  Longitude: -117.116965  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
451 Mader Road, Palouse, Wash., about 0.5 mi east of WA 27, on south side of road; well is up the hill, on east side of driveway

Location Method:
Location is for well which is visible from road; Whitman County Assessor; Google Earth imagery; topographic map. PLSS range, subdivision, and tax parcel are incorrect on driller's report. Site visit (April 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>1 – 57</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>57 – 187</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>187 – 195</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>195 – 213</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>213 – 219</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>219 – 230</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516143290, 451 MADER RD, SW1/4 PT NW1/4 L & S WAGNER SHPLT 3.26AC, owners now are ARLT, DOUGLAS W/PAULETTE; house built in 2004.

[Whitman County Tax Parcel 200004516143900 is listed on driller's report, but the County Assessor lists that property as having land only (no improvements); SW1/4 BAL 154.73 AC ; owners are WAGNER, LESLIE D/SHELBY J (5601 CLEAR CREEK RD, PALOUSE).]

References Cited:
WATER WELL REPORT

CONSTRUCTION/DECOMMISSION

NOTICE OF INTENT NUMBER 1981

PROPOSED USE: ☐ Domestic ☐ Irrigation ☐ Test Well ☐ Other
☐ Domestic ☐ Industrial ☐ Municipal

TYPE OF WORK: Owner’s number of well (if more than one)
☐ New well ☐ Reconditioned Method: ☐ Dug ☐ Bored ☐ Driven
☐ Deepened ☐ Cable ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 8 5/8 inches, drilled 196290 ft.
Depth of completed well 230 ft.

CONSTRUCTION DETAILS

Casing: ☐ Welded 8 5/8 Diameter from 51 ft. to 53 ft.
Installed: ☐ Liner installed 8 5/8 Diameter from 56 ft. to 196 ft.
☐ Threaded 8 5/8 Diameter from 56 ft. to 196 ft.

Perforations: ☐ Yes ☐ No
Type of perforator used SAW

SIZE of perfor in. by ft. and no. of perfi from XXX4 from XXX4 to XXX4 ft.

Screen: ☐ Yes ☐ No ☐ K-Pac Location
Manufacturer’s Name

Type
Model No.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth? 630 ft.
Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☐ No
Type of water? Depth of strata

Method of sealing strata off

PUMP: Manufacturer’s Name
Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.
Static level 127 ft. below top of well Date 9/25/03
Artesian pressure lbs. per square inch Date
Artesian water is controlled by ___________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal/min. with ______ ft. drawdown after ______ hrs.
Yield: gal/min. with ______ ft. drawdown after ______ hrs.
Yield: gal/min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal/min. with ______ ft. drawdown after ______ hrs.
Airtest 80 gal/min. with stem set at ______ ft. for ______ hrs.
Artesian flow g.p.m. Date
Temperature of water 55 Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I, the undersigned, do hereby certify that I constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller ☐ Engineer ☐ Trainee Name (Print) TED WRIGHT
Driller/Engineer/Trainee Signature

Driller or trainer’s License No.

IF TRAINEE: Driller’s License No.
Driller’s Signature

CURRENT

Notice of Intent No. W166153
Unique Ecology Well ID Tag No. AHR703
Water Right Permit No.

Property Owner Name LES & SHELBY WAGNER
Well Street Address 1 MILE EAST ON MADER RD
City PALOUSE County WHITMAN
Location SW1/4-1/4 SW1/4 Sec 14 Twn 16N R 43 EWM 85 WWM 85
(s. t. r. Still Required)

Lat/Long Lat Deg ______ Lat Min/Sec ______
Long Deg ______ Long Min/Sec ______

Tax Parcel No. (Required) 20000-45-16-14-3900

CONSTRUCTION OR DECOMMISSION PROCEDEE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (Use additional sheets if necessary)

MATERIAL FROM TO
SOIL BLACK 0 1
CLAY LIGHT BROWN STIFF 1 57
BASALT STRONG BLACK 57 187
BASALT WEATHERED WEAK 187 195
BASALT STRONG BLACK 195 213
BASALT WEATHERED WEAK 213 219
BASALT STRONG BLACK 219 230

SEP 11 2009

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Start Date 9/25/03 Completed Date 9/29/03

The Department of Ecology does NOT warrant the Data and/or Information on this Water Report.
RICH WALDRON WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, May 15, 2018

Well Log ID: NA Elev (ft): 2618 Depth (ft): 305 Quad: Moscow East

Depth

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>56</td>
<td>240</td>
</tr>
<tr>
<td>*Idaho Batholith</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>240</td>
<td>305</td>
</tr>
</tbody>
</table>

Latitude: 46.740652° Longitude: -116.942193° decimal degrees (WGS84)

¼, SE ¼, NE ¼, Sec. 10, T. 39 N, R. 5 W

Well Address and (or) Other Location Information:
Inside southeast corner of Mill and Robinson Park Roads, Moscow, Idaho

Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006); Latah County Assessor; Google Earth imagery; topographic map

*Difficult to determine contact between granite and sediments of Bovill (Latah Formation)
Comments:

Latah County Tax Parcel not listed online (May 12, 2018).

References Cited:

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER’S REPORT

1. WELL OWNER
Name: Ricks Wallace
Address: Moscow
Owner's Permit No.: 87-78-N-1

2. NATURE OF WORK
☑ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☑ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)
☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED
☐ Cable ☑ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Diameter of hole: 8 inches
Total depth: 300 feet
Casing schedule: ☑ Steel ☐ Concrete

Thickness: 1350 inches
Diameter: 6 inches
From feet: 0 feet
To feet: 300 feet

Was casing drive shoe used? ☑ Yes ☐ No
Was a packer or seal used? ☑ Yes ☐ No
Perforated? ☑ Yes ☐ No
How perforated? ☑ Factory ☐ Knife ☑ Torch
Size of perforation: 1/2 inches by 1/2 inches
Number of perforations: 500
From feet: 0 feet
To feet: 300 feet

6. LOCATION OF WELL
Sketch map location must agree with written location.

Subdivision Name: 
Lot No.: Block No.: 
County: Latah

7. WATER LEVEL
Static water level: 103 feet below land surface.
Flowing? ☑ Yes ☐ No G.P.M. flow
Temperature: ☑ 0°F. Quality:
Artesian closed-in pressure: p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA
☐ Pump ☐ Bailer ☑ Other
Discharge G.P.M.: 4.5
Drawdown: 11.5
Hours Pumped: 4.5
Air Test

9. LITHOLOGIC LOG

<table>
<thead>
<tr>
<th>Hole Diameter</th>
<th>Depth From</th>
<th>Material</th>
<th>Water Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>To feet</td>
<td>inches</td>
<td>Yes</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Soil</td>
<td>X</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>Clay</td>
<td>X</td>
</tr>
<tr>
<td>15</td>
<td>30</td>
<td>Cemented Sand</td>
<td>X</td>
</tr>
<tr>
<td>24</td>
<td>47</td>
<td>Sandstone</td>
<td>X</td>
</tr>
<tr>
<td>34</td>
<td>60</td>
<td>Cemented Sand</td>
<td>X</td>
</tr>
<tr>
<td>40</td>
<td>80</td>
<td>300 feet</td>
<td>X</td>
</tr>
</tbody>
</table>

10. Work started: 10/2/78 finished: 10/9/78

11. DRILLERS CERTIFICATION

Firm Name: Copher Drilling
Firm No.: 115
Address: Moscow, Idaho
Date: 10/2/78

Signed by (Firm Official) and (Operator):

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT
SUSAN WALLER WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 17, 2016

Well Log ID: 876269  Elev (ft): 2520 ±10  Depth (ft): 100  Quad: Elberton

Latitude: 46.876707  Longitude: -117.128040  decimal degrees (WGS84)

1/4, SE 1/4, NW 1/4, Sec. 15, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
13862 WA State Route 27, Palouse, Wash., west side of road, north of Mader Road and south of Clear Creek Road.

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivisions incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 0 – 31</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>From 31 – 53</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 53 – 72</td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>From 72 – 100</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004516152590, 13862 SR 27, NW PT E1/2, now owned by MOORE, BARRY/DANNA; 12.0 acres, 1½ story residence built in 1907; grantor was WALLER, SUSAN M on 7/8/2013.

References Cited:
WATER WELL REPORT

Notice of Intent Number: WE15286
Property Owner Last Name: Waller
First Name: Susan
Organization Name:

Well Tag ID Number (e.g., AAA-001): 8CP 077
Variance Granted? (Circle One) Yes No
Water Right Permit Required? (Circle One) Yes No
If Yes, enter Water Right Permit Here (Required):

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Domestic
- Individual Irrigation
- Parks and recreation
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Hydrofracturing
- Deepened Well
- Replacement
- Other

Method (Circle One):
- Cable
- Dug
- Driven
- Jetted
- Other
- Hydrofracturing

Drilling Start Date: 10-3-12
Drilling Completion Date: 10-3-12

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)
Well Street Address: 13806 N State Rd 27
Well City: Palouse
Well County: Whitman
Well Zip Code: 99161
Tax Parcel Number: 80000 45160152590

If claiming tax parcel exemption (Circle One)
- Tribal
- Federal Property
- Right of Way
- Railroad Land

Contribution Information – Securely Attach (Staple) Additional Sheets of Information (No Drawings) as Needed.

Diameter of Well: 14 in, Drilled 38 ft 2 in
Depth of Completed Well: 100 ft 0 in

Casings (At least one casing must have 6 in of stickup and all fields must be filled out for each casing entered)
Type (Circle One)
- Concrete
- Plastic
- Steel
- Other

Diameter: 10 inches
Stickup: 24 inches
Depth: 10 ft 2 in, TO: 36 ft 0 in

Liners? Circle One Yes No
(If yes, then complete the below fields that apply)

Type 1 (Circle One)
- PVC
- Steel
- Other

Diameter: 4 1/2 in, From: 10 ft 2 in, TO: 70 ft 0 in

Type 2 (Circle One)
- PVC
- Steel
- Other

Diameter: 10 ft 2 in, TO: 70 ft 0 in

Perforations? Circle One Yes No
(If yes, then complete the below fields that apply)

Type of Perforator (Circle One)
- Drill
- Mills Knife
- Saw
- Star
- Torch Cut
- Other

Perforation size: 1/2 in by 4 in
Total Perforations: 5/1 ft

Perforation 1: From: 30 ft 0 in, TO: 70 ft 0 in
Perforation 2: From: 10 ft 0 in, TO: 70 ft 0 in

Screens? Circle One Yes No
(If yes, then complete the below fields that apply)

Mfr 1
- Type
- Diam in
- Slot Size
- From ft 0 in, TO ft 0 in

Mfr 2
- Type
- Diam in
- Slot Size
- From ft 0 in, TO ft 0 in

ECY 050-1-20 (Rev 2/11) The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.
If you need this document in an alternate format for the visually impaired, please call the Water Resources Program at 360-407-6872.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes No (If yes, then complete the below fields that apply)

<table>
<thead>
<tr>
<th>Packing Material 1 Circle One</th>
<th>O10-20</th>
<th>20-40</th>
<th>8-12</th>
<th>Coarse Sand</th>
<th>Pea Gravel</th>
<th>From ft in</th>
<th>To ft in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing Material 2 Circle One</td>
<td>O10-20</td>
<td>20-40</td>
<td>8-12</td>
<td>Coarse Sand</td>
<td>Pea Gravel</td>
<td>From ft in</td>
<td>To ft in</td>
</tr>
</tbody>
</table>

Surface Seal Was there an existing surface seal? Yes No Depth of Seal 38 ft in

Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes No If yes, Mfr Name Pump Type HP

Static Water Level (Circle One and fill in the blanks if needed)

Yes Measured Level (Below top of well) 30 ft in Date Measured 10-3-12

Flowing Artesian (Circle One) Greater Than or Equal To GPM PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)

Dry Hole

Unusable Water Strata? (Circle One) Yes No If Yes is circled, method of sealing strata off

<table>
<thead>
<tr>
<th>Strata 1 (Specify Unusable Water Type)</th>
<th>From ft in</th>
<th>To ft in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strata 2 (Specify Unusable Water Type)</td>
<td>From ft in</td>
<td>To ft in</td>
</tr>
</tbody>
</table>

General Well Tests (Circle all that apply and fill in the blanks)

Bailer Test Date of test (Circle One) Greater Than or Equal To GPM, with Drawdown after hrs min

Air Test Date of test 10-3-12 (Circle One) Greater Than or Equal To GPM, with stem set at 95 ft in

Test Duration 1 hrs min

Pump Test Date of test Test performed by

Note: Drawdown=the amount the water level is lowered below the static level

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Yield gpm, with ft in; Drawdown after hrs min Yield gpm, with ft in; Drawdown after hrs min

Note: Recovery=the time taken at zero when the pump is turned off. Water level is measured from the well top to… Ask Lars for wording

Time hrs min; Water Level ft in Time hrs min; Water Level ft in

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Ratty Brown Silt</td>
<td>31</td>
<td>53</td>
</tr>
<tr>
<td>Medium Black Silt</td>
<td>53</td>
<td>72</td>
</tr>
<tr>
<td>Ratty Brown Silt</td>
<td>72</td>
<td>100</td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

(Circle One) Driller Trainee Engineer Trainee Name (Print) Drilling Company

Brett Unknoft

Driller Engineer/Trainee Signature Address

Cottonwood, ID 83522

Driller/Trainee/PE License No.

5044

City, State, Zip

PO Box 233

Phone Number

37-93-3300

If Trainee, Mentor Driller License No.

Mentor Driller Signature

budrillingalive.com
JOHN WARD WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 14, 2018

Well Log ID: 499457 Elev (ft): 2630 ±10 Depth (ft): 103 7.5’ Quad: Viola

Latitude: 46.756993° Longitude: -117.115333° decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 26, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
851 Orville Boyd Road, Pullman, Wash.; on southwest side of road

Location Method:
Location is for well, in field inside curve of driveway to only house in NW¼ section 26; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 14, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>From 0</td>
</tr>
<tr>
<td>Wanapum Basalt(?)*</td>
<td>To 77</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>From 77</td>
</tr>
<tr>
<td></td>
<td>To 103</td>
</tr>
</tbody>
</table>

*Unit could be Weissenfels Ridge Member of Saddle Mountains Basalt
Comments:

Whitman County Tax Parcel 200004515262390, 851 ORVILLE BOYD RD 99163, NW1/4 PT SW1/4 FRED WEXLR SHRTPLT #1, owners now are HEMINGWAY, BRIAN M/MARISA F; 3.97 acres; year built 2007–2008.

Well is in field, below (north of) and inside curve of driveway

References Cited:
**WATER WELL REPORT**

**Notice of Intent Number:** W32011

**Unique Ecology Well ID Tag No.:** APN 259

**Water Right Permit No.:**

**Property Owner Name:** John Ward

**Well Street Address:** Orville Boyd Rd

**City:** Pullman

**County:** Whitman

**Location:** SW 1/4 - NW 1/4 Sec. 26

**Twn:** 15N

**Rng:** 45E

**WMM:** circle

**Lat/Long:**

- **Lat Deg:**
- **Lat Min/Sec:** REQUIRED
- **Long Deg:**
- **Long Min/Sec:**

**Tax Parcel No.:** 0-0000-45-15-36-7900

---

**CONSTRUCTION DETAILS**

- **Casing:** Yes [ ] No [ ]
  - Diam. from ft. to ft.
- **Installed:**
  - Liner installed [ ]
  - Diam. from ft. to ft.
  - Threaded [ ]
  - Diam. from ft. to ft.
- **Perforations:**
  - Yes [ ] No [ ]
  - Type of perforator used
- **Screens:**
  - Yes [ ] No [ ] K-Pac [ ]
  - Location
  - Manufacturer's Name
  - Type
  - Model No.
  - Diam. Slot Size from ft. to ft.
  - Diam. Slot Size from ft. to ft.
- **Gravel/Filter packed:**
  - Yes [ ] No [ ]
  - Size of gravel/sand
- **Materials placed from ft. to ft.**
- **Surface Seal:**
  - Yes [ ] No [ ]
  - To what depth? ft.
  - Materials used in seal
  - Depth of strata
- **Did any strata contain unusable water?**
  - Yes [ ] No [ ]
- **Type of water?**
  - Method of sealing strata off

**PUMP:**

- Manufacturer's Name
- Type: [ ] H.P.

**WATER LEVELS:**

- Land-surface elevation above mean sea level ft.
- Static level ft. below top of well Date: 6/16/xx
- Artesian pressure lbs. per square inch Date: 
- Artesian water is controlled by (cap, valve, etc.)

**WELL TESTS:**

- Drawdown is amount water level is lowered below static level.
- Was a pump test made? [ ] Yes [ ] No
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- Yield: gal./min. with ft. drawdown after hrs.
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
  - Time Water Level Time Water Level
  - Start Date 6/16/xx Completed Date 6/16/xx

**RECEIVED**

- OCT 09 2007
- DEPARTMENT OF ECOLOGY
- WELL DRILLING UNIT

- OCT 12, 2007

---

**WELL CONSTRUCTION CERTIFICATION:** I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

- Driller [ ] Engineer [ ] Trainee Name (Print)
- Driller/Engineer/Trainee Signature
- Driller or Trainee License No.

---

**Drilling Company:** WITT WELL DRILLING

**Address:** 691 South Grade Rd

**City, State, Zip:** Juliaetta, ID 83535

**Contractor's Registration No.:** WITT08158 Date 7/16/xx

**Ecology is an Equal Opportunity Employer.** ECY 050-1-20 (Rev 4/01)
WARREN STREET AG WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, February 7, 2018

Well Log ID: 1592901
[Well Tag ID: BIU715]
Elev (ft): 2560 ±10
Depth (ft): 200
7.5’
Quad: Albion

Latitude: 46.757930°
Longitude: -117.148360°
decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 28 , T. 15 N , R. 45 E

Well Address and (or) Other Location Information:
292 Warren Road, Pullman, Wash.; on south side of road (north of Kitzmiller Road)

Location Method:
Location is for well, east of well house; Whitman County Assessor; Google Earth imagery;
topographic map; driller reported "Kitzmiller Road," Tax Parcel No. "200004515286902," and NW¼,
SE¼, Section 28; site visit March 27, 2018, and verified well tag ID

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 — To 3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>From 40 — To 185</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Green clay and soft basalt</td>
<td>From 185 — To 200</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515286902, 292 WARREN RD, LOT 1 WHITMAN COUNTRY ESTATES SHORT PLAT; owners now are COBOS, DOUGLAS R/ANDREA; 920 SE SKYLARK CT, CULLMAN [sic] WA; 6.19 acres; 08/01/17: grantor was WARREN STREET AGRICULTURAL LLC to COBOS, DOUGLAS R/ANDREA.

Other parcels for Warren Street Agricultural LLC include:

- Whitman County Tax Parcel 200004515286905, 51 WARREN RD, LOT 4 WHITMAN COUNTRY ESTATES SHORT PLAT, owner is WARREN STREET AGRICULTURAL LLC, 18 CRESCENT KEY, BELLEVUE WA; 5.15 acres.

- Whitman County Tax Parcel 200004515286904, 52 WARREN RD, LOT 3 WHITMAN COUNTRY ESTATES SHORT PLAT, owner now is ANDERSON, TRAVIS S; 235 NW CLAY CT, PULLMAN WA; 4.16 acres; 07/12/17: grantor was WARREN STREET AGRICULTURAL LLC to ANDERSON, TRAVIS S.

- Whitman County Tax Parcel 200004515286903, 182 WARREN RD, LOT 2 WHITMAN COUNTRY ESTATES SHORT PLAT, owner is WARREN STREET AGRICULTURAL LLC, 18 CRESCENT KEY, BELLEVUE WA; 4.81 acres.

Well is to left of well house

References Cited:
WATER WELL REPORT

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

Construction/Decommission ("x" in circle)

Construction

Decommission

ORIGINAL INSTALLATION

Notice of Intent Number

PROPOSED USE: [ ] Domestic [ ] Industrial [ ] Municipal

[ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)

[ ] New well [ ] Reconditioned [ ] Method [ ] Drilled

[ ] Deepened [ ] Cable [ ] Rotary [ ] Jetted

DIMENSIONS: Diameter of well ______ inches, drilled ______ ft.

Depth of completion ______ ft.

CONSTRUCTION DETAILS

Casing [ ] Welded ______ Diam. from ______ ft. to ______ ft.

Installed: [ ] Liner installed ______ Diam. from ______ ft. to ______ ft.

[ ] Threaded ______ Diam. From ______ ft. to ______ ft.

Perforations: [ ] Yes [ ] No

Type of perforator used ______

SIZE of perfor ______ in. by ______ in. and no. of perfor ______ from ______ to ______.

Screens: [ ] Yes [ ] No [ ] K-Pac

Location ______

Manufacturer's Name ______

Type ______ Model No. ______

Diam. ______ Slot size ______ ft. to ______ ft.

Diam. ______ Slot size ______ ft. to ______ ft.

Gravel/Filter packed: [ ] Yes [ ] No Size of gravel/sand ______

Materials placed from ______ ft. to ______ ft.

Surface Seal: [ ] Yes [ ] No To what depth ______ ft.

Material used in seal ______

Did any strata contain unusable water? [ ] Yes [ ] No

Type of water ______

Depth of strata ______

Method of sealing strata ______

PUMP: Manufacturer's Name ______

Type: ______ H.P. ______

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.

Static level ______ ft. below top of well Date ______

Artesian pressure ______ lbs. per square inch Date ______

Artesian water is controlled by ______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? [ ] Yes [ ] No If yes, by whom ______

Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time ______ Water Level ______ Time ______ Water Level ______

Date ______

Bailier test ______ gal./min. with ______ ft. drawdown after ______ hrs.

Airstest ______ gal./min. with stem set at ______ ft. for ______ hrs.

Artesian flow ______ g.p.m. Date ______

Temperature of water ______ Was a chemical analysis made? [ ] Yes [ ] No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller [ ] Engineer [ ] Trainee Name (Print) ______

Driller or trainee License No. ______

IF TRAINEE: Driller's License No. ______

Driller's Signature ______

Drilling Company ______

Address ______

City, State, Zip ______

Contractor ______

Registration No. ______

Date ______

Washington Department of Transportation Well 1
(WA DOT Well 1, WA DOT—Colfax Maintenance Facility Well 1)

[Drilled March 5, 1985]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November, 2016

Well Log ID: 160198  Elev (ft): 2260  Depth (ft): 100  Quad: Colfax North

Latitude: 46.9583  Longitude: -117.3311  decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 24, T. 17 N, R. 43 E

Well Address and (or) Other Location Information:
43101 WA 195, Colfax, Wash., Washington Department of Transportation—Colfax Maintenance Facility; east side of road, milepost 43.9, north of Papè Machinery; Colfax North quadrangle Well 11 of Bush and others (2005 [2006])

Location Method:
Latitude, longitude, and elevation from Washington Department of Ecology Well Tagging Form; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (September 16, 2016), but did not see well.

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)

<table>
<thead>
<tr>
<th>Overburden</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand and gravel</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>5 – 25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanapum Basalt</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, brown, broken</td>
<td>25 – 55</td>
</tr>
<tr>
<td>Basalt, brown, broken</td>
<td>55 – 100</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004317242901, NW-PART, 10.0 acres; owner is STATE OF WASHINGTON.

There are two wells at this property: WA DOT well 1, and a second 55-ft well (drilled March 25, 1985) in the SW¼, NE¼, sec. 24 (not shown above).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Washington Dept. Transportation
Address: N. 2714 Mayfair, Spokane, WA 99205

LOCATION OF WELL: Whitman
NE 1/4 NW 1/4 Sec 24, T.17 N., R.43 E. W.M.

PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

TYPE OF WORK: (Owner's number of well)
New well [ ] Method: Dug [ ] Bored [X]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [X] Jetted [ ]

DIMENSIONS:
Diameter of well 8 inches
Drilled 100 ft. Depth of completed well 100 ft.

CONSTRUCTION DETAILS:
Casing installed 8 " Diam. from 0 ft. to 59 ft.
Threaded [ ] Diam. from ft. to ft.
Welded [X] Diam. from ft. to ft.

Perforations: Yes [X] No [ ]
Type of perforator used.
SIZE of perforations in. in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [X] No [ ]
Manufacturer's Name
Diam. 8 in. Std. size from ft. to ft.
Diam. Std. size from ft. to ft.

Gravel packed: Yes [X] No [ ]
Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ]
To what depth 58 ft.
Material used in seal: Bentonite cement
Did any strata contain unusable water? Yes [X] No [ ]
Type of water:
Depth of strata:
Method of sealing strata off:

PUMP:
Manufacturer's Name
Type:
H.P.:

WATER LEVELS:
Land-surface elevation

Hold for
Test pump
85 GPM
47 ft. 0 in 8 hrs
Recovery
47 ft. 12 hrs 22 min
Water Level

85 GPM in 8 hrs

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: FONEROSA DRILLING & DEVELOPMENT INC.
(Person, firm, or corporation) (Type or print)
Address: P.O. Box 6029, Spokane, WA 99212

[Signature]
Lynwood E. Hendrick (Well Driller)
License No. 1351 Date: 3/5/85, 10.85

(RUSE ADDITIONAL SHEETS IF NECESSARY)
WELL TAGGING FORM

Date of Field Visit 8/10/94 By Larry Wendt

ADDITIONAL WELL IDENTIFIERS

Department of Health System ID Number HD 117 D  Source Number SO 01

USGS Site Identification 465708117195321

RECORD VERIFICATION

☐ Well Report available (please attach)
☐ Well Report not available
☐ Verification inconclusive

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

Name ____________________________

Street address ____________________________

City ____________________________ State ____________________________

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address ____________________________

City ____________________________ County ____________________________

T. ___ N. R. ___ W.M. Sec. ___ ¼ of the ___ ¼

Latitude 46° 57' 30"

Longitude 117° 19' 52"

Elevation at land surface 2260 feet/meters (circle one)
WASHINGTON WATER POWER WELL 1

(WWP WELL 1)

[DRILLED IN 1957]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 16, 2016

Well Log ID: 173396  Elev (ft): 2460 ±10  Depth (ft): 259  Quad: Moscow West

Latitude: 46.727589  Longitude: -117.119765  decimal degrees (WGS84)

SE ¼, SE ¼, NE ¼, Sec. 3, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
5702 WA 270, Pullman, Wash., on north side of highway; well house is in northeast part of parking lot area, northeast of long shed.

Location Method:
Location is for well house; Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>From 0 - 3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>From 3 - 11</td>
</tr>
<tr>
<td>Basalt</td>
<td>From 11 - 102</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, light gray</td>
<td>From 102 - 117</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>From 117 - 214</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
</tbody>
</table>
Meyer Ridge Member(?)
Basalt, alternating soft and hard

214 – 259

Comments:
Identification of Grande Ronde Basalt units is based upon tentative correlations to the DOE Pullman Test and Observation well where Conrey and Wolff (2010) determined stratigraphic units.

Whitman County Tax Parcel 200004514031449, NE1/4 SE 6 ACRES M/L TCO 45; owner is WASH WATER POWER CO (which is now AVISTA CORP).

References Cited:
STATE OF WASHINGTON  
DEPARTMENT OF CONSERVATION AND DEVELOPMENT  

WELL LOG  
No. Appl. 1,666  

Date: 8/5/6, 1957  
Record by: well driller  
Source: driller's record  

Location: State of WASHINGTON  
County: Whitman  

Drilling Co.: A.A. Durand & Son  
Address: Walla Walla, Wash.  
Method of Drilling: Date: 19  
Address: Spokane, Wash.  

Land surface, datum: above  

<table>
<thead>
<tr>
<th>CONSOLIDATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soft, black topsoil</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Soft, brown clay &amp; basalt</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Rock</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Med. hard, black basalt</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Med. hard, brown basalt</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Hard, brown basalt</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Very hard, grey basalt</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Hard brown basalt</td>
<td>2</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Hard grey basalt</td>
<td>2</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Med. brown basalt</td>
<td>2</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Hard dark grey basalt</td>
<td>5</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Med. dark grey basalt</td>
<td>3</td>
<td>102</td>
</tr>
<tr>
<td></td>
<td>Soft light grey clay</td>
<td>15</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>Med. hard, dark grey basalt</td>
<td>8</td>
<td>203</td>
</tr>
<tr>
<td></td>
<td>Med. black basalt</td>
<td>11</td>
<td>214</td>
</tr>
<tr>
<td></td>
<td>Soft black basalt (over)</td>
<td>10</td>
<td>224</td>
</tr>
</tbody>
</table>

Turn up Sheet... of... sheets...
### WELL LOG—Continued

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>224</td>
</tr>
<tr>
<td></td>
<td>Depth forward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Med. black basalt</td>
<td>2</td>
<td>226</td>
<td></td>
</tr>
<tr>
<td>Soft, black basalt</td>
<td>10</td>
<td>236</td>
<td></td>
</tr>
<tr>
<td>Med. hard, black basalt</td>
<td>7</td>
<td>243</td>
<td></td>
</tr>
<tr>
<td>Hard, dark grey basalt</td>
<td>16</td>
<td>259</td>
<td></td>
</tr>
</tbody>
</table>

**PUMP TEST:**
- Dim. 259' x 8"
- SWL: 152 ft.
- DD: 2 ft.
- Yield: 102 g.p.m.
- Type & size of pump: Byron Jackson electric submersible
- Type & size of motor: Code 8M10, 3 phase, 220 volt, 9 hp.
- CASING: Temporary casing 12" diam., pulled at well completion from 0 to 10'9".
- Temp. casing 10" diam., pulled at well completion from 0 to 41'10".
- Permanent casing 8" diam., permanent grout sealed from 0 to 177 1/8".
- Open rock well 8" diam., uncased 8" rock well from 177 1/8" to 259".

S.F. No. 7444—12:54—SM. 40'10"
WASHINGTON WATER POWER WELL 2

(WWP WELL 2)

[DRILLED IN 1983]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 24, 2016

Well Log ID: 173398
Elev (ft): 2580 ±10
Depth (ft): 440
7.5’
Quad: Pullman

Latitude: 46.742504
Longitude: -117.153921
decimal degrees (WGS84)

¼, SW ¼, NW ¼, Sec. 33 , T. 15 N , R. 45 E

Well Address and (or) Other Location Information:
NE Terre View Drive, Pullman, Wash., on north side of road; southeast of NE Merman Drive

Location Method:
Approximate location (well has been capped and is no longer visible at surface; it most likely was paved over); Google Earth imagery; topographic map. Site visit (April 15, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>8 – 60</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>60 – 80</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>80 – 200</td>
</tr>
<tr>
<td>*Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>200 – 260</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>260 – 400</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>400 – 440</td>
</tr>
</tbody>
</table>
Comments:

*Without an interbed at the Vantage horizon, it was difficult to pick the top of the Grande Ronde. The determination was, in part, based on Washington State University well 6.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: The Washington Water Power Co. Address: P.O. Box 3727, Spokane, WA 99220

LOCATION OF WELL: County: Whitman

(3) PROPOSED USE: Domestic [X] Industrial [ ] Municipal [ ]

(4) TYPE OF WORK: 
- New well [X]
- Method: Dug [X]
- Bored [ ]
- Deepended [ ]
- Cable [ ]
- Driven [ ]
- Reconditioned [ ]
- Rotary [ ]
- Jetted [ ]

(5) DIMENSIONS:
- Diameter of well: 8 inches
- Depth of completed well: 440 ft.

(6) CONSTRUCTION DETAILS:
- Casing installed: 10 ft. Diam. from 0 ft. to 8 ft.
- Threaded [ ]
- Welded [X]
- Perforations: Yes [X] No [ ]
- Type of perforator used: 
- Size of perforations: in. by in.
- perforations from ft. to ft.
- Screened from ft. to ft.
- Perforations from ft. to ft.
- Perforations from ft. to ft.

(7) PUMP:
- Manufacturer's Name: 
- Type: 
- H.P.: 

(8) WATER LEVELS:
- Land-surface elevation above mean sea level: 2600 ft.
- Static level: 180 ft. below top of well
- Artesian pressure: lbs. per square inch
- Artesian water is controlled by: (Cap, valve, etc.)

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes [X] No [ ]
- If yes, by whom?
- Yield: 50 gal./min. with ft. drawdown after hrs.

ESTIMATED AEROSIL:

- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
  - Time: Water Level: Time: Water Level: Time: Water Level:

- Date of test:
- Boiler test: gal./min. with ft. drawdown after hrs.
- Artesian flow: g.p.m. Date
- Temperature of water: Was a chemical analysis made? Yes [X] No [ ]

(10) WELL LOG:

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Soil</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Basalt, Medium Hard</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>Soft basalt</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Hard basalt</td>
<td>80</td>
<td>200</td>
</tr>
<tr>
<td>Broken basalt w/water</td>
<td>200</td>
<td>260</td>
</tr>
<tr>
<td>Hard basalt</td>
<td>260</td>
<td>400</td>
</tr>
<tr>
<td>Fractured basalt</td>
<td>400</td>
<td>440</td>
</tr>
</tbody>
</table>

NOTE: The purpose of this hole is to serve as a ground bed. The water encountered at 200 feet was sealed out with cement. No water shall be drawn from this hole.

NOTE: 180" 4" PVC Liner installed
No Drive shoe installed.


WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: PONDEROSA DRILLING & DEVELOPMENT INC.
Type or print: (Person, firm, or corporation)
Address: 6010 Broadway, Spokane, WA 99206

[Signature]
Clarence Shulze (Well Driller)
License No. 0541 Date: June 11, 1982

ECY 950-1 20
**ELENA WATSON WELL**

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, August 18, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 308295</th>
<th>Elev (ft): 2630 ±10</th>
<th>Depth (ft): 455</th>
<th>7.5’</th>
<th>Quad: Moscow West</th>
</tr>
</thead>
</table>

Latitude: 46.721992, Longitude: -117.097129 decimal degrees (WGS84)

¼, SE ¼, SE ¼, Sec. 2, T. 14 N, R. 45 E

**Well Address and (or) Other Location Information:**

1101 Sunshine Road, Pullman, Wash., on north side of road

**Location Method:**

Located at smaller building/garage at end of east driveway; Whitman County Assessor; Google Earth imagery, topographic map. PLSS subdivisions are incorrect on driller's report. Site visit (September 18, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 1</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td>1 – 92</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>92 – 219</td>
</tr>
<tr>
<td>Basalt, soft, red</td>
<td>219 – 235</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>235 – 241</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>241 – 310</td>
</tr>
</tbody>
</table>

1835
Basalt, soft  310 – 343
Basalt  343 – 426
Basalt, weathered, brown  426 – 449
Basalt  449 – 455

Comments:

Whitman County Tax Parcel 200004514024901; 1101 SUNSHINE RD, SE SE OF SEC 2, owners are now HANSHAW, TIMOTHY C/DIANE, who purchased the property on 01/01/03; one story residence was built in 1960.

References Cited:
## WATER WELL REPORT

### STATE OF WASHINGTON

**Notice of Intent**  
**UNIQUE WELL I.D. #: AFE 126**

### OWNER:
- **Name**: ELENA WATSON  
- **Address**: 1101 SUNSHINE RD., PULLMAN, WA 99163

### LOCATION OF WELL:
- **County**: WHITMAN  
- **TAX PARCEL NO.**: SAME

### PROPOSED USE:
- Domestic [X]  
- Industrial  
- Municipal  
- Irrigation  
- Test Well  
- Other

### TYPE OF WORK:
- Owner's number of well (If more than one):
- **New Well**  
- Method:
- [X] Drilled  
- [ ] Dug  
- [ ] Reconditioned  
- [ ] Bored  
- [ ] Reconditioned  
- [ ] Cable  
- [ ] Driven  
- [ ] Decommission  
- [ ] Rotary  
- [ ] Jetted

### DIMENSIONS:
- Diameter of well:
  - Drilled: 455 inches, 455 feet.  
- Depth of completed well:
  - 8 & 8 ft.

### CONSTRUCTION DETAILS:
- **Casing Installed**:  
  - [X] Welded  
  - [ ] Liner installed
  - Diam. from ft. to ft.
  - Diam. from ft. to ft.
  - Diam. from ft. to ft.

### Screens:
- **Manufacturer's Name**: K-Pac Location
- **Type**:  
- **Model No.**:  
- **Diam.**: from ft. to ft.
- **Slot size**: from ft. to ft.
- **Gravel/Filter packed**: [X] Yes  
- **Size of gravel/sand**  
  - [X] Yes  
  - [ ] No

### Surface seal:
- **Material in seal**: BENTONITE
- **Did any strata contain unusable water?**: [X] Yes  
- **Type of strata**: Depth of strata
- **Method of sealing strata off**

### PUMP:
- **Manufacturer's Name**: H.P.

### WATER LEVELS:
- **Land-surface elevation above mean sea level**: 380 ft.
- **Static level**: 380 ft. below top of well  
  - Date: 4/21/2000
  - Artesian pressure: lbs. per square inch  
  - Date:  
  - Artesian water is controlled by

### WELL TESTS:
- **Drawdown is amount water level is lowered below static level**
- **Was a pump test made?**: [X] Yes  
- **If yes, by whom?**
- **Yield**: gal./min. with ft. drawn down after hrs.
- **Yield**: gal./min. with ft. drawn down after hrs.
- **Yield**: gal./min. with ft. drawn down after hrs.

### Recovery data:
- (time taken as zero when pump turned off) (water level measured from well top to water level)
- **Time**  
- **Water Level**  

### Date of test:
- **Bailer test**: gal./min. with ft. drawn down after hrs.
- **Airtest**: 30 gal./min. with stem set at 430 ft. for hrs.
- **Artesian flow**: g.p.m.  

### Temperature of water:
- **53**

### WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
- **Formation**: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

### MATERIAL:
- **SOIL**: 0 1
- **CLAY BROWN**: 1 92
- **BASALT MEDIUM BLACK**: 92 219
- **BASALT RED SOFT**: 219 235
- **CLAY BLUE**: 235 241
- **BASALT MEDIUM BLACK**: 241 310
- **BASALT SOFT BLACK**: 310 343
- **BASALT MEDIUM BLACK**: 343 426
- **BASALT WEATHERED BROWN**: 426 449
- **BASALT MEDIUM**: 449 455

### Received:
- **Receival Date**: JAN 8 2001

### WELL CONSTRUCTION CERTIFICATION:
- I, the above named contractor, do hereby certify that the well described herein was constructed in accordance with the plans and specifications and the local or state regulations and/or rules and such other ordinances as may be applicable.

### License No. 0532

### Address:
- 2246 BURRELL, LEWISTON ID 83501

### USE ADDITIONAL SHEETS IF NECESSARY

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6800. The TDD number is (360) 407-6006.
WAWAWAI COUNTY PARK WELL
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 27, 2016

Well Log ID: 173778  Elev (ft): 760 ±10  Depth (ft): 250  7.5’ Quad: Almota

Latitude: 46.636707  Longitude: -117.376186  decimal degrees (WGS84)

WELL ADDRESS AND (OR) OTHER LOCATION INFORMATION:
13501 Wawawai Road, Colton, Wash., on north side of road

LOCATION METHOD:
Approximate location from driller's report (PLSS); Whitman County Assessor; Google Earth imagery; topographic map.

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)

<table>
<thead>
<tr>
<th>Overburden</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulders and soil</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grande Ronde Basalt</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>*N1 magnetostratigraphic unit</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Basalt, brown, broken</td>
<td>34</td>
<td>108</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>108</td>
<td>119</td>
</tr>
<tr>
<td>Basalt, broken, and clay</td>
<td>119</td>
<td>163</td>
</tr>
<tr>
<td>Basalt</td>
<td>163</td>
<td>174</td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>174</td>
<td>250</td>
</tr>
<tr>
<td>Basalt, flow breccia, brown, black and red</td>
<td>1838</td>
<td>250</td>
</tr>
</tbody>
</table>
Comments:

* N1 magnetostratigraphic unit based upon map by Swanson and others (1980).

The 75-ft-thick breccia encountered at the base of the well could be related to the flow breccia exposed about 7.5 mi to the northeast in NE¼ NE¼, sec. 13, T 14 N, R 42 E, near the base of the Almota grade, north side of railroad tracks.

Whitman County Tax Parcel 200004313022901, 13501 WAWAI WAWAI RD, SW1/4 PART COUNTY EARTH HOME, owner is WHITMAN COUNTY; 49 acre park; however, driller's report says owner is "US. Corps of Engineers."

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: U.S. Corps of Engineers
Address: 1111 NW 15th Ave, Seattle, WA 98101

(9) LOCATION OF WELL: County: Whatcom
Township: 5T, Section 1, T13N, R43E

(3) PROPOSED USE: Domestic [] Industrial [] Municipal []
Irrigation [] Test Well [] Other []

(4) TYPE OF WORK: Owner's number of well (if more than one)...
New well [] Method: Dug [] Bored []
Deepened [] Cable [] Driven []
Reconditioned [] Rotary [] Jetted []

(5) DIMENSIONS:
Drilled 8 ft
Depth of completed well 250 ft

(6) CONSTRUCTION DETAILS:
Casing installed: 14 1/2 in
Diam. from 71/2 ft to 8 ft
Threaded [] 8 1/2 in
Diam. from 8 1/2 ft to 9 ft
Welded [] 8 1/2 in
Diam. from 10 3/4 ft to 13 8/16 ft

Perforations: Yes [] No []
Type of perforator used: High pressure
Size of perforations: 1/16 in by 1/16 in

Screens: Yes [] No []
Manufacturer's Name:
Type: [ ]
Diam. Slot size: from ft to ft
Model No.
Diam. Slot size: from ft to ft

Gravel packed: Yes [] No []
Size of gravel:
Gravel placed from ft to ft

Surface seal: Yes [] No []
To what depth: 20 ft
Material used in seal: Cement grout
Did any strata contain unsafe water? Yes [] No []
Type of water: n/a
Depth of strata: n/a
Method of sealing strata off:

(7) PUMP: Manufacturer's Name:
Type: [ ]
H.P.: [ ]

(8) WATER LEVELS:
Land-surface elevation above mean sea level: 60 ft
Static level: 60 ft below top of well
Date: 12-1-76
Artesian pressure: lbs per square inch
Artesian water is controlled by:
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [] No []
If yes, by whom:
Yield: gal/min.
with ft drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):


Date of test:
Bailer test: 80 gal/min. with 60 ft. drawdown after 1 hrs.
Artesian flow: g.p.m. Date 12-1-76
Temperature of water: Was a chemical analysis made? Yes [] No []

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt Black</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Basalt Black</td>
<td>12</td>
<td>94</td>
</tr>
<tr>
<td>Basalt Green Clay</td>
<td>94</td>
<td>54</td>
</tr>
<tr>
<td>Basalt Black Hard</td>
<td>54</td>
<td>90</td>
</tr>
<tr>
<td>Basalt Black Medium</td>
<td>90</td>
<td>181</td>
</tr>
<tr>
<td>Basalt Black Hard</td>
<td>181</td>
<td>145</td>
</tr>
<tr>
<td>Basalt Green Clay</td>
<td>145</td>
<td>197</td>
</tr>
<tr>
<td>Basalt Green Clay</td>
<td>197</td>
<td>128</td>
</tr>
<tr>
<td>Basalt Green Clay</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>Basalt Green Clay</td>
<td>128</td>
<td>144</td>
</tr>
<tr>
<td>Basalt Green Clay</td>
<td>144</td>
<td>144</td>
</tr>
<tr>
<td>Basalt Black</td>
<td>144</td>
<td>197</td>
</tr>
<tr>
<td>Basalt Black</td>
<td>197</td>
<td>174</td>
</tr>
<tr>
<td>Basalt Black</td>
<td>174</td>
<td>250</td>
</tr>
<tr>
<td>Flow Borella</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Flow Borella</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Basalt Black</td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: Ray McVicker, Well Driller
Address: T15517 NW 139TH AVE., WASH. 98011

[Signed] Ray McVicker

License No. 3209 Date 1-10-77

(USE ADDITIONAL SHEETS IF NECESSARY)
WEBER HOMESTEAD WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 2, 2016

Well Log ID: 810071 Elev (ft): 2220 ±10 Depth (ft): 305 7.5’ Quad: Colfax South

Latitude: 46.834064 Longitude: -117.267076 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
3601 Shawnee Road, Pullman, Wash., on southeast side of road

Location Method:
Location is for house in SE ¼, NE ¼, sec. 33; Whitman County Assessor; Google Earth imagery; topographic map. Tax parcel incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Roza Member</td>
<td>27</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td>93</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>98</td>
</tr>
<tr>
<td>Clay, green, and basalt</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>105</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>109</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>127</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>201</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>210</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td>259</td>
</tr>
<tr>
<td>Basalt, vesicular</td>
<td></td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004416331400, NE SE 1/4, owner is WEBER HOMESTEAD LLC (YVONNE WEBER, 3601 SHAWNEE RD); 38.0 acres; 1 story residence built in 1947; 1064 ft².

References Cited:
WATER WELL REPORT

Construction/Decommission ("x" in circle)
- Decommission

PROPOSED USE
- Domestic
- Industrial
- Municipal

TYPE OF WORK
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method
- Dug
- Bored
- Driven
- Deepened
- Replanted
- Cable
- Rotary
- Jetted

DIMENSIONS
- Diameter of well: inches, drilled: ft
- Depth of completed well: ft

CONSTRUCTION DETAILS
- Casing
  - Welded
  - Drilled from ft to ft
- Installed
  - Drilled: ft
  - Diameter: ft
  - Depth: ft

Perforations:
- Yes
- No
- Type of perforator used: SAW

SIZE of perfs
- by in
- no. of perfs: from 12" to 225" to 305" ft

Screen:
- Yes
- No
- K-Pac Location

Manufacturer's Name

Type

Model No

Dia.

Slot size from ft to ft

Dia.

Slot size from ft to ft

Gravel/Filter packed
- Yes
- No
- Size of gravel/sand
- Materials placed from ft to ft

Surface Seal:
- Yes
- No
- To what depth? ft

Material used in seal: BENTONITE

Did any strata contain unusable water?
- Yes
- No

Type of water:

Depth of strata

Method of sealing strata off

PUMP: Manufacturer's Name

Type

H P

WATER LEVELS: Land-surface elevation above mean sea level ft

Static level: ft below top of well Date 20/6/2010

Artesian pressure: lbs per square inch Date

Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made?
- Yes
- No
- If yes, by whom?

Yield gal/min with ft drawdown after hrs

Yield gal/min with ft drawdown after hrs

Yield gal/min with ft drawdown after hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time

Water Level

Time

Water Level

Date

Temperature of water: Was a chemical analysis made?
- Yes
- No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller

Driller or trainee License No: 0532

Driller or trainee Name (Post) TED WRIGHT

Driller's Signature

Drilling Company: MCPHERSON & WRIGHT DRILLING

Address: 2246 BURRELL

City, State, Zip: LEWISTON, ID, 83502

Contractor's Name

Registration No: mcphwd135n

Date: 2/20/10

Start Date: 1/26/10 Completed Date: 2-3-10

ECY 050-1-20 (Rev 02/10) If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872

Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6349.

1843
Alice Wells Well

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 18, 2016

Well Log ID: 453442  Elev (ft): 2870 ±10  Depth (ft): 205  Quad: Albion

Latitude: 46.869742  Longitude: -117.173008  decimal degrees (WGS84)

1/4, E 1/2, SW 1/4, Sec. 17, T. 16 N, R. 45 E

Well Address and (or) Other Location Information:
902 Marvin Wells Road, Palouse, Wash., south side of road, north flank of Kamiak Butte

Location Method:
Location is for house, Whitman County Assessor; Google Earth imagery; topographic map; PLSS section and subdivisions incorrect on driller’s report

GEOLOGIC UNITS — DESCRIPTION  DEPTH (ft)

<table>
<thead>
<tr>
<th></th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Precambrian–Cambrian basement(?)</td>
<td>4</td>
<td>205</td>
</tr>
</tbody>
</table>

*Argillite and clay
Comments:

*The argillite drills in places like soft clay.

Whitman County Tax Parcel 200004516173901, 902 MARVIN WELLS RD PALOUSE, SW 1/4 PT E1/2 HOMESITE, owner is now WELLS, JAMES W., 1 story house built in 1948.

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Alice Wells
Address: 902 Main
Well No. 10 NW

LOCATION OF WELL:
County: Whitman
Sec. 20
T. 16
N. R. 45 W.M.

STREET ADDRESS OF WELL (or nearest address): Same

PROPOSED USE:
Domestic ☐
Industrial ☐
Municipal ☐
Irrigation ☐
DeWater ☐
Test Well ☐
Other ☐

TYPE OF WORK:
Owner's number of well (if more than one)
Abandoned ☐
New well ☐
Method: Dug ☐
Bored ☐
Deepered ☐
Reconditioned ☐
Rotary ☐
Jetted ☐

DIMENSIONS:
Diameter of well: 8 inches
Drilled: 305 feet
Depth of completed well: 205 ft.

CONSTRUCTION DETAILS:
Casing Installed: 8 in. Diam. from 0 ft. to 60 ft.
Welded: ✓
Liner installed: ✓
Threaded: ✓

Perforations:
Yes ☐
No ☐
Type of perforator used:

SIZE OF PERFORATIONS
in. by in.
perforations from to ft.
perforations from to ft.
perforations from to ft.

Screens:
Yes ☐
No ☐
Manufacturer's Name
Model No.

Gravel packed:
Yes ☐
No ☐
Size of gravel
Gravel placed from to ft.

Surface seal:
Yes ☐
No ☐
Water to water

WATER LEVELS:
Static level: 160 ft. below top of well Date: 10/14/99
Artesian pressure: lbs. per square inch
Artesian water is controlled by
(Cap, valve, etc.)

WELL TESTS:
Drawdown is amount water level is lowered by static level
Was a pump test made? Yes ☐
No ☐
If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artiest 74 gal./min. with stem set at 180 ft. for 1 hrs.
Artesian flow 846 g.p.m. Date
Temperature of water °F Was a chemical analysis made? Yes ☐
No ☐

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson Wright Drilling
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address: 2946 Russell Lewiston 83501
(Signed)
License No: 05-32

Contractor's Registration No.:

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6606.
RICHARD WESSON WELL 2

[DRILLED IN 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, December 12, 2016

Well Log ID: 510958 Elev (ft): 2333 Depth (ft): 125 7.5’ Quad: Pullman

Latitude: 46.73791 Longitude: -117.19317 decimal degrees (WGS84)

¼, SE ¼, SW ¼, Sec. 3, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
284 Hayward Road, Pullman, Wash., on south side of road

Location Method:
Latitude, longitude, and elevation from Moxley (2012, p. 73, well DW-02); Whitman County Assessor; Google Earth imagery; topographic map

GEOLOGIC UNITS — DESCRIPTION DEPTH (ft)

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>18</td>
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<tr>
<td>18</td>
<td>22</td>
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<tr>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>24</td>
<td>96</td>
</tr>
<tr>
<td>96</td>
<td>125</td>
</tr>
</tbody>
</table>

Overburden
Clay, brown

Grande Ronde Basalt
N2 magnetostratigraphic unit
Sentinel Bluffs Member
Basalt of Spokane Falls
Basalt, hard
Basalt, soft
Basalt, hard

R2 magnetostratigraphic unit(?)
Meyer Ridge Member
Basalt, fractured, red and black
Comments:

Whitman County Tax Parcel 122259900020000, 284 HAYWARD RD, PULL S1/2 31-15-45 BANKS SHORT PLAT #1; owner is WESSON, RICHARD; 2.0 acres. [Mr. Wesson also owns the adjacent 2.0-acre parcel, 122259900010000, to the west.)

References Cited:

WATER WELL REPORT

Construction/Decommission ("x" in circle)
☐ Construction
☐ Decommission

ORIGINAL INSTALLATION
Notice of Intent Number

PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal
☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other

TYPE OF WORK: Owner's number of well (if more than one)
☐ New well ☐ Reconditioned ☐ Method: ☐ Drift ☐ Bored ☐ Driven
☐ Replaced ☐ Cased ☐ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 125 ft.
Depth of completed well 125 ft.

CONSTRUCTION DETAILS
Casing ☐ Welded 6" Diam. from +2 ft. to +25 ft.
Installed: ☐ Liner installed 4.5" Diam. from -25 ft. to -100 ft.
☐ Threaded "" Diam. From to ft.

Perforations: ☐ Yes ☐ No
Type of perforator used: SAW

SIZE of perfs 1/8 in. by 4 in. and no. of perfs 22 from -85 ft. to -125 ft.

Screens: ☐ Yes ☐ No ☐ K-Pac Location
Manufacturer's Name

Type: Diameter Slot size from ft. to ft.
Diameter Slot size from ft. to ft.

Gravel/Filter packed: ☐ Yes ☐ No Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: ☐ Yes ☐ No To what depth -25 ft.
Material used in seal: BENTONITE

Did any strata contain unsuitable water? ☐ Yes ☐ No
Type of water: ☐ Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name N/A
Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level 3 ft.
Static level 36 ft. below top of well Date 10-5-07
Artesian pressure lbs. per square inch Date
Artesian water is controlled by ____________________________ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test ____________________________

Bailer test gal./min. with ft. drawdown after hrs.
Airstest gal./min. with stem set at 125 ft. for 15 hrs.
Artesian flow p.g.m. Date

Temperature of water 55. Was a chemical analysis made? ☐ Yes ☐ No

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (sign) BRETT UHLENKOTT
Driller/Engineer/Trainee Signature
Driller or trainee License No. 2697

IF TRAINEE: Driller's License No:
Driller's Signature:

CURRENT
Notice of Intent No. W 244017
Unique Ecology Well ID Tag No. AHF 515
Water Right Permit No.
Property Owner Name RICK WESSON
Well Street Address 284 HOWARD RD
City PULLMAN County WHITMAN
Location SW1/4 SW1/4 Sec 15 T26 R 45 EWM
(8, 10, 5 Still REQUIRED)

Lat/Long Lat Deg Lat Min/Séc Long Deg Long Min/Sec

Tax Parcel No. (Required) 12215-99-01-01-02-0000

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL FROM TO

BROWN CLAY 0 18
MED HARD BASALT 18 22
SOFT BLACK BASALT 22 24
MED HARD BASALT 24 96
FRACTURED RED/BLACK BASALT 96 125

RECEIVED

JAN 07 2007
DEPARTMENT OF ECOLOGY WELL DRILLING UNIT

JAN 10 2008
DEPARTMENT OF ECOLOGY EASTER REGION OFFICE

Start Date 12/05/07 Completed Date 12/05/07

Drilling Company TWO U DRILLING, LLC
Address PO BOX 104
City, State, Zip COTTONWOOD, WA, 83522
Contractor's Registration No. RAYUHLP770A Date 10/27-07

ECY 050-1-20 (Rev 4/07)

Ecology is an Equal Opportunity Employer
JEFF WEST WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, March 27, 2016

Well Log ID: 154346 Elev (ft): 2465 ±10 Depth (ft): 53
Quad: Albion

Depth 7.5’

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>1 – 11</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>11 – 38</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>38 – 53</td>
</tr>
</tbody>
</table>
Comments:

It looks like the mobile home and well are actually in Whitman County Tax Parcel 200004516223169, SW1/4 PT NE1/4 & 1 AC IN SE OF NW; owner is WEST, JEFFREY; 19.0 acres (listed as land only, no improvements). The second parcel lists the mobile home: Whitman County Tax Parcel 200004516222490, 12531 PARVIN RD, NW1/4 1AC IN SE1/4 1991 28X66 MARLETTE, owner is WEST, JEFF, 1.0 acre.

Above, well is behind 5th wheeler, left of center of photo.

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name: Jeff West
Address: 271 Box 1862, Spokane WA 99201

LOCATION OF WELL: County: Whitman

STREET ADDRESS OF WELL: 16 Sec. 22 T. 16 N. R. 45 W.M.

PROPOSED USE: Domestic ☒, Irrigation ☐, Industrial ☐, Municipal ☐

TYPE OF WORK: Owner's number of well ☐, New well ☐, Deepened ☐, Reconditioned ☐
Method: Dug ☐, Bored ☐, Driven ☐, Jetted ☐

DIMENSIONS: Diameter of well 8 1/2 inches.
Drilled 53 feet. Depth of completed well 53 ft.

CONSTRUCTION DETAILS:
Casing installed: 8 in. from 1 ft. to 19 ft.
Welded ☐, Linear Installed ☐, Threaded ☐
Perforations: Yes ☐, No ☐
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐, No ☐
Manufacturer's Name
Type
Diam. Slot size from to ft.
Diam. Slot size from to ft.
Gravel packed: Yes ☐, No ☐, Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☐, No ☐
To what depth? 19 ft.
Material used in seal
Did any strata contain unusable water? Yes ☐, No ☐
Type of water?
Method of sealing strata off

PUMP: Manufacturer's Name
Type

WATER LEVELS:
Static level: 27 ft. below top of well. Date: 4/30/91
Artesian pressure in lbs. per square inch. Date: (Cap. valve, etc.)
Artesian water is controlled by

WELL TESTS:
Was a pump test made? Yes ☐, No ☐
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test

Bailer test gal./min. with ft. drawdown after hrs.
Air test gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐, No ☐

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson & Wright Drilling
Address: Lewiston, Idaho 83501

(Signed) Jack Wright (WELL DRILLER) License No: 0523
Contractor's Registration No: 1852
Date: 5-5-91

(USE ADDITIONAL SHEETS IF NECESSARY)
ALBERT AND KAREN WHITEHEAD WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 18, 2016

Well Log ID: D0010570 Elev (ft): 2980 ±10 Depth (ft): 245 Quad: Viola

Latitude: 46.804444 Longitude: -117.008597 decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 18, T. 40 N, R. 5 W

Well Address and (or) Other Location Information:
1058 Terra Drive, Moscow, Idaho; at south end of road, on east side

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>From</td>
</tr>
<tr>
<td>Sand</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>1</td>
</tr>
<tr>
<td>Idaho Batholith</td>
<td>35</td>
</tr>
<tr>
<td>Granite</td>
<td>35</td>
</tr>
</tbody>
</table>
Comments:
Latah County Tax Parcel RP40N05W188498, 1058 TERRA DR, Whitehead Revocable Living Trust, 4.92 acres.

References Cited:
**11. WELL TESTS:**

<table>
<thead>
<tr>
<th>Yield gpm</th>
<th>Drawdown</th>
<th>Pumping Level</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>230</td>
<td>1 HR</td>
<td></td>
</tr>
</tbody>
</table>

Water Temp. 49°F  
Water Quality test or comments:  
Depth first Water Encounter: 223

**12. LITHOLOGIC LOG:** (Describe repairs or abandonment)

<table>
<thead>
<tr>
<th>Dia.</th>
<th>Remarks: Lithology, Water Quality &amp; Temperature</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>SOIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>35 CLAY BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>41 GRANITE MEDIUM WHITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>179 GRANITE MEDIUM WHITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>187 GRANITE DEMONPOSED BROWN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>223 GRANITE MEDIUM WHITE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>239 GRANITE DEMONPOSED BROWN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**8. CASING/LINER:**

<table>
<thead>
<tr>
<th>Diameter</th>
<th>From</th>
<th>To</th>
<th>Gauge</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>+1</td>
<td>41</td>
<td>1/4 STEEL</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>25</td>
<td>245</td>
<td>160 PVC</td>
</tr>
</tbody>
</table>

**9. PERFORATIONS/SCREENS:**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Slot Size</th>
<th>Diameter</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>165</td>
<td>245</td>
<td>1/8</td>
<td>120</td>
<td>PVC</td>
</tr>
</tbody>
</table>

**10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:**

87 ft below ground  
Artesian pressure:  

**13. DRILLER'S CERTIFICATION:**

We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name: MCPHERSON & WRIGHT DRILLING  
Firm Official:  
Driller or Operator:  

Date: 6/6/2000  
### JANICE WILLARD WELL

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, April 10, 2018

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>NA</th>
<th>Elev (ft):</th>
<th>2648</th>
<th>Depth (ft):</th>
<th>173</th>
<th>7.5’</th>
<th>Quad: Robinson Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude:</td>
<td>46.752088°</td>
<td>Longitude:</td>
<td>-116.958980°</td>
<td>decimal degrees (WGS84)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location:</td>
<td>¼, SW ¼, NW ¼, Sec. 3, T. 39 N, R. 5 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well Address and (or) Other Location Information:</td>
<td>3110 (formerly 2080) Darby Road, Moscow, Idaho; on north side of road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Location Method:
Location is for well (latitude, longitude, and elevation from Fairley and others, 2006, HCP_wells shapefile); Latah County Assessor; Google Earth imagery; topographic map; driller switched subsections.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil, black</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>2 – 9</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>9 – 29</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>29 – 40</td>
</tr>
<tr>
<td>Clay, white</td>
<td>40 – 81</td>
</tr>
<tr>
<td>Clay, light brown</td>
<td>81 – 108</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, wood at base</td>
<td>108 – 126</td>
</tr>
<tr>
<td>Clay and basalt and wood</td>
<td>126 – 166</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>166 – 173</td>
</tr>
</tbody>
</table>
Comments:

Latah County Tax Parcel RP39N05W033612, WILLARD, JANICE M; 3110 DARBY RD, 39.78 AC SWNW; N 33.19' OF NWSW, 3 39 5.

References Cited:

### 1. WELL OWNER
Name: Janice Willard
Address: 2080 Darby Road, Moscow, Idaho 83843
Owner’s Permit No.: 87-85-N-9

### 7. WATER LEVEL
Static water level: 141 feet below land surface.
Flowing? Yes $$\checkmark$$ No
G.P.M. flow
Artesian closed-in pressure: 10 p.s.i.
Controlled by: Valve $$\checkmark$$ Cap $$\checkmark$$ Plug $$\checkmark$$
Temperature: 60°F. Quality: A

### 8. WELL TEST DATA
Discharge: G.P.M.
Pumping Level
Hours Pumped: 15

### 9. LITHOLOGIC LOG
<table>
<thead>
<tr>
<th>Hole</th>
<th>Depth From</th>
<th>Depth To</th>
<th>Material</th>
<th>Water</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>8 to 9</td>
<td>9 to 10</td>
<td>Black dirt</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>9 to 20</td>
<td>9 to 25</td>
<td>Yellow clay</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>20 to 40</td>
<td>25 to 45</td>
<td>Brown clay</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>40 to 60</td>
<td>45 to 65</td>
<td>Sand, gravel, granite</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>60 to 80</td>
<td>65 to 85</td>
<td>White clay, granite</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>80 to 100</td>
<td>85 to 105</td>
<td>Mt. brown clay, granite</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>100 to 110</td>
<td>105 to 115</td>
<td>Rock</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>110 to 120</td>
<td>115 to 125</td>
<td>Rock</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>120 to 130</td>
<td>125 to 135</td>
<td>Black clay, wood</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>130 to 140</td>
<td>135 to 145</td>
<td>L. brown clay, wood</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>140 to 150</td>
<td>145 to 155</td>
<td>Gray clay, wood</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>150 to 160</td>
<td>155 to 165</td>
<td>Broken soft rock</td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Number of perforations:** 153
**Plastic pipe:** 13 to 17 feet
**Feet:** 173

### 6. LOCATION OF WELL
Sketch map location must agree with written location.

![Sketch map](image)

### 11. DRILLERS CERTIFICATION
I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

**Firm Name:** Don Town Hall Drilling
**Address:** 300 Moscow Mtn Rd, Moscow, Idaho 83843
**Date:** 11-14-85
**Operator:** Don Town

**Signed by (Firm Official):**

**Date:** 11-14-85
GUY WILLIAMS WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 18, 2016

Well Log ID: 167465  Elev (ft): 2720 ±10  Depth (ft): 380  7.5’  Quad: Moscow West

Latitude: 46.719157°  Longitude: -117.044288°  decimal degrees (WGS84)


Well Address and (or) Other Location Information:
6052 Old Moscow Road, Pullman, Wash., on north side of road, second house west of Washington-Idaho state line.

Location Method:
Location is for well, assumed to be near end of mowed lane extending northeast (and downhill) of northwest corner of residence; Whitman County Assessor; Zillow.com (2016); Google Earth imagery; topographic map; site visit September 18, 2016 — well not observed from road.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>0</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>104</td>
</tr>
<tr>
<td>Basalt, soft, with clay</td>
<td>122</td>
</tr>
<tr>
<td>Basalt</td>
<td>174</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>294</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>297</td>
</tr>
<tr>
<td>Sand, white</td>
<td>357</td>
</tr>
<tr>
<td>Clay, green</td>
<td>371</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004614054902, 6052 OLD MOSCOW RD, SE1/4 1AC IN SW COR & 1AC IN LT 1 NE1/4 OF 8, WILLIAMS, GUY M/CINDY K, PULLMAN WA; 1 story residence built in 1988. [House is in Section 8; well is in Sec. 5.]

Above, photo of house at 6052 Old Moscow Road (Zillow.com, 2016).

References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: [Name] Address: [Address]

(2) LOCATION OF WELL: County: [County] Township: [Township] Section: [Section] Range: [Range] W.M.

(3) PROPOSED USE: Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ]

(4) TYPE OF WORK: Owner's number of well [ ] if more than one [ ]. Method: Dug [ ] Bored [ ] Deepened [ ] Driven [ ] Rotated [ ] Worked [ ]

(5) DIMENSIONS: Diameter of well [ ] Depth of completed well [ ]. Drilled [ ] ft., 380 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: Diameter from [ ] ft. to [ ] in. ft. Threaded [ ] Diameter from [ ] ft. to [ ] in. ft. Welded [ ] Diameter from [ ] ft. to [ ] in. ft.

Perforations: Yes [ ] No [ ]
Type of perforator used [ ] Size of perforations [ ] in. by [ ] in.

Screens: Yes [ ] No [ ]
Manufacturer's Name [ ]
Type [ ]
Diam. [ ] ft. Slot size [ ] ft. to [ ] ft.
Diam. [ ] ft. Slot size [ ] ft. to [ ] ft.

Gravel packed: Yes [ ] No [ ]
Size of gravel [ ]
Gravel placed from [ ] ft. to [ ] ft.

Surface seal: Yes [ ] No [ ]
To what depth? [ ] ft.
Material used in seal [ ]
Did any strata contain usable water? Yes [ ] No [ ]
Type of water [ ]
Depth of strata [ ]
Method of sealing strata [ ]

(7) PUMP:
Manufacturer's Name [ ]
Type [ ]

(8) WATER LEVELS:
Land-surface elevation above mean sea level [ ]
Static level [ ] ft. below top of well Date: [Date]
Artesian pressure [ ] lbs. per square inch Date:
Artesian water is controlled by [ ]
(Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom? [ ]
Yield: gal./min. with ft. drawdown after hrs. [ ]

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level

Date of test [ ]
Bailer test: gal./min. with ft. drawdown after hrs. [ ]
Artesian flow: g.p.m. Date: [ ]
Temperature of water: °F
Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay - Top</td>
<td>0</td>
<td>104</td>
</tr>
<tr>
<td>Clay - Clay Shale - Sandstone - Clay - Shale</td>
<td>104 172</td>
<td></td>
</tr>
<tr>
<td>Clay - Shale - Sandstone</td>
<td>172 274</td>
<td></td>
</tr>
<tr>
<td>Clay - Biotite</td>
<td>274 297</td>
<td></td>
</tr>
<tr>
<td>Shale - Granite</td>
<td>297 321</td>
<td></td>
</tr>
<tr>
<td>Silt - Green</td>
<td>321 380</td>
<td></td>
</tr>
</tbody>
</table>

RECEIVED
SEP 21 1961

DEPARTMENT OF ECOLOGY
SPokane REGIONAL OFFICE

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name: [Name] (Person firm or corporation) (Type or print)
Address: [Address]

[Signature]: [Signature] (Well Driller)

License No. [License No.] Date: [Date]

1861

(USE ADDITIONAL SHEETS IF NECESSARY)
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 30, 2018

Well Log ID: NA Elev (ft): 2820 ±10 Depth (ft): 350 Quad: Robinson Lake

Latitude: 46.785145° Longitude: -116.967313° decimal degrees (WGS84)

Location Method:
Location is for house; Latah County Assessor; Google Earth imagery; topographic map

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>From 0 To 2</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>From 2 To 24</td>
</tr>
<tr>
<td>Clay, sandy</td>
<td>From 24 To 194</td>
</tr>
<tr>
<td>Clay and sand</td>
<td>From 194 To 275</td>
</tr>
<tr>
<td>*Idaho Batholith(?)</td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>From 275 To 350</td>
</tr>
</tbody>
</table>

*Difficult to pick contact between sediments of Bovill and granite
Comments:

Latah County Tax Parcel RP40N05W280628, owner is WILLIS, BARRY D; 1075 IDLERS REST RD, NWNE, 28 40 5.

References Cited:
IDaho Department of Water Resources
Well Driller's Report

1. Drilling Permit No.: 87-94 N. 45 W. 000

2. Owner:
   Name: Larry Miller
   Address: 7686 1823
   City: Moscow
   State: ID
   Zip: 83843

3. Location of Well by legal description:
   Sketch map location must agree with written location.

4. Proposed Use:
   - Domestic [ ]
   - Municipal [ ]
   - Monitor [ ]
   - Irrigation [ ]
   - Thermal [ ]
   - Injection [ ]
   - Other [ ]

5. Type of Work:
   - New Well [ ]
   - Modify or Repair [ ]
   - Replacement [ ]
   - Abandonment [ ]

6. Drill Method:
   - Mud Rotary [ ]
   - Air Rotary [ ]
   - Cable [ ]
   - Other [ ]

7. Sealing Procedures
   Material: Cement
   Seal/Filter Pack: 0
   From: 50
   To: 50
   Amount: 750
   Method: Dry

8. Casing/liner:
   - Diameter: 6"
   - From: 2
   - To: 350
   - Gauge: 50
   - Material: PVC
   - Casing: [ ]
   - Liner: [ ]
   - Welded: [ ]
   - Threaded: [ ]

9. Perforations/screens:
   - Perforations: Method
   - Screens: Screen Type

10. Static Water Level or Artesian Pressure:
    147 ft. below ground
    Artesian pressure __________ lb.
    Depth flow encountered __________ ft.
    Describe access port or control devices:

11. Well Tests:
    - Pump [ ]
    - Bailer [ ]
    - Air [ ]
    - Flowing Artesian [ ]
    Yield gpm max: 6 to 6.5
    Drawdown: __________
    Pumping Level: __________
    Time: __________

12. Litholog Log:
    (Describe repairs or abandonment)
    Water
    Bore Dia.: From: To: Remarks: Lithology, Water Quality & Temperature
    8 0 2 3 0
    2 29 24 Clay
    29 194 Clay
    154 223 Silt clay gravel
    223 348 Clay
    228 370 Mud
    275 325 Gray granite
    375 350 Sand granite

13. Driller's Certification
    I/we certify that all minimum well construction standards were complied with at
    the time the rig was removed.

   Firm Name: Schwabacker Drilling
   Firm No: 125
   Firm Official: Ray Schwabacker
   Date: Oct 1, 94
   Supervisor or Operator: Ray Schwabacker
   Date: Oct 1, 94

   (Sign once if Firm Official & Operator)
JASON WILLS WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 12, 2016

Well Log ID: 1557322
Elev (ft): 2630 ±10
Depth (ft): 110
7.5’ Quad: Pullman

Latitude: 46.635101
Longitude: -117.137884 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
7204 Johnson Road, Colton, Wash., on east side of road (opposite the Ed Druffel Farm)

Location Method:
Approximate location for new house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS subdivisions incorrect on driller’s report

GEOLOGIC UNITS — DESCRIPTION

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dirt</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
| Wanapum Basalt
| Priest Rapids Member
| Basalt of Lolo
| Basalt | 5    | 85  |
| Latah Formation
| Vantage Member
| Clay, orange, sandy | 85 | 110 |

1865
Comments:

Whitman County Tax Parcel 200004513033900, SW PT E 1/2 PTN OF VACATED BLOCK 7-9 LAMB ADTN EXCEPT SHORT PLAT, owners are WILLS, JASON/TAMARA; 27.0 acres; building permit issued 12/2/2015 for NEW HOME: 2755SF MAIN & UPPER FLOORS 1500SF BASEMENT-BONUS ROOM-PORCHES 506SF ATTACHED GARAGE; grantor was DRUFFEL INC, PHIL R on 11/24/15.

Plat map for Johnson (above) shows Lamb Addition in blue (Anderson Map Company, 1910).

References Cited:

**WATER WELL REPORT**

Original & 1st copy - Ecology, 2nd copy - owner, 3rd copy - driller

**Construction/Decommission ("x" in circle)**
- Decommission
- ORIGINAL INSTALLATION
- Notice of Intent Number

**Proposed Use:**
- Domestic
- Irrigation
- Industrial
- Municipal
- DeWater
- Irrigation Test Well
- Other

**Type of Work:**
- Owner's number of well (if more than one)
- New well
- Reconditioned
- Method: Dog
- Bored
- Driven
- Drilled
- Deadend
- Cable
- Rotary
- Jetted

**Dimensions:**
- Diameter of well: 10 inches, drilled 32 ft.
- Depth of completed well: 110 ft.

**Construction Details:**
- Casing:
  - Steel: Yes
  - Diameter: 4.5 in.
- Insulated:
  - Insulation: Yes
  - Insulation: 10 ft.
- Drilled:
  - Casing: Yes
  - Casing: 10 ft.

**Perforations:**
- Yes
- No
- Type of perforator used: Skill SAW
- Size of perforation: 6 in.

**Screen:**
- Yes
- No
- K-Pac
- Location:

**Manufacturer's Name:**
- Type:
- Model No:
- Diameter:
- Slot size:
- Slot size:
- Slot size:

**Gravel Filter:**
- Packed: Yes
- Packed: 6 in.
- Size of gravel:
- Sand:
- Material placed:
- from ft. to ft.

**Wells:**
- Land surface elevation above mean sea level: 4 ft.
- Static level: 48 ft. below top of well:
- Date:
- Artisan pressure:
- Per inch square:
- Date:

**Artisan water controlled by:**
- Cap, valve, etc.

**Well Tests:**
- Drawdown: Amount water level is lowered below static level:
- Was a pump test made:
- Yes
- No
- If yes, by whom:
- Yield:
- gal./min. with:
- ft. drawdown after:
- hrs.
- Yield:
- gal./min. with:
- ft. drawdown after:
- hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level):
- Time:
- Water Level:
- Time:
- Water Level:
- Time:
- Water Level:

**Date of Test:**
- Test:
- Date:
- Gal./min. with:
- ft. drawdown after:
- hrs.
- Artisan flow:
- p.m.
- Date:
- Temperature of water:
- Was a chemical analysis made:
- Yes
- No

**Well Construction Certification:**
- I, the undersigned, do not warrant the data for and/or the information on this report.

**Driller/Engineer/Trainee:**
- Driller/Engineer/Trainee Signature:
- Driller's License No.
- Owner's License No.
- Date:

**Drilling Company:**
- Brett Uhlenkott Drilling
- Address:
- City, State, Zip:

**Republic Water:**
- Water Right Permit No.
- Property Owner Name:
- Well Street Address:
- City:
- County:
- Location:
- Lat/Long:
- Tax Parcel No. (Required):

**Construction or Decommission Procedure:**
- Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

**Materials:**
- Drill mud:
- Sand:
- Gravel:
- Salts:
- Water:

**Received:**
- APR 25, 2016

**Department of Ecology:**
- Eastern Regional Office

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**ECY 050-1-20 (Rev 02-2010):** To request ADA accomodation including materials in a format for the visually impaired, call Ecology Water Resources Program at 360-407-6872. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.
M.E. WINGATE WELL

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 2, 2016

Well Log ID: 170297 Elev (ft): 2335 ±10 Depth (ft): 142 7.5’ Quad: Colfax South

Well Address and (or) Other Location Information:
27881 US 195, Pullman, Wash., on northeast side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. PLSS subdivision incorrect on driller's report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>22</td>
<td>133</td>
</tr>
<tr>
<td>Roza Member(?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>133</td>
<td>141</td>
</tr>
<tr>
<td>Basalt</td>
<td>141</td>
<td>142</td>
</tr>
</tbody>
</table>

Latitude: 46.781869 Longitude: -117.294533 decimal degrees (WGS84)
Comments:

Whitman County Tax Parcel 200004415174390, 27881 SR 195, SE PT SW 1/4, owners are now MEIER, KATHRYN E/G PATRICK; 12.0 acres; 1½ story residence built in 1909; grantor was WINGATE, CICELY J on 08/20/12.

Marcel Wingate, age 86, died on November 29, 2006, at his ranch home near Pullman (Minnesota State University Mankato, 2007).

References Cited:

**WATER WELL REPORT**

**STATE OF WASHINGTON**

(1) **OWNER:** Name: M. E. Wingate

Address: RT 2, Box 102, Pullman, Wash.

(2) **LOCATION OF WELL:** County: Whitman

(3) **PROPOSED USE:** Domestic □ Industrial □ Municipal □ Irrigation □ Test Well □ Other □

(4) **TYPE OF WORK:** Owner's number of well (if more than one)...

New well □ Method: Drilled □ Bored □ Deepened □ Cable □ Driven □ Reconditioned □ Rotary □ Jetted □

(5) **DIMENSIONS:** Diameter of well 7 inches.

Drilled: 142 ft. Depth of completed well 142 ft.

(6) **CONSTRUCTION DETAILS:**

Casing installed: 7 "Diam. from 1 ft. to 936 ft."

Threaded □ "Diam. from ft. to ft."

Welded □ "Diam. from ft. to ft."

Perforations: Yes □ No □

Type of perforator used...

SIZE of perforations in. by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

Sequences: Yes □ No □

Manufacturer's Name...

Type...

Diam. Slot size from ft. to ft.

Diam. Slot size from ft. to ft.

Gravel packed: Yes □ No □ Size of gravel...

Gravel placed from ft. to ft.

Surface seal: Yes □ No □ To what depth 23.6 ft.

Material used in seal CEMENT MORT.

Did any strata contain unusable water? Yes □ No □

Type of water...

Depth of strata...

Method of sealing strata off...

(7) **PUMP:** Manufacturer's Name...

Type: H.P.

(8) **WATER LEVELS:**

Land-surface elevation 2400 ft.

Static level 115 ft. below top of well

Date 8-14-78

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (Cap, valve, etc.)

(9) **WELL TESTS:**

Drawdown is amount water level is lowered below static level measured from well top to water level

Was a pump test made? Yes □ No □

If yes, by whom?

Yield: gal/min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Date of test...

Jier test gal/min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Date

Temperature of water...

Was a chemical analysis made? Yes □ No □

**WELL DRILLER'S STATEMENT:**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

**NAME:** RAY McPHerson WELL DATING

(Person, firm, or corporation) (Type or print)

Address: AB1, 804, 138, PALM, WASH, 99461

(Signed) Ray McPherson

(Well Driller)

License No. 0302 Date 9-13, 1978

CO/FOX 5, 714

(USE ADDITIONAL SHEETS IF NECESSARY)
# BILL WOLTERING WELL

**Geologic Interpretation of Water Well Driller’s Log**  
**By John H. Bush, January 9, 2018**

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>149820</th>
<th>Elev (ft):</th>
<th>2690 ±10</th>
<th>Depth (ft):</th>
<th>180</th>
<th>7.5’</th>
<th>Quad:</th>
<th>Palouse</th>
</tr>
</thead>
</table>

Latitude: 46.997784°  
Longitude: -117.074347°  
decimal degrees (WGS84)

| ¼, NW ¼, SE ¼, Sec. 1, T. 17N, R. 45E |

**Well Address and (or) Other Location Information:**

202 Trapper Road, Garfield, Wash., on east side of Ladow Butte Road

**Location Method:**

Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 24, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 23</td>
</tr>
<tr>
<td>Cambrian—Precambrian(?)</td>
<td></td>
</tr>
<tr>
<td>Siltite, black and white</td>
<td>23 – 180</td>
</tr>
</tbody>
</table>

Driller reported the rock to be granite. Outcrops on nearby Ladow Butte are interlayered siltite, argillite, and quartzite. The siltites are black and white laminated; therefore, driller’s description suggests a siltite.
Comments:
Whitman County Tax Parcel 200004517014290, SE W1/2 N W PT, WOLTERING, WILLIAM R; last name is misspelled in DOE database of water wells as "Wallving."

References Cited:
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Bill Wattinger
Address: Lt 8 Bu 138 campaigners

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address):

(3) PROPOSED USE: Domestic ☐, Industrial ☐, Municipal ☐, Irrigation ☐, DeWater ☐, Test Well ☐, Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one):
- Abandoned ☐
- New well ☐
- Deepened ☐
- Reconditioned ☐
- Condition Method: Dug ☐, Bored ☐, Cable ☐, Rotary ☐, Jetted ☐

(5) DIMENSIONS:
- Diameter of well: 84.6 inches.
- Drilled: 180 feet. Depth of completed well: 180 feet.

(6) CONSTRUCTION DETAILS:
- Casing installed: 8 in. Diam. from 1 to 80 ft.
- Welded: ☐
- Liner installed: ☐
- Threaded: ☐
- Type of perforator used: Saw
- SIZE of perforations: 145 in. by 12 in.
- Perforations from 145 ft. to 158 ft.
- Perforations from 158 ft. to 160 ft.
- Gravel packed: ☐, Size of gravel: ☐
- Gravel placed from ft. to ft.
- Surface seal: Yes ☐, No ☐
- To what depth? 80 ft.
- Did any strata contain unusable water? Yes ☐, No ☐
- Type of water? Depth of strata:
- Method of sealing strata off:

(7) PUMP:
- Manufacturer's Name:
- Type:
- H.P.

(8) WATER LEVELS:
- Static level: 47 ft. below top of well Date: 8-3-92
- Artesian pressure: lbs. per square inch Date: 
- Artesian water is controlled by: (Cap, valve, etc.)
- Land-surface elevation above mean sea level:

(9) WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes ☐, No ☐
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- g.p.m. Date
- Recovery date (time taken as zero when pump turned on) (water level measured from well top to water level)
- Time
- Water Level
- Time
- Water Level
- Time
- Water Level
- Date of test
- Bailter test: gal./min. with ft. drawdown after hrs.
- Airtest: 10 gal./min. with stem set at 160 ft. for 1 hrs.
- Artesian flow: g.p.m. Date
- Temperature of water: Was a chemical analysis made? Yes ☐, No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
- Description:

MATERIAL
- FROM TO
- Clay: 0 13
- Sand: 13 137
- Sand: 13 137
- Sand: 13 137
- Sand: 13 137
- Sand: 13 137

WELL CONSTRUCTION CERTIFICATION:
- I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME: McPherson & Wright Drilling
Address: 2248 Burrell
Lewiston, Idaho 83501

License No. 0523

Contractor's Registration No. Date: 8-10-92
(USE ADDITIONAL SHEETS IF NECESSARY)
STATE COLLEGE OF WASHINGTON WELL 2

(WSC WELL 2)

[DRILLED IN 1957]

Geologic Interpretation of Water Well Driller’s Log

Well Log ID: 294223 Elev (ft): 2315 ±10 Depth (ft): 172 Quad: Pullman

Latitude: 46.740434 Longitude: -117.198380 decimal degrees (WGS84)

Well Address and (or) Other Location Information:
402 Hayward Road, Pullman, Wash., on west side of road; formerly Old City Dump Road (see Sorenson, 1996)

Location Method:
Location is for shed near road; Whitman County Assessor; Google Earth imagery; topographic map; Lot 4, Block 11 of Farr’s Third Addition, per driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
<td>0</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>29</td>
</tr>
<tr>
<td>1N2–R2 magnetostratigraphic units</td>
<td>40</td>
</tr>
<tr>
<td>Sentinel Bluffs Member (basalt of Spokane Falls) and Meyer Ridge Member Basalt, weathered</td>
<td>55</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td></td>
</tr>
</tbody>
</table>

Comments:

1Nearby DOE City Yard wells 1 and 2 show about 100 ft of N2 overlying 265 ft of R2 Meyer Ridge flows.

2The driller made a special note ”no interbeds,” most likely because he expected to encounter interbeds similar to those in downtown Pullman. The reason he did not was because he was drilling on an anticline which places the Vantage at an elevation above that of the well site.
Whitman County Tax Parcel 12170011040000, 402 HAYWARD RD, PULLMAN FARRS 3RD 1.52 AC OF SE 90'-3 6 AC IN R S, owners are now SHORS, BEN/CHelsea; grantor was OLFS ESTATE, HAROLD on 12/10/13; building permit for NEW HOME: 2036SF 2036SF DAYLIGHT BASEMENT 765SF ATTACHED GARAGE issued on 6/17/2014.

"Washington State University is accepting bids for the sale of approximately 7.2 acres of fenced pasture land, with a 14'x16' mobile home and assorted farm buildings known as the Wegner Farm and located about 1 mile west of Pullman, Washington, on Old City Dump Road and described as follows: Legal description—Lot 4 in Block 11 of Farr’s Third Addition to Pullman..." (Moscow-Pullman Daily News, 1987).

Lot 4, Block 11 is the wedge east of (adjoining) the area outlined in yellow in the plat map, above.

References Cited:


STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG
No. Appl 4, 2297

Date: May 7, 1957
Record by: well driller
Source: driller's record

Location: State of WASHINGTON
County: Whitman
Lot: 4, Blk. 11 of Farr's 3d Addn.
Sec. 31, T. 15 N., R. 45 E

Diagram of Section

Drilling Co.: A.A. Durand & Son
Address: Walla Walla, Wash.
Method of Drilling: 19

Owner: State College of Washington
Address: Pullman, Wash.

Land surface, datum: 1 above

<table>
<thead>
<tr>
<th>CORRELATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden formations of</td>
<td>top soil, clay, clay &amp; basalt</td>
<td>29 x 29 x 29 x 29</td>
<td></td>
</tr>
<tr>
<td>Talus (seepage water</td>
<td>29 29</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>28')</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt (brown &amp; weathered)</td>
<td>11 49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, hard, dense, black</td>
<td>15 55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt, (no interbeds)</td>
<td>117 172</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PUMP TEST:
Dim. 172' x 10'' x 8-1/2''
SHL: 23.4''
DD: 9 ft.
Yield: 396 g.p.m.
Water Temp. 51°F, sub-artesian

Type & size of pump: deep well

burbine-gear head drive

Turn up Sheet of sheets
**WELL LOG—Continued**

<table>
<thead>
<tr>
<th>CASING:</th>
<th>10&quot; I.D. diam. std. black steel pipe from 0 to 51'6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; I.D. open rock hole from 61'6&quot; to 172' ft.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

1. 10" casing continuously sanitary grout sealed from 0-51'6" (26 sacks cement)
2. All overburden and surface waters shut off.

---

S. F. No. 7-12-54-3M. 1877
WASHINGTON STATE UNIVERSITY WELL 4

(WSU WELL 4)

[DRILLED IN 1963]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, November 1, 2016

Well Log ID: 294361  Elev (ft): 2380 ±10  Depth (ft): 275  Quad: Pullman

Latitude: 46.730107  Longitude: -117.1711  decimal degrees (WGS84)

¼, SE ¼, NW ¼, Sec. 5, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
NE College Avenue, Pullman, Wash., north of road; well plots at northwest corner of College Avenue Steam Plant

Location Method:
Location is for well (from coordinates on Well Tagging Form attached to driller’s report); Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>15</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>23</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, brown, sandy</td>
<td>68</td>
</tr>
<tr>
<td>Conglomerate</td>
<td>85</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>98</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>108 – 199</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>199 – 220</td>
</tr>
<tr>
<td>Basalt, hard, fractured</td>
<td>220 – 235</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>235 – 263</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>263 – 275</td>
</tr>
</tbody>
</table>

Comments:

References Cited:
STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

Well 

WELL LOG

Date: April 9, 1963
Record by: Driller
Source: Driller's Record

Location: State of WASHINGTON
County: Whitman
Area:
Map:

\[ \text{Diagram of Section} \]

Drilling Co.: Holman Drilling Corporation
Address: 3410 E. 9th, Spokane 31, Washington
Method of Drilling: Date: Nov. 29, 1962

Owner: Washington State University
Address: Pullman, Washington

Land surface, datum: "ft. above"

<table>
<thead>
<tr>
<th>CORRELATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top soil</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Brown clay</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>45</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Brown sandy clay</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Green &amp; blue, conglomerate</td>
<td>13</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft water bearing</td>
<td>10</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Basalt, medium hard</td>
<td>28</td>
<td>136</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>63</td>
<td>199</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft</td>
<td>11</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>Basalt, soft &amp; fractured water bearing</td>
<td>10</td>
<td>220</td>
</tr>
<tr>
<td></td>
<td>Basalt, medium hard fractured</td>
<td>15</td>
<td>235</td>
</tr>
<tr>
<td></td>
<td>Basalt, hard very broken, water bearing</td>
<td>28</td>
<td>263</td>
</tr>
<tr>
<td></td>
<td>Basalt, crevice, hard water</td>
<td>7</td>
<td>279</td>
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</tbody>
</table>

Turn up Sheet of sheets
<table>
<thead>
<tr>
<th>Layer</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basalt, hard</td>
<td>5</td>
<td>275</td>
</tr>
<tr>
<td></td>
<td>Casing: 20 O.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>from 0 to 40'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 O.D. from 42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>to 121.5'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 I.D. from 116</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>to 263'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perforated from</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>65 to 102'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>206 to 261'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWL: 598.88'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>on 4-8-63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yields 1750 gpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>with 1.22' DD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>after 6 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Instantaneous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(April 8, 1963)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pump: 175 hp,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>turbine</td>
<td></td>
<td></td>
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</table>

Pumped 1974 - 227,785,000
Well Tagging Form

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Unique Well Tag No: AEH 210 - 504

RECORD VERIFICATION (check one)

☐ Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)
☐ Verification inconclusive
☐ Well Report not available

WELL OWNERSHIP: IF DIFFERENT FROM WELL REPORT

First Name: Will Far 4TH
Last Name: R Safety
Street Address: PO Box 6441 72
City: Pullman
State: WA

LOCATION OF WELL: IF DIFFERENT FROM WELL REPORT

Well Address: 504
City: Pullman
County: Whitman
T. 14N. R. 45E W.M. Sec. 5 NE 1/4 of the SE

FOR AGENCY USE ONLY

Latitude 46.730107
Longitude 117.1711

Elevation at land surface feet/meters (circle one)

Additional information, if available:

☐ Location marked on topographic map (please attach)
☐ Location marked on air photo (please attach)

1882
Physical Description of well (size of casing, type of well, housing, etc.)

Location of Well identification Tag:

Was supplemental tag needed for ease of identifying well? □ Yes □ No

If yes, where was tag placed? Casing

<table>
<thead>
<tr>
<th>D</th>
<th>C</th>
<th>B</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
</tr>
<tr>
<td>M</td>
<td>L</td>
<td>K</td>
<td>J</td>
</tr>
<tr>
<td>N</td>
<td>P</td>
<td>Q</td>
<td>R</td>
</tr>
</tbody>
</table>

Scale 1:24,000 (1"=2,000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION ____________

COMMENTS: 504

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Water Right # __________________________ Date Issued __________________________

Circle One: Application Permit Certificate Claim Exempt
WASHINGTON STATE UNIVERSITY WELL 5

(WSU WELL 5)

[DRILLED IN 1964]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 17, 2016

Well Log ID: 294362  Elev (ft): 2505.04  Depth (ft): 396  Quad: Pullman

Latitude: 46.739910  Longitude: -117.127761  decimal degrees (WGS84)

¼, NE ¼, SW ¼, Sec. 34, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
Pullman Airport Road, Pullman, Wash., well plots on northwest side of road

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 3</td>
</tr>
<tr>
<td>Clay</td>
<td>3 – 11</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td>Basalt</td>
</tr>
<tr>
<td></td>
<td>11 – 139</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td>Clay, blue</td>
</tr>
<tr>
<td></td>
<td>139 – 155</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>Basalt</td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td>Basalt</td>
</tr>
<tr>
<td></td>
<td>155 – 249</td>
</tr>
</tbody>
</table>

R2 magnetostratigraphic unit

1884
### Meyer Ridge Member

<table>
<thead>
<tr>
<th>Layer</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basalt, fractured</td>
<td>249</td>
<td>280</td>
</tr>
<tr>
<td>Basalt</td>
<td>280</td>
<td>296</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>296</td>
<td>300</td>
</tr>
<tr>
<td>Basalt</td>
<td>300</td>
<td>365</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>365</td>
<td>372</td>
</tr>
<tr>
<td>Basalt</td>
<td>372</td>
<td>396</td>
</tr>
</tbody>
</table>

**Comments:**

Whitman County Tax Parcel 200004515343600, SW N1/2, owner is WSU.

**References Cited:**
### State of Washington
#### Department of Conservation and Development

**Well No. 5**

**Well Log**

- **Date:** February 20, 1964
- **Record by Driller:**
- **Source Driller's Record:**

**Location:** State of Washington
- **County:** Whitman
- **Area:**

**Map:** NE 1/4 SW 1/4 sec. 34, T. 15 N., R. 15 E., W.

**Drilling Co.:** Chas. Jungmann Drilling Company

**Address:** P.O. Box 123, Walla Walla, Washington

**Method of Drilling:** Cable
- **Date:** Feb. 4, 1964

**Owner:** Washington State University

**Address:** Pullman, Washington

**Land surface, datum:** Above

---

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
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</thead>
<tbody>
<tr>
<td>Domestic well</td>
<td>Top soil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Clay</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Basalt dark</td>
<td>11</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td>Blue clay</td>
<td>139</td>
<td>155</td>
</tr>
<tr>
<td></td>
<td>Basalt dark</td>
<td>155</td>
<td>235</td>
</tr>
<tr>
<td></td>
<td>Lots water at 180' hole</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sucking air</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt grey</td>
<td>235</td>
<td>249</td>
</tr>
<tr>
<td></td>
<td>Broken basalt dark</td>
<td>249</td>
<td>280</td>
</tr>
<tr>
<td></td>
<td>Basalt dark</td>
<td>280</td>
<td>296</td>
</tr>
<tr>
<td></td>
<td>Dark broken basalt</td>
<td>296</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Basalt dark</td>
<td>300</td>
<td>365</td>
</tr>
<tr>
<td></td>
<td>Broken basalt</td>
<td>365</td>
<td>372</td>
</tr>
<tr>
<td></td>
<td>Lost cuttings 365'-372'</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt dark</td>
<td>372</td>
<td>396</td>
</tr>
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Turn up Sheet of sheets

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1886
### WELL LOG—Continued

<table>
<thead>
<tr>
<th>Casing</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Depth forward</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casing: 12&quot; from +2 to 50'2&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10&quot; from +2 to 300'1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No perforations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No screens</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface sealed with neat cement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWL: 196'7&quot; on January 29, 1964</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yields 503 gpm with 218&quot; DD after 20 Hrs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14 hour recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>January 27, 1964</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temp: 55°</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pumped in 1976 23,664,000**
WASHINGTON STATE UNIVERSITY WELL 6
(WSU WELL 6)
[DRILLED IN 1975]
Geologic Interpretation of Water Well Driller’s Log

Well Log ID: 174181   Elev (ft): 2534.71   Depth (ft): 702   Quad: Pullman

Latitude: 46.734206   Longitude: -117.156804   decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Fairway Lane, Pullman, Wash., on west side of road; well plots in WSU parking lot south of Beasley Coliseum

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>-------</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>3</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken, with clay</td>
<td>21</td>
</tr>
<tr>
<td>Basalt</td>
<td>32</td>
</tr>
<tr>
<td>Basalt, broken, with clay</td>
<td>73</td>
</tr>
<tr>
<td>Basalt</td>
<td>105</td>
</tr>
<tr>
<td>Basalt, broken, with clay</td>
<td>141</td>
</tr>
<tr>
<td>Basalt</td>
<td>156</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue</td>
<td>166</td>
</tr>
<tr>
<td>Layer</td>
<td>Depth (m)</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td>188 – 190</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td>190 – 195</td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken, with clay</td>
<td>195 – 215</td>
</tr>
<tr>
<td>Basalt</td>
<td>215 – 342</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>342 – 479</td>
</tr>
<tr>
<td>Grouse Creek member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>479 – 550</td>
</tr>
<tr>
<td>Wapshilla Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>550 – 690</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>690 – 702</td>
</tr>
<tr>
<td>Sand, coarse</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

Driller's log has many units of basalt and clay which makes it difficult to pick contacts. Conrey and Wolff (2010) picks were used to assist in the interpretations; however, it must be noted that their contacts occur in the middle of thick basalt units described on the driller's log.
References Cited:

WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: Washington State University
       Address: Pullman, Washington 99163

(2) LOCATION OF WELL: County: Whitman
         NW 1/4 NW 1/4 Sec. 4, T 14 N., R 45 E., W.M.

PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
                 Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) 6
                 New well ☒ Method: Dug ☐ Bored ☐
                 Deepened ☐ Cable ☒ Driven ☐
                 Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS:
     Diameter of well 14 11/16 inches.
     Drilled 70 7/8 ft. Depth of completed well 72 7/8 ft.

(6) CONSTRUCTION DETAILS:
     Casing installed: 72 7/8 ft. Diameter from 2 1/8 in. to 2 15/32 in.
     Threaded ☐ Welded ☒

Perforations: Yes ☐ No ☒

Screens: Yes ☒ No ☐

Gravel packed: Yes ☐ No ☒

Surface seal: Yes ☒ No ☐ To what depth? 150 6 1/2 ft.

Material:

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Soil</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Brown Clay</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Brown Basalt - Clay</td>
<td>21</td>
<td>32</td>
</tr>
<tr>
<td>Black Basalt</td>
<td>73</td>
<td>165</td>
</tr>
<tr>
<td>Broken Basalt with Clay</td>
<td>106</td>
<td>141</td>
</tr>
<tr>
<td>Broken Brown Basalt - Clay</td>
<td>111</td>
<td>156</td>
</tr>
<tr>
<td>Black Basalt</td>
<td>156</td>
<td>166</td>
</tr>
<tr>
<td>Blue Clay</td>
<td>166</td>
<td>188</td>
</tr>
<tr>
<td>Green Clay</td>
<td>188</td>
<td>200</td>
</tr>
<tr>
<td>Broken Basalt with Clay</td>
<td>195</td>
<td>240</td>
</tr>
<tr>
<td>Black Basalt</td>
<td>240</td>
<td>340</td>
</tr>
<tr>
<td>Grey Clay</td>
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<td>360</td>
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<tr>
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<tr>
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<td>890</td>
</tr>
</tbody>
</table>

(7) PUMP:

Manufacturer's Name:

(8) WATER LEVELS:

<table>
<thead>
<tr>
<th>LAND-SURFACE ELEVATION</th>
<th>ABOVE MEAN SEA LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft.</td>
<td></td>
</tr>
</tbody>
</table>

Static level: 150 6 1/2 ft. below top of well Date: 1964-08-06
Artesian pressure: lbs. per square inch Date: 1964-08-06
Artesian water is controlled by: (Cap, valve, etc.)

(9) WELL TESTS:

<table>
<thead>
<tr>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Yield: gal/min with 1.0 1/2 ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level): 150 6 1/2 ft.

(10) WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME: (First name, middle initial, and last name)
(Person, firm, or corporation) (Type or print)
Address: ____________________________

[Signed] ____________________________ (Well Driller)
License No.: C 577 Date: 1975-10-06

S.F. No. 7366-OS—(Rev. 4-71)

(USE ADDITIONAL SHEETS IF NECESSARY)

1891
WASHINGTON STATE UNIVERSITY WELL 7

(WSU WELL 7)

[Drilled in 1987]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 22, 2017

Well Log ID: 174183           Elev (ft): 2414.12           Depth (ft): 2224           7.5’ Quad: Pullman

Latitude: 46.72908           Longitude: -117.169788   decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 5, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
NE College Avenue, Pullman, Wash., WSU Building 955, on south side of road; well house

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery; topographic map. Site visit (August 25, 2015).

GEOLOGIC UNITS — DESCRIPTION


<table>
<thead>
<tr>
<th>GEOLOGIC UNIT</th>
<th>DESCRIPTION</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>Soil and clay</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basalt, coarse-grained, plagioclase and olivine phenocrysts, finely</td>
<td>5</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>vesicular at top</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay and silt, yellow, minor angular sand-size grains of quartz</td>
<td>125</td>
<td>140</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Member</td>
<td>Time (ft)</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------</td>
<td>-----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Winter Water Member</td>
<td>140–250</td>
<td>Basalt, fine-grained, aphyric, vesicular at top, interpreted as one flow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250–360</td>
<td>Basalt, fine-grained, iron-stained, 40-ft-thick vesicular top, interpreted as one flow</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td>360–440</td>
<td>Basalt, fine-grained</td>
<td></td>
</tr>
<tr>
<td>Grouse Creek member</td>
<td>440–480</td>
<td>Basalt, fine-grained</td>
<td></td>
</tr>
<tr>
<td>Wapshilla Ridge Member</td>
<td>480–670</td>
<td>Basalt, fine-grained, vesicular zone at 550–580 ft, interpreted as two flows</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>670–720</td>
<td>*Hyaloclastite(?), glassy, soft, green clay vesicles</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Spring Ridge Member</td>
<td>720–980</td>
<td>Basalt, fine-grained, poor samples</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>980–1004</td>
<td>Sand, medium-grained, salt and pepper, angular quartz and basalt, minor muscovite</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frye Point member</td>
<td>1004–1070</td>
<td>Basalt, fine-grained, vesicular in places</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>1070–1115</td>
<td>Sand, yellowish-gray, coarse-grained; angular quartz and basalt</td>
<td></td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N1 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frye Point member</td>
<td>1115–1160</td>
<td>Basalt, fine-grained, alternating denser and soft zones</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1160–1280</td>
<td>Basalt, fine-grained, pyrite in places, vesicular zones</td>
<td></td>
</tr>
<tr>
<td>N1–R1 magnetostratigraphic units</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downey Gulch member–Brady Gulch member</td>
<td>1280–1490</td>
<td>Basalt, very fine-grained, vesicular in places</td>
<td></td>
</tr>
<tr>
<td>R1 magnetostratigraphic unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kendrick Grade member(?)</td>
<td>1490–1575</td>
<td>Basalt, fine-grained, yellow clay, weathered(?)</td>
<td></td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td>1575–1595</td>
<td>Sand, light-gray, coarse-grained, poor sample</td>
<td></td>
</tr>
</tbody>
</table>

1893
Grande Ronde Basalt
R1 magnetostratigraphic unit
Teepee Butte Member
  Basalt, fine-grained, aphyric 1595 – 1740
  Basalt, fine-grained, 25-ft-thick vesicular zone at top 1740 – 1848

Latah Formation
Sediments of Moscow
  Sand, very coarse-grained, angular quartz, basalt, and minor feldspar 1848 – 1882

Grande Ronde Basalt
R1 magnetostratigraphic unit
Buckhorn Springs Member
  Basalt, minor plagioclase phenocrysts, soft, weathered flow top(?) 1882 – 1920
  Basalt, abundant plagioclase phenocrysts 1920 – 2210

Latah Formation
Sediments of Moscow
  Claystone, greenish-gray, wood fragments 2210 – 2225

Comments:

* Originally interpreted as near-vent, but now believed to be pillow lava or hyaloclastite(?)

This well log was constructed from (1) data presented by Conrey and Wolff (2010), (2) sample descriptions by Bush and Hayden (1985); the driller's log, and geophysical logs by Wyatt-Jaykim Engineers (1987). In addition, Stephen P. Reidel (written commun., November 16, 2016) provided geochemical data with his interpretations of the units. These data sets did not all agree; the description and contacts identified herein are an interpretive summary of that information. A review of descriptions with the geochemical data revealed some confusion. The problem appears to have been a lag in samples (with respect to depth recorded) not understood at the time descriptions were made. For example, basalt samples labeled for intervals where no samples were collected, and samples of basalt recorded where geophysical logs show interbeds.

Note: Lower case "m" in the word "member" indicates an informal stratigraphic unit within a geologic formation; "Member" indicates a formal stratigraphic unit.
References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name: WASHINGTON STATE UNIVERSITY Address: SW 1/4 NE 1/4 Sec. 5 T. 14 N. R. 15E W.M.

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ☒ # 7

New well ☒ Method: Dug ☐ Bored ☐ Reconditioned ☐ Drilled ☐ Other ☐

Deepened ☐ Cable ☐ Driven ☐ Rotary ☒ Jetted ☐

(5) DIMENSIONS: Diameter of well: 16 x 12 x 10 inches Drilled 222 4 ft. Depth of completed well: 1814 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 16" Diam. from 372 ft. to 685 ft. Threaded ☐ Welded ☒

Diam. 16" Slot size 80 from 372 ft. to 685 ft. Diam. 16" Slot size 80 from 685 ft. to 675 ft. Perforations: Yes ☒ No ☐

Type of perforation used: In. by.

perforations from ft. to ft. perforations from ft. to ft. perforations from ft. to ft. perforations from ft. to ft.

Screens: Yes ☒ No ☐

Manufacturer's Name: JOHNSON

Type STEEL #1 CAP Model No. 7000 SIZE 16"

Diam. 16" Slot size 80 from 372 ft. to 685 ft. Diam. 16" Slot size 80 from 685 ft. to 675 ft.

Gravel packed: Yes ☒ No ☐ Size of gravel:

Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 170 ft.

Material used in seal: NEAT CEMENT

Did any strata contain unusable water? Yes ☐ No ☒

Type of water: Depth of strata:

Method of sealing strata off:

(7) PUMP: Manufacturer's Name:

Type:

H.P.

(8) WATER LEVELS:

Land-surface elevation above mean sea level: 2415.6 ft.

Static level 134 ft. below top of well Date 7-10-87

Artesian pressure lbs. per square inch Date

Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:

Was a pump test made? Yes ☒ No ☐ If yes, by whom? CONTRACTOR

Yield: 7200 gal./min. with 44 ft. drawdown after 3.5 hrs.

3000 11.6 5.5

2400 9.0 7.0

Recovery data (time taken as zero when pump turned on) (Time measured from well top to water level)

Time Water Level Time Water Level Time Water Level

0 163

17 HR. 159

Date of test 10-7-87

Bailer test: gal./min. with 18 ft. drawdown at 250 ft.

Artesian flow: g.p.m. Date

Temperature of water: Was a chemical analysis made? Yes ☒ No ☐

1896

(USE ADDITIONAL SHEETS IF NECESSARY)
Well Tagging Form

Unique Well Tag No: A6C 328

RECORD VERIFICATION (check one)

☐ Well Report available (please attach this form to the well report and submit it to the Ecology Regional Office near you)
☑ Verification inconclusive
☐ Well Report not available

WELL OWNERSHIP, IF DIFFERENT FROM WELL REPORT

First Name: WSU Law School
Last Name: Saffey
Street Address: PO Box 6411172
City: Pullman
State: WA

LOCATION OF WELL, IF DIFFERENT FROM WELL REPORT

Well Address: S0 5
City: ________
County: ________

T. 14 N. R. 45 E W.M. Sec. 5 NE 1/4 of the SW

FOR AGENCY USE ONLY

Latitude: 46.729389
Longitude: 117.1699

Elevation at land surface 749.018 feet/meters (circle one)

Additional information, if available:

☐ Location marked on topographic map (please attach)
☐ Location marked on air photo (please attach)
WELL CHARACTERISTICS

Physical Description of well (size of casing, type of well, housing, etc.)


Location of Well identification Tag:


Was supplemental tag needed for ease of identifying well?  

☐ Yes  ☐ No

If yes, where was tag placed?  

Casing

Scale 1:24,000 (1"=2,000')

Indicate the location of the well within the Section by drawing a dot at that point.

SECTION ______________________

COMMENTS:  

508

FOR ECOLOGY WATER RESOURCES PROGRAM ONLY

Water Right # ______________________ Date Issued ______________________

Circle One: Application  Permit  Certificate  Claim  Exempt
WELL SECTION

**LITHOGRAPHIC LOG** (WELL NO. 7)

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pelouse Formation</td>
</tr>
<tr>
<td>2</td>
<td>Columbia River Basalt Group</td>
</tr>
</tbody>
</table>

**GEOLOGICAL RECORD**

**Penetration Rate Feet / Minute**

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pelouse Formation</td>
</tr>
<tr>
<td>2</td>
<td>Columbia River Basalt Group</td>
</tr>
</tbody>
</table>

**Thickness (Feet)**

<table>
<thead>
<tr>
<th>Unit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pelouse Formation</td>
</tr>
<tr>
<td>2</td>
<td>Columbia River Basalt Group</td>
</tr>
</tbody>
</table>
WASHINGTON STATE UNIVERSITY WELL 8

(WSU WELL 8)

[DRILLED IN 2003]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 4, 2017

Well Log ID: 368715  Elev (ft): 2606  Depth (ft): 812  Quad: Pullman

Latitude: 46.734206  Longitude: -117.156804  decimal degrees (WGS84)

Well Address and (or) Other Location Information:
Hog Lane, Pullman, Wash., on west side of lane; north of NE Wilson Road

Location Method:
Latitude, longitude, and elevation from Steve Robischon (unpub. data, January 19, 2016, Monitoring_Wells_WGS84 shapefile); Google Earth imagery; topographic map. PLSS subdivision incorrect in driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, tan</td>
<td>0 – 38</td>
</tr>
<tr>
<td>Latah Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Sediments of Bovill</td>
<td></td>
</tr>
<tr>
<td>Clay, with gravel</td>
<td>38 – 42</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>42 – 66</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>66 – 223</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, with green claystone</td>
<td>223 – 235</td>
</tr>
<tr>
<td>Claystone, green</td>
<td>235 – 246</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>NZ magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Member/Magnetostratigraphic Unit</td>
<td>Age (Ma)</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Spokane Falls (?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, with green claystone</td>
<td>246 – 280</td>
</tr>
<tr>
<td>Basalt</td>
<td>280 – 345</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, brown, scoriaceous</td>
<td>345 – 373</td>
</tr>
<tr>
<td>Basalt</td>
<td>373 – 455</td>
</tr>
<tr>
<td>Basalt, scoriaceous</td>
<td>455 – 465</td>
</tr>
<tr>
<td>Basalt</td>
<td>465 – 500</td>
</tr>
<tr>
<td>Grouse Creek member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, with brown scoria</td>
<td>500 – 514</td>
</tr>
<tr>
<td>Basalt</td>
<td>514 – 543</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td></td>
</tr>
<tr>
<td>Claystone, green and brown scoria</td>
<td>543 – 557</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Wapshilla Ridge Member(?) – Mount Horrible member(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>557 – 578</td>
</tr>
<tr>
<td>Basalt, scoriaceous</td>
<td>578 – 595</td>
</tr>
<tr>
<td>Basalt</td>
<td>595 – 642</td>
</tr>
<tr>
<td>Basalt, with green minerals(?)</td>
<td>642 – 686</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>686 – 691</td>
</tr>
<tr>
<td>Basalt</td>
<td>691 – 719</td>
</tr>
<tr>
<td>Basalt, with green claystone</td>
<td>719 – 754</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Sediments of Moscow</td>
<td></td>
</tr>
<tr>
<td>Gravels$^2$ and cobbles, rounded to subrounded basalt, not flat or elongated</td>
<td>754 – 759</td>
</tr>
<tr>
<td>Sand and gravel$^2$, gravels are basalt, sand consists of quartz and basalt fragments</td>
<td>759 – 762</td>
</tr>
<tr>
<td>Gravels$^2$, cemented in a clay and minor sand matrix; similar to above rounded to subrounded basalt</td>
<td>762 – 812</td>
</tr>
</tbody>
</table>
Comments:

1 Samples were not analyzed for chemistry, so the stratigraphic picks were made only by comparisons to WSU wells 6 and 7. Conrey and Wolff (2010) made similar correlations and their work was used for the comparisons.

2 Gravel pieces from the 755-, 763-, 775-, and 785-ft intercepts were collected for chemistry (John H. Bush, 2003, personal data). The gravels were interpreted to be similar to those in Pullman city well 8 and compare (are chemically similar) to the Grande Ronde Basalt, N1 magnetostratigraphic unit, Cold Spring Ridge Member.

The stratigraphic information for this well was interpreted from the driller’s log and comparison to WSU wells 6 and 7. There are no chips to examine, nor are geochemical data available except for the gravels encountered at the base of the well, as collected by John Bush.

References Cited:

Water Well Report

Construction/Decommission

Original Installation Notice

SEP 17 2003

PROPOSED USE:
- Domestic
- Irrigation
- Industrial
- Municipal
- Municipal

TYPE OF WORK:
- New Well
- Reconditioned
- Deepened

DIMENSIONS:
- Diameter of well 16 inches, drilled 812 ft.
- Depth of completed well 812 ft.

CONSTRUCTION DETAILS

Casing:
- Welded

Installed:
- Liner installed 16 inches, drilled from 0 ft. to 812 ft.

Perforations:
- Yes
- No

Screen:
- Yes
- No

Manufacturer's Name: See attached sheet for screen information

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe the color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information indicate all water encountered. (Use additional sheets if necessary.)

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tan clay</td>
<td>0</td>
<td>38</td>
</tr>
<tr>
<td>Clay with gravel</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td>Brown clay</td>
<td>42</td>
<td>66</td>
</tr>
<tr>
<td>Black basalt</td>
<td>66</td>
<td>115</td>
</tr>
<tr>
<td>Grey basalt</td>
<td>115</td>
<td>223</td>
</tr>
<tr>
<td>Black basalt w/ green claystone</td>
<td>223</td>
<td>235</td>
</tr>
<tr>
<td>Green clay w/ green claystone</td>
<td>235</td>
<td>246</td>
</tr>
<tr>
<td>Broken black w/ green claystone</td>
<td>246</td>
<td>280</td>
</tr>
<tr>
<td>Black w/ grey basalt</td>
<td>280</td>
<td>345</td>
</tr>
<tr>
<td>Black w/ brown scoria</td>
<td>345</td>
<td>373</td>
</tr>
<tr>
<td>Black Basalt</td>
<td>373</td>
<td>455</td>
</tr>
<tr>
<td>Black w/ black scoria</td>
<td>455</td>
<td>465</td>
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<tr>
<td>Black Basalt</td>
<td>465</td>
<td>500</td>
</tr>
<tr>
<td>Black w/ brown scoria</td>
<td>500</td>
<td>514</td>
</tr>
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<td>Black Basalt</td>
<td>514</td>
<td>528</td>
</tr>
<tr>
<td>Grey basalt</td>
<td>528</td>
<td>543</td>
</tr>
<tr>
<td>Black w/ brown scoria &amp; green claystone</td>
<td>543</td>
<td>557</td>
</tr>
<tr>
<td>Grey basalt (hard)</td>
<td>557</td>
<td>578</td>
</tr>
<tr>
<td>Black w/ black scoria</td>
<td>578</td>
<td>595</td>
</tr>
<tr>
<td>Black Basalt</td>
<td>595</td>
<td>642</td>
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<tr>
<td>Black basalt w/ green claystone minerals</td>
<td>642</td>
<td>686</td>
</tr>
<tr>
<td>Broken black basalt</td>
<td>686</td>
<td>691</td>
</tr>
<tr>
<td>Black basalt</td>
<td>691</td>
<td>719</td>
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<tr>
<td>Black w/ green claystone</td>
<td>719</td>
<td>754</td>
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<tr>
<td>Gravels and cobbles</td>
<td>754</td>
<td>758</td>
</tr>
<tr>
<td>Black basalt - fractured</td>
<td>758</td>
<td>759</td>
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<tr>
<td>Sand &amp; gravels</td>
<td>759</td>
<td>762</td>
</tr>
<tr>
<td>Cemented gravels</td>
<td>762</td>
<td>801</td>
</tr>
<tr>
<td>Cemented gravels - tight</td>
<td>801</td>
<td>810</td>
</tr>
<tr>
<td>Cemented gravel</td>
<td>810</td>
<td>812</td>
</tr>
</tbody>
</table>

WELL CONSTRUCTION CERTIFICATION: I, the Driller/Engineer, have constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Driller/Engineer/Trainer Name (Print)

Driller/Engineer/Trainer License No.

Driller/Engineer/Trainer Signature

Drilling Company: Geo-Tech Explorations, Inc.

Address: 19700 S.W. Teton Ave.

City, State, Zip: Tualatin, OR 97062

Contractor's Registration No.: 100CZ

Driller/Engineer/Trainer Name: 1789

Ecology is an Equal Opportunity Employer.

Date: 9/4/03

1903
Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 1, 2016; November 9, 2017

Well Log ID: 174162  Elev (ft): 2560 ±10

Depth (ft): 600  Quad: Pullman

Latitude: 46.692520  Longitude: -117.241600  decimal degrees (WGS84)

\[ \frac{1}{4}, \text{ SE} \frac{1}{4}, \text{ SW} \frac{1}{4}, \text{ Sec. 14}, \text{ T. 14 N}, \text{ R. 44 E} \]

**Well Address and (or) Other Location Information:**
2253 Country Club Road, Pullman, Wash., WSU Knott Dairy Center, on southeast side of road; well is in well house east of access road.

**Location Method:**
Location from TerraGraphics and Ralston (2011, p. 9, fig. 2); Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
</tr>
<tr>
<td>Palouse Formation</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>0</td>
</tr>
<tr>
<td>Clay, hardpan</td>
<td>37</td>
</tr>
<tr>
<td>Saddle Mountains Basalt</td>
<td></td>
</tr>
<tr>
<td>Asotin Member</td>
<td>Basalt</td>
</tr>
<tr>
<td></td>
<td>76</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td>Clay, gray, sandy</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>Basalt of Lolo</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td>Basalt</td>
</tr>
<tr>
<td></td>
<td>133</td>
</tr>
<tr>
<td>Latah Formation</td>
<td>Vantage Member</td>
</tr>
<tr>
<td></td>
<td>Clay, green</td>
</tr>
<tr>
<td>Clay, yellow</td>
<td>256 – 266</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, brown and broken</td>
<td>266 – 276</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>276 – 281</td>
</tr>
<tr>
<td>*Basalt, weathered</td>
<td>281 – 293</td>
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<tr>
<td>Basalt, hard</td>
<td>293 – 320</td>
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<td>*Basalt</td>
<td>320 – 373</td>
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<tr>
<td>Basalt</td>
<td>373 – 375</td>
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<tr>
<td>Latah Formation</td>
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</tr>
<tr>
<td>Sediments of Moscow(?)</td>
<td></td>
</tr>
<tr>
<td>Basalt, broken, and clay</td>
<td>375 – 411</td>
</tr>
<tr>
<td>Basalt and clay</td>
<td>411 – 420</td>
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<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member(?)</td>
<td></td>
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<tr>
<td>Basalt, brown, hard</td>
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<tr>
<td>Basalt, hard</td>
<td>509 – 545</td>
</tr>
<tr>
<td>Basalt, brown</td>
<td>545 – 548</td>
</tr>
<tr>
<td>Basalt, alternating hard and soft</td>
<td>548 – 600</td>
</tr>
</tbody>
</table>

**Comments:**

*Reported by driller as shale.

There are two wells at the WSU Knott Dairy Center: well 1 (originally drilled for Washington State College, its third well) and well 2 (drilled in 1980, less than 50 ft to the southeast of well 1). Driller’s reports for both are difficult to interpret, and contacts and descriptions do not match between the two.

The Roza Member of the Wanapum Basalt was identified in the DOE Flat Road well about 1.3 mi to the northwest; however, I believe that the Roza pinched out before reaching the Dairy wells, and the Grande Ronde surface is rising beneath them. Please use my interpretations for this well with caution.
Whitman County Tax Parcel 200004414143290, 2253 COUNTRY CLUB, SW PT NW 1/4 16.3 AC; owner is WSU.

References Cited:
STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

No. Appl. #4959

Date: 3-20-1959

Record by: well driller

Source: driller’s record

Location: State of WASHINGTON

County: Whitman

Area: 

Map: SE 1/4 SW 1/4 sec. 14, T. 14 N., R. 44 E.

Diagram of Section

Drilling Co.: Midland Drilling Co.

Address: Walla Walla, Wash.

Method of Drilling: 

Owner: Washington State College

Address: Pullman, Wash.

Land surface, datum: ft. below

<table>
<thead>
<tr>
<th>CORRELATION</th>
<th>MATERIAL</th>
<th>THICKNESS (feet)</th>
<th>DEPTH (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sticky brown clay</td>
<td>37</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Dark med. hardpan &amp; clay</td>
<td>39</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Dark grey hard basalt</td>
<td>37</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>&quot; med. broken basalt</td>
<td>11</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>&quot; med. basalt</td>
<td>7</td>
<td>131</td>
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</tr>
<tr>
<td>Med. grey sandy shale</td>
<td>2</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Med. hard grey basalt</td>
<td>3</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Hard grey basalt</td>
<td>105</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>Med. green shale</td>
<td>15</td>
<td>256</td>
<td></td>
</tr>
<tr>
<td>Med. yellow clay</td>
<td>10</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>Med. brown broken basalt</td>
<td>10</td>
<td>276</td>
<td></td>
</tr>
<tr>
<td>Hard Black basalt</td>
<td>5</td>
<td>281</td>
<td></td>
</tr>
<tr>
<td>Med. sticky blue grey shale</td>
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<td></td>
</tr>
<tr>
<td>Med. hard light grey basalt</td>
<td>27</td>
<td>320</td>
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<tr>
<td>&quot; &quot; grey sandy shale</td>
<td>53</td>
<td>373</td>
<td></td>
</tr>
<tr>
<td>&quot; dark grey basalt &amp; shale</td>
<td>2</td>
<td>375</td>
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</tr>
<tr>
<td>&quot; black broken basalt</td>
<td>25</td>
<td>400</td>
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</table>

Turn up (over)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
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<tr>
<td>Depth forward</td>
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<td>400</td>
<td></td>
</tr>
<tr>
<td>Grey med. broken muddy basalt</td>
<td></td>
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<td>411</td>
</tr>
<tr>
<td>Med. muddy brown basalt</td>
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<td>9</td>
<td>420</td>
</tr>
<tr>
<td>Hard brown basalt</td>
<td></td>
<td>4</td>
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<tr>
<td>Hard light grey basalt</td>
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<td>456</td>
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<tr>
<td>Hard grey basalt</td>
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<td>Med. hard light grey basalt</td>
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</tr>
<tr>
<td>Med. hard grey basalt</td>
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</tr>
<tr>
<td>Hard grey basalt</td>
<td></td>
<td>2</td>
<td>566</td>
</tr>
<tr>
<td>Soft grey basalt</td>
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<td>569</td>
</tr>
<tr>
<td>Hard grey basalt</td>
<td></td>
<td>31</td>
<td>600</td>
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</tbody>
</table>

**PUMP TEST:**

- Dim. 600' x 14x10x8”
- SWL: 236 ft.
- DD: 24 ft.
- Yield: 329 g.p.m.
- Water Temp. 58°

**CASTING:**

- 10” diam. std. black steel pipe from 0 to 81'7”
- 8” diam. std. black steel pipe from 0 to 400 ft.
- 10” Atlas Gopher drive shoe
- 8” Atlas Gopher drive shoe
Well #1 located in house

Well #2 located outside of house under removable cover

Figure 2. Photo of Well House at WSU Dairy Farm.

Location of WSU Knott Dairy Center wells 1 and 2 (page from TerraGraphics and Ralston, 2011).
**WASHINGTON STATE UNIVERSITY KNOTT DAIRY CENTER WELL 2**

[WSU KNOTT DAIRY WELL 2, WSU WELL 2]

[DRILLED IN 1980, DEEPENED IN 1993]

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, November 8, 2016; November 9, 2017

<table>
<thead>
<tr>
<th>Well Log ID:</th>
<th>174180, 174148</th>
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<tbody>
<tr>
<td>Elev (ft):</td>
<td>2560 +10</td>
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<tr>
<td>Depth (ft):</td>
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<tr>
<td>Quad:</td>
<td>Pullman</td>
</tr>
<tr>
<td>Latitude:</td>
<td>46.692452</td>
</tr>
<tr>
<td>Longitude:</td>
<td>-117.241444</td>
</tr>
<tr>
<td></td>
<td>decimal degrees (WGS84)</td>
</tr>
</tbody>
</table>

| ¼, SE ¼, SW ¼, Sec. 14 , T. 14 N , R. 44 E |

**Well Address and (or) Other Location Information:**
2253 Country Club Road, Pullman, Wash., WSU Knott Dairy Center, on southeast side of road, well is southeast of well house east of access road.

**Location Method:**
Location from TerraGraphics and Ralston (2011, p. 9, fig. 2) and driller's report; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
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</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Overburden</td>
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</tr>
<tr>
<td>Top soil</td>
<td>3</td>
</tr>
<tr>
<td>Clay, tan</td>
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</tr>
<tr>
<td>Latah Formation</td>
<td>55</td>
</tr>
<tr>
<td>Unnamed interbed</td>
<td></td>
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<tr>
<td>Clay, green</td>
<td></td>
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<tr>
<td>Saddle Mountains Basalt</td>
<td>80</td>
</tr>
<tr>
<td>Asotin Member</td>
<td>86</td>
</tr>
<tr>
<td>Basalt, hard</td>
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<td>Basalt</td>
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<tr>
<td>Basalt</td>
<td>115</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td>125</td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
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</tr>
<tr>
<td>Basalt</td>
<td></td>
</tr>
<tr>
<td>¹Green shale and rock</td>
<td>235</td>
</tr>
</tbody>
</table>

1910
Basalt, soft 260 – 265

Latah Formation
Vantage Member(?)
Brown rock and clay 265 – 290

Grande Ronde Basalt
N2 magnetostratigraphic unit
Sentinel Bluffs Member
Basalt and clay 290 – 305
Basalt 305 – 412

Latah Formation
Sediments of Moscow
Interbed(?), red 412 – 416

Grande Ronde Basalt
R2 magnetostratigraphic unit
Meyer Ridge Member(?)
Basalt 416 – 432
No description / no recovery 432 – 440
Basalt 440 – 470
Basalt, with brown seams 470 – 510
Basalt, soft, red 510 – 530
Basalt 530 – 550
Basalt, red 550 – 570
Basalt 570 – 600

Comments:

1Interpreted as mixed up sample

2The driller’s reports for the two WSU Knott Dairy Center wells (this one, well 2, and WSU Knott Dairy Center well 1, drilled in 1959 for Washington State College, less than 50 ft to the northwest and inside the well house) are difficult to interpret: contacts do not match between wells, and there are many mixed samples and descriptions. Comparisons to the DOE Flat Road well show either the Roza extending through the Dairy Farm and (or) a pinch out of the Roza and a rising Grande Ronde surface. The interpretations herein assume the Roza is pinching out against an upfolded Grande Ronde. Because of these difficulties please use the interpretations with caution.

A geologic map by Hooper and Webster (1982) shows the uppermost flow in the area as belonging to the Asotin Member.
Whitman County Tax Parcel 200004414143290, 2253 COUNTRY CLUB, SW PT NW 1/4 16.3 AC; owner is WSU.

References Cited:


Figure 2. Photo of Well House at WSU Dairy Farm.

Location of WSU Knott Dairy Center wells 1 and 2 (page from TerraGraphics and Ralston, 2011).
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Washington State University
Address: Pullman, Washington

Location of Well:
County: Whitman
Township: NW 1/4, SE 1/4
Section: 14
T. 14 N., R. 44 E., W.M.

Proposed Use: Domestic
Type of Work: New well

Dimensions: Diameter of well: 10 inches
Depth of completed well: 132 ft.

Construction Details:
Casing installed: Diam. from 4 ft. to 8 ft.
Perforations: In.

Screens: Yes

Gravel packed: Yes

Surface seal: Yes

Pump: Manufacturer: Beyeler
Type: Submersible

Water Levels:
Land-surface elevation: 2520 ft.
Static level: 285.6 ft. below top of well
Artesian pressure: lbs. per square inch

Well Tests:
Yield: 120 gal./min., with 95 ft. drawdown after 7 hrs.

Well Driller's Statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name: Detray Drilling
Address: 1036 15th ST., Clarkston, WA

License No.: 0039
Date: 11-19-80

permit No.: G-3-26467

Additional pages if necessary.
WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name: Wash State University Address: Pullman, Wa

(2) LOCATION OF WELL: County: Whitman

(2a) STREET ADDRESS OF WELL (or nearest address): 1480 E and 830 N

(3) PROPOSED USE: Domestic ☑ Industrial ☐ Municipal ☐
DeWater ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned ☐ New well ☑ Deepened ☑
Reconditioned ☐ Method: Dug ☐ Cable ☑ Driven ☑
Rotary ☑ Jetted ☐

(5) DIMENSIONS: Diameter of well: 8 inches.
Drilled: 430 feet. Depth of completed well: 600 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: Yes ☑ No ☐
Diam. from ft. to ft. ft.

Welded: Yes ☑ No ☐
Diam. from ft. to ft. ft.

Liner installed: Yes ☑ No ☐
Diam. from ft. to ft. ft.

Threaded: Yes ☑ No ☐
Diam. from ft. to ft. ft.

Perforations: Yes ☑ No ☐
Type of perforator used:
SIZE of perforations: in. by in.
perforations from ft. to ft. ft.

Screens: Yes ☑ No ☐
Manufacturer's Name
Type: Model No.
Diam. from ft. to ft.
Slot size
Diam. from ft. to ft.
Slot size
Gravel packed: Yes ☑ No ☐
Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes ☑ No ☐ To what depth? ft.
Material used in seal
Did any strata contain usable water? Yes ☑ No ☐
Type of water?
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type
H.P.

(8) WATER LEVELS:

Land-surface elevation above mean sea level ft.
Static level: 300 ft. below top of well
Total drawdown: ft. drawdown after
Artesian pressure lbs. per square inch
Artesian water controlled by
(Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static

Was a pump test made? Yes ☑ No ☐ If yes, by whom?
Yield: gal./min. with hrs.

Recovery date (time taken as zero when pump turned off) (water level measured
from well top to water level)

Time Water Level Time Water Level

Date of test

Bailor test: gal./min. with ft. drawdown after hrs.
Air test: gal./min. with stem set at ft. for hrs.
Artesian flow: g.p.m. Date

Temperature of water: Was a chemical analysis made? Yes ☑ No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show
thickness of aquifers and the kind and nature of the material in each stratum penetrated,
with at least one entry for each change of information.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>gray basalt</td>
<td>440</td>
<td>470</td>
</tr>
<tr>
<td>red clay</td>
<td>420</td>
<td>510</td>
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<td>gray basalt</td>
<td>520</td>
<td>570</td>
</tr>
<tr>
<td>gray basalt</td>
<td>570</td>
<td>600</td>
</tr>
</tbody>
</table>

RECEIVED
JUNE 11, 1993
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well,
and its compliance with all Washington well construction standards.
Materials used and the information reported above are true to my best
knowledge and belief.

NAME: "Uhlenkott Drilling"
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
License No. 1740

Address: 825 31
(Signed) "Uhlenkott Drilling"
Contractor's Registration
No. Date:

USE ADDITIONAL SHEETS IF NECESSARY

ECY 05-01-20 (10/67) 1329-1
WASHINGTON STATE UNIVERSITY SPILLMAN AGRONOMY FARM WELL 1

(WSU SPILLMAN FARM WELL 1)

[DRILLED IN 1956, DECOMMISSIONED ON APRIL 17, 2007]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, April 27, 2016; November 9, 2017

Well Log ID: 173054 Elev (ft): 2470 ±10 Depth (ft): 400 Quad: Pullman

Latitude: 46.696903 Longitude: -117.149998 decimal degrees (WGS84)

NW ¼, NW ¼, SE ¼, Sec. 16, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
1452 Johnson Road, Pullman, Wash., WSU Spillman Agronomy Farm, on east side of road

Location Method:
Location is for Pullman quadrangle well 4 of Bush and Garwood (2005 [2006]); Whitman County Assessor; Google Earth imagery; topographic map. Site visit (April 19, 2016) but did not see well.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Top soil</td>
<td>0 – 14</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>14 – 29</td>
</tr>
<tr>
<td>Basalt, hard, with one porous interval</td>
<td>29 – 200</td>
</tr>
<tr>
<td>Basalt, broken</td>
<td>200 – 205</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, blue-green</td>
<td>205 – 222</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, porous</td>
<td>222 – 238</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>238 – 271</td>
</tr>
</tbody>
</table>
Basalt, broken  
R2 magnetostratigraphic unit(?)  
Basalt, hard

Comments:

Grande Ronde determinations assume very little change from Pullman city wells where Conrey and Wolff (2010) and Conrey and others (2013) identified major contacts.

There are two wells on the property: WSU Spillman Agronomy Farm well 1 (originally drilled for State College of Washington) and WSU Spillman Agronomy Farm well 2 (drilled in 2007).

Whitman County Tax Parcel 200004514164600, SE N 1/2 & 13 AC IN S 1/2; owner is WSU.

References Cited:


STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT

WELL LOG
No. Appla, 4251

Date: 12-28, 1919.

Record by: Well driller.

Source: Driller's record.

Location: State of WASHINGTON
County: Whitman
Area: Diagram of Section

Map: NW 1/4 NE 1/4 sec. 16 T. 14 N., R. 45 W.

Drilling Co.: A. A. Durand & Son
Address: Walla Walla, Wash.

Method of Drilling: July 25, 1919
Date: 1919.

Owner: State College of Washington
Address: Pullman, Wash.

Land surface, datum: feet above

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Material</th>
<th>Thickness (feet)</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Palouse top soil</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Basalt, black, weathered</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>&quot; very hard, black</td>
<td>12</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>&quot; brown, porous</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>&quot; very hard, dark grey</td>
<td>151</td>
<td>193</td>
</tr>
<tr>
<td></td>
<td>&quot; med. hard</td>
<td>7</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>&quot; broken, med. hard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dark grey</td>
<td>5</td>
<td>205</td>
</tr>
<tr>
<td></td>
<td>Clay, blue green, soft</td>
<td>17</td>
<td>222</td>
</tr>
<tr>
<td></td>
<td>Basalt, porous,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fractured with clay</td>
<td>16</td>
<td>238</td>
</tr>
<tr>
<td></td>
<td>Basalt, dark grey,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>very hard</td>
<td>33</td>
<td>271</td>
</tr>
<tr>
<td></td>
<td>&quot; broken, dk. grey</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>med. hard-soft</td>
<td>44</td>
<td>315</td>
</tr>
<tr>
<td></td>
<td>Basalt, grey, hard</td>
<td>37</td>
<td>335</td>
</tr>
</tbody>
</table>

Turn up

Sheet of sheets
<table>
<thead>
<tr>
<th>Observation</th>
<th>Material</th>
<th>Thickness (ft)</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basalt, very hard, grey</td>
<td>8</td>
<td>343</td>
</tr>
<tr>
<td></td>
<td>&quot; grey, hard &amp; very hard</td>
<td>13</td>
<td>356</td>
</tr>
<tr>
<td></td>
<td>&quot; grey, med. hard</td>
<td>18</td>
<td>374</td>
</tr>
<tr>
<td></td>
<td>&quot; hard</td>
<td>26</td>
<td>400</td>
</tr>
</tbody>
</table>

**PUMP TEST:**
- Dim.: 400' x 10" x 8"
- SWL: 172 ft.
- DD: 55 ft.
- Yield: 340 g.p.m.

**CASING:** 10" I.D. std. black steel pipe from 0 to 31'10"
**WATER WELL REPORT**

**ORIGINAL CONSTRUCTION Notice** of Intent Number

**PROPOSED USE:**
- D Water
- I Irrigation
- T Test Well
- O Other

**TYPE OF WORK:**
- N New Well
- R Reconditioned
- M Method: Dug
- B Bored
- D Driven
- D Deepened
- C Cased
- R Ronged
- J Jointed

**DIMENSIONS:**
- Diameter of well: 10 inches, drilled 240 ft.
- Depth of completed well: ft.

**CONSTRUCTION DETAILS**
- Catalog: Dialed
- Installed: Later installed
- Perforation: Yes

**WATER LEVELS:**
- Land surface elevation above mean sea level: ft.
- Static level below top of well: Date
- Artesian pressure: psi per square inch
- Artesian water is controlled by:

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level.
- Was a pump test made? Yes
- Yield: gal/min. with ft. drawdown
- Recovery: gal/min. with ft. drawdown

**WELL CONSTRUCTION CERTIFICATION:**
- Drilled and/or accepts responsibility for construction of this well and its compliance with all Washington well construction standards. Materials used and the information reported above are true to the best knowledge and belief.

MARK AND PAT YOUELL WELL

Geologic Interpretation of Water Well Driller's Log
By John H. Bush, August 2016

Well Log ID: 318106  Elev (ft): 2510 ±10  Depth (ft): 190  Quad: Albion

Latitude: 46.787445  Longitude: -117.188043  decimal degrees (WGS84)

¼, SW ¼, NE ¼, Sec. 18, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
2301 Banner Road, Pullman, Wash., on west side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; street number incorrect on driller's report. Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>Depth (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Clay</td>
<td>2 – 36</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>36 – 170</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Sand, hard</td>
<td>170 – 180</td>
</tr>
<tr>
<td>Sand, soft</td>
<td>180 – 190</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004515181789, 2301 BANNER RD PULLMAN, NE1/4 PAT SW1/4 W OF RD, owners are now RICHARDSON, SHELLY and Paul Fox, 2 acres, grantor was Patricia Youell, on 06/01/2002.

Mark Eugene Youell, 76, a Pullman resident, died Sunday, Jan. 13, 2002; he leaves his wife, Patricia Youell (Lewiston Tribune, 2002; Moscow-Pullman Daily News, 2002).

References Cited:

# WATER WELL REPORT

**STATE OF WASHINGTON**

**UNIQUE WELL LD. #**: 45E.5765

**Owner's Name**: Mark Keft Youell  
**Address**: 2500 Bannack Rd, Pullman

**Location**: Whitman County

## Proposed Use
- **Domestic**: √  
- **Irrigation**:  
- **Industrial**:  
- **Municipal**:  
- **DeWater**:  
- **Test Well**:  
- **Other**:  

### Type of Work
- **Abandoned**:  
- **New well**:  
- **Deepened**:  
- **Reconditioned**:  

### Dimensions
- **Diameter of well**: 8" inches  
- **Diameter of completed well**: 150 ft

### Construction Details
- **Casing installed**: 8" Diam. from 12 ft. to 34 ft.  
- **Linor installed**: 6" Diam. from -10 ft. to 1740 ft.

### Perforations
- **Type of perforator used**: Skull Saw
- **Size of perforations**: 6 in. by 1450 in.
- **Perforations from**: 140 ft. to 180 ft.

### Screens
- **Screens**: Yes  
- **Manufacturer's Name**:  
- **Type**:  

### Gravel Pack
- **Gravel packed**: Yes  
- **Size of gravel**:  

### Surface Seal
- **Surface seal**: Yes  
- **Material used in seal**:  
- **To what depth?**: 3 ft.

### Well seen
- **Artesian water level**: 40 ft. below top of well  
- **Artesian pressure**:  
- **Artesian water is controlled by**: (Cap, valve, etc.)

### Water Levels

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Water Level</td>
</tr>
<tr>
<td>Time</td>
<td>Water Level</td>
</tr>
<tr>
<td>Time</td>
<td>Water Level</td>
</tr>
</tbody>
</table>

**Work Started**: 6-21-19  
**Completed**: 6-25-19

---

## WELL CONSTRUCTOR CERTIFICATION:

I, [Name], [License No.], declare that the well described above is constructed in accordance with the regulations of the State of Washington. All materials and workmanship used were of good quality, and the work was performed in a workmanlike manner.

**Name**: [Signature]

**License No.**: 2348

---

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.
PATRICIA YOUNT WELL
Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, January 14, 2018


Latitude: 46.990402°  Longitude: -117.034402°  decimal degrees (WGS84)

  ¼,  SE ¼,  SW ¼,  Sec. 12,  T. 42 N,  R. 6 W

Well Address and (or) Other Location Information:
Yellow Dog Road, Potlatch, Idaho; at northwest corner of intersection with Schneider Road

Location Method:
Location is for well between two sheds in field at northwest corner of Yellow Dog Road and Schneider Road; Whitman County Assessor; Google Earth imagery; topographic map; site visit March 24, 2018

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 14</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>14 – 103</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>103 – 107</td>
</tr>
<tr>
<td>Basalt</td>
<td>107 – 139</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>139 – 145</td>
</tr>
<tr>
<td>Basalt</td>
<td>145 – 157</td>
</tr>
</tbody>
</table>
Comments:

Location is for Latah County Tax Parcel RP42N06W12600, owner is PIASKOWSKI, JULIA L; E 11 AC TAX #907 SE 5W, 12  42  6.

Well is to left (east) of small blue shed.

References Cited:
**IDAHO DEPARTMENT OF WATER RESOURCES**

**WELL DRILLER’S REPORT**

1. **WELL TAG NO.** D 0054049
   **DRILLING PERMIT NO.** 852325
   Other IDWR No.

2. **OWNER:**
   - **Name:** PATRICIA YOUNT
   - **Address:** 1005 CHANEY RD.
   - **City:** VIOLA State ID Zip 83872

3. **LOCATION OF WELL by legal description:**
   Sketch map location must agree with written location.

4. **USE:**
   - Domestic
   - Municipal
   - Monitor
   - Irrigation
   - Thermal
   - Injection
   - Other

5. **TYPE OF WORK:** check all that apply
   - New Well
   - Modify
   - Abandonment
   - Other

6. **DRILL METHOD:**
   - Air Rotary
   - Cable
   - Mud Rotary
   - Other

7. **SEALING PROCEDURES:**
<table>
<thead>
<tr>
<th>Seal/Filter Pack</th>
<th>AMOUNT</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTONITE</td>
<td>From 0</td>
<td>To 24</td>
</tr>
</tbody>
</table>

   **Was drive shoe used?** Yes Y No N
   **Shoe Depth(s):** 24'
   **Was drive shoe seal tested?** Yes Y No N
   **How?** 300 PSI

8. **CASING/LINER:**
   - **Diameter From To Guage Material**
     - 8 0 24 1/4 STEEL
     - 6 7 157 200 PVC
<table>
<thead>
<tr>
<th>Length of Headpipe</th>
<th>Length of Tailpipe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. **PERFORATIONS/SCREENS:**
   - **Perforations Method:** SAW
   | From To Slot Size Number Diameter Material Casing Liner Welded Threaded |
   |------------------------|---------|----------|-------|
   | 117 157 1/8 90 6 PVC |         |          |

10. **STATIC WATER LEVEL OR ARTESIAN PRESSURE:**
    - **40’’ below ground**
    - **Artesian pressure**
    - **Depth flow encountered**
    - **lb.**
    - **Describe access port or control devices:** WELL CAP

11. **WELL TESTS:**
    | Pump | Bail | X/Air | Flowing Artesian |
    |------|------|-------|------------------|
    | Yield gal./min. | Drawdown | Pumping Level | Time |
    | 60   | 150  | 1 HR  |                  |

   **Water Temp.** 55
   **Bottom hole temp.**
   **Water Quality test or comments:**
   **Depth first Water Encounter** 139

12. **LITHOLOGIC LOG:**
    (Describe repairs or abandonment)
<table>
<thead>
<tr>
<th>Lithology</th>
<th>Water Quality &amp; Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 19 24 BASALT</td>
<td>Y</td>
</tr>
<tr>
<td>8 24 103 BASALT</td>
<td>N</td>
</tr>
<tr>
<td>8 103 107 BASALT WEATHERED</td>
<td>N</td>
</tr>
<tr>
<td>8 107 139 BASALT</td>
<td>N</td>
</tr>
<tr>
<td>8 139 145 BASALT WEATHERED</td>
<td>Y</td>
</tr>
<tr>
<td>8 145 157 BASALT</td>
<td>N</td>
</tr>
</tbody>
</table>

**RECEIVED**

**IDWR/North**

**RECEIVED**

**IDWR/North**

**CERTIFICATION:**
We certify that all minimum well construction standards were complied with at the time the rig was removed.

**Company Name:** MCPherson & Wright Drilling Co

**Firm Official:**

**Driller or Operator:**

**Date:** 7/22/2008

**Office Use Only**

**Inspected by**

**Twp.**

**Rge.**

**Sec.**

**Lat.**

**Long.**

1927

**FORWARD WHITE COPY TO WATER RESOURCES**
PETE YUROVCHAK WELL

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, July/August 2016; November 9, 2017


Latitude: 46.692246  Longitude: -117.150188  decimal degrees (WGS84)

¼, SW ¼, SE ¼, Sec. 16, T. 14 N, R. 45 E

Well Address and (or) Other Location Information:
24 Sand Road, Pullman, Wash., north side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map; PLSS subdivision is incorrect on driller’s report. Site visit (September 19, 2016).

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0</td>
</tr>
<tr>
<td>Clay, brown</td>
<td>1</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>4</td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td>111</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>113</td>
</tr>
<tr>
<td>Basalt, weathered, brown</td>
<td>178</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, white</td>
<td>179</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, weathered, soft, brown</td>
<td>236</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 121900015000000 [this is Lot 15]; 24 SAND RD, PULLMAN MENNET ACRES SUBN 1.10 AC 24 SAND ROAD, owner is YUROVCHAK, PETER.

Lot 15 is second lot from the left (top tier) on the plat map below.

References Cited:
1930 WATER WELL REPORT
STATE OF WASHINGTON

(1) OWNER: Name PETE YUROVCHAK
Address 732 RICHELIEU ST., APT. C, PULLMAN, WA 99163

(2) LOCATION OF WELL: County WHITMAN
Street Address of Well (or nearest address) #24 SAND ROAD, PULLMAN WA 99163

(3) PROPOSED USE: X Domestic ☐ Industrial ☐ Municipal ☐ Other
☐ Irrigation ☐ Test Well ☐ Domestic ☐ DeWater

(4) TYPE OF WORK:
Owner's number of well (if more than one)
X New Well ☐ Method:
☐ Deepened ☐ Dug ☐ Bored ☐ Drilled ☐ Decommissioned ☐ Rotary ☐ Jetted

(5) DIMENSIONS:
Diameter of well 6 & 6 inches
Drilled 305 feet
Depth of completed well 305 ft.

(6) CONSTRUCTION DETAILS:
X Welded ☐ Liner installed ☐ 8” Diam. from +1 ft. to 20 ft.
☐ Liner installed ☐ 6” Diam. from 15 ft. to 305 ft.
☐ Liner installed ☐ 6” Diam. from ft. to ft.

Perforations:
X Yes ☐ No
Type of perforator used SAW
SIZE of perforations 1/8 in. by 12 in.
90 perforations from 225 ft. to 305 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens:
☑ Yes ☐ No ☐ K-Fac Location
Manufacturer’s Name
Type
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.
Gravel/Filter packed:
☑ Yes ☐ No ☐ Size of gravel/sand
Material placed from ft. to ft.

Surface seal:
☑ Yes ☐ No To what depth? 20 ft.
Material used in seal BENTONITE
Did any strata contain unsuitable water? ☑ Yes ☐ No
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP:
Manufacturer’s Name
Type
H.P.

(8) WATER LEVELS:
Land-surface elevation above mean sea level ft.
Static level 197 ft. below top of well Date 5/27/2000
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☑ Yes ☐ No if yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
<th>Time</th>
<th>Water Level</th>
</tr>
</thead>
</table>

Date of test
Boiler test gal./min. with ft. drawdown after hrs.
Air test 7 gal./min. with stem set at 290 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water 51 °F Was a chemical analysis made? ☑ Yes ☐ No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and the land and
nature of the material in each stratum penetrated, with at least one entry for each change
of information. Indicate all water encountered.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>CLAY BROWN</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>BASALT HARD BLACK</td>
<td>4</td>
<td>111</td>
</tr>
<tr>
<td>BASALT WEATHERED BROWN</td>
<td>111</td>
<td>113</td>
</tr>
<tr>
<td>BASALT HARD BLACK</td>
<td>113</td>
<td>178</td>
</tr>
<tr>
<td>BASALT WEATHERED BROWN</td>
<td>178</td>
<td>179</td>
</tr>
<tr>
<td>CLAY WHITE</td>
<td>179</td>
<td>236</td>
</tr>
<tr>
<td>BASALT WEATHERED BROWN SOFT</td>
<td>236</td>
<td>305</td>
</tr>
</tbody>
</table>


WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its
compliance with all Washington well construction standards. Materials used
and the information reported above are true to my best knowledge and belief.

Type or Print Name: TED WRIGHT
(Licensed Driller/Engineer)
Trainee Name
Drilling Company: MCPHERSON & WRIGHT DRILLING
(Signed) (Licensed Driller/Engineer)
Address 2246 BURRELL, LEWISTON ID 83501
Contractor's Registration No. MCPHED135N1 Date 12/16/00, 19

(USE ADDITIONAL SHEETS IF NECESSARY)
Ecology is an Equal Opportunity and Affirmative Action employer. For
special accommodation needs, contact the Washington Resources Program at
(360) 407-7600. The TDD number is (360) 407-6066.

1930
ERIC ZAKARISON WELL

(WALT ZAKARISON INC WELL)

[DRILLED IN 2015]

Geologic Interpretation of Water Well Driller’s Log
By John H. Bush, August 18, 2016

Well Log ID: 1074637
Elev (ft): 2565 ± 10
Depth (ft): 183
Quad: Viola

Latitude: 46.80795
Longitude: -117.124
decimal degrees (WGS84)

⅛, SW ⅛, SE ⅛, Sec. 3, T. 15 N, R. 45 E

Well Address and (or) Other Location Information:
8672 WA 27, Pullman, Wash., on northwest side of road; well plots north of house

Location Method:
Latitude and longitude of well is from driller’s report; Whitman County Assessor; Google Earth imagery; topographic map. Tax parcel number, and PLSS section and subdivisions are incorrect on driller’s report.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td></td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt, soft</td>
<td>29 – 44</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>44 – 183</td>
</tr>
<tr>
<td>*Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>183 – ?</td>
</tr>
</tbody>
</table>
Comments:

*Extrapolation from the Walt Zakarison well (drilled in 1990) which is believed to be in sec. 10 at the same address (8672 WA 27, Pullman).

The Grande Ronde should occur at about 2350 ft in elevation at the Erik Zakarison well (at about 215 ft in depth) which plots in sec. 3, north of the house at 8692 WA 27, Pullman.

Whitman County Tax Parcel 200004515034902, SE PT S 1/2, owner is ZAKARISON, WALTER R INC; 7.0 acres with tax value of improvements set at $300, is likely the parcel in which the well is located, as the only other parcel (200004515034890) with same ownership consists of 65.0 acres with no tax value ($0) listed for improvements.
Mr. Eric Zakarison is the son of Walter Zakarison (Tilth Producers of Washington, n.d.).

Mr. Walter Richard Zakarison died in 2003, aged 69 years (BillionGraves.com, 2016).

References Cited:


WATER WELL REPORT

Notice of Intent Number: W360657
Property Owner Last Name: Zakarison
First Name: Eric
Organization Name: Wair Zakarison INC.
Well Tag ID Number (e.g., AAA-001): APN 274
Variance Granted? (Circle One) Yes ☐ No ☐
Water Right Permit Required? (Circle One) Yes ☒ No ☐ If Yes, enter Water Right Permit Here (Required)

Well Use (Circle All That Apply):
- Agricultural Irrigation
- Commercial
- Domestic
- Group Domestic
- Individual Irrigation
- Municipal
- Parks and recreation
- Stockwater
- Test Well
- Other

Type of Work (Circle One):
- Alteration
- Deepened Well
- Hydrofracturing
- Replacement
- Other

Method (Circle One):
- Cable
- Driven
- Dug
- Hydrofracturing
- Jetted
- Rotary
- Other

Drilling Start Date: 5/4/15
Drilling Completion Date: 6/4/15

Well Location Only (No Mailing Address, No PO Box, Cross Streets are ok)
Well Street Address: 8472 SR 27
Well City: Pullman
Well County: Whitman
Well Zip Code:

Tax Parcel Number: 20000451501290

If claiming tax parcel exemption (Circle One):
- Tribal
- Federal Property
- Right of Way
- Railroad Land

Township: 15 N
Range: 45
Circle One: East or West
Section: 1

Latitude: N 46° 48.477
Decimal Degrees; Longitude: W 117° 07.440 West Decimal Degrees

CONSTRUCTION INFORMATION – SECURELY ATTACH (STAPLE) ADDITIONAL SHEETS OF INFORMATION (NO DRAWINGS) AS NEEDED.

Diameter of Well: 8" in, Drilled: 183' in
Depth of Completed Well: 183' ft in

Casings (At least one casing must have 6 in. of stickup and all fields must be filled out for each casing entered)
Type (Circle One):
- Concrete
- Plastic
- Steel
- Other

Diameter: 8" inches Stickup: 12 inches Depth: 1 ft in, TO: 52' ft in

Liners? Circle One: Yes ☐ No ☐ (If yes, then complete the below fields that apply)
Type 1 (Circle One):
- PVC
- Steel
- Other

Diameter: in, from: ft in TO: ft in

Type 2 (Circle One):
- PVC
- Steel
- Other

Diameter: in, from: ft in TO: ft in

Perforations? Circle One: Yes ☐ No ☐ (If yes, then complete the below fields that apply)
Type of Perforator (Circle One):
- Drill
- Mills Knife
- Saw cut
- Star
- Torch Cut
- Other

Perforation size: in by: in Total Perforations:

Perforation 1 from: ft in, TO: ft inches
Perforation 2 from: ft in, TO: ft

Screens? Circle One: Yes ☐ No ☐ (If yes, then complete the below fields that apply)
Type: Diam: in Slot Size: in
Mfr 1:

Type: Diam: in Slot Size: in
Mfr 2:

Type: Diam: in Slot Size: in

ECY 050-1-20 (Rev 1/11) The Department of Ecology does NOT warranty the data and/or information on this Well Report.
If you need this document in an alternate format, please call the Water Resources Program at 360-407-6872.
Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.
Sand/Gravel Packing? (Circle One) Yes No (If yes, then complete the below fields that apply)

<table>
<thead>
<tr>
<th>Packing Material 1 Circle One</th>
<th>10-20</th>
<th>20-40</th>
<th>8-12</th>
<th>Coarse Sand</th>
<th>Pea Gravel</th>
<th>From ______ ft _______ in TO ______ ft _______ in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing Material 2 Circle One</td>
<td>10-20</td>
<td>20-40</td>
<td>8-12</td>
<td>Coarse Sand</td>
<td>Pea Gravel</td>
<td>From ______ ft _______ in TO ______ ft _______ in</td>
</tr>
</tbody>
</table>

Surface Seal Was there an existing surface seal? Yes No Depth of Seal ______ ft _______ in

Type of Seal Material (Circle One) Bentonite Bentonite Slurry Concrete Dry Bentonite Neat Cement Neat Cement Grout

Pump Pump Installed? (Circle One) Yes No If yes, Mfr Name Pump Type HP

Static Water Level (Circle One and fill in the blanks if needed)

<table>
<thead>
<tr>
<th>Yes</th>
<th>Measured Level (Below top of well) 115 ft _______ in Date Measured 6/15/15</th>
<th>Flowing Artesian (Circle One) Greater Than or Equal To ______ GPM PSI Artesian Water Controlled by (e.g. Cap, Valve, etc.)</th>
</tr>
</thead>
</table>

Dry Hole

Unusable Water Strata? (Circle One) Yes No If Yes is circled, method of sealing strata off

| Strata 1 (Specify Unusable Water Type) From ______ ft _______ in TO ______ ft _______ in |
|--------------------------------------------|-----------------------------------------------|
| Strata 2 (Specify Unusable Water Type) From ______ ft _______ in TO ______ ft _______ in |

General Well Tests (Circle all that apply and fill in the blanks)

<table>
<thead>
<tr>
<th>Baler Test Date of test (Circle One) Greater Than or Equal To ______ GPM, with ______ Drawdown after ______ hrs ______ min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Test Date of test 6/15/15 Greater Than or Equal To ______ GPM, with stem set at ______ ft _______ in</td>
</tr>
<tr>
<td>........................................................................................................................................</td>
</tr>
<tr>
<td>........................................................................................................................................</td>
</tr>
<tr>
<td>........................................................................................................................................</td>
</tr>
</tbody>
</table>

Pump Test Date of test ______ Drawdown after ______ hrs ______ min

Note: Drawdown = the amount the water level is lowered below the static level

Yield ______ gpm, with ______ ft _______ in; Drawdown after ______ hrs ______ min Yield ______ gpm, with ______ ft _______ in; Drawdown after ______ hrs ______ min

Note: Recovery = The time taken at zero when the pump is turned off. Water level is measured from the well top to...Ask Lars for wording

<table>
<thead>
<tr>
<th>Time ____ hrs ____ min; Water Level ______ ft _______ in</th>
<th>Time ____ hrs ____ min; Water Level ______ ft _______ in</th>
<th>Time ____ hrs ____ min; Water Level ______ ft _______ in</th>
</tr>
</thead>
</table>

Well Lithology Details – Your lithology MUST be reported to the drilled depth of the well. Please check your “From” and “To” feet and inches for accuracy.

<table>
<thead>
<tr>
<th>Layer Formation Description</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overburden</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>Soft Basalt</td>
<td>29</td>
<td>44</td>
</tr>
<tr>
<td>Basalt Firm</td>
<td>44</td>
<td>183</td>
</tr>
<tr>
<td>Grey Shale</td>
<td>183</td>
<td></td>
</tr>
</tbody>
</table>

Comments – Enter any other important well construction and/or location details here.

CERTIFICATION – I hereby certify that I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington Well construction standards. Materials used and the information reported within the Well Report are true to my best knowledge and belief.

Driller Trainee Engineer Name (Print) Roger Wilt Drilling Company Wilt Well Drilling

Driller/Trainee Signature Roger Wilt Address 1091 South Grade Rd.

City, State, Zip Yakima, WA 83535

Phone Number (509) 246-3745 Email Address wilton@email.com

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report
**Russell Zakarison Well**

*Drilled in 1988*

Geologic Interpretation of Water Well Driller’s Log

By John H. Bush, August 18, 2016

| Well Log ID: 172781 | Elev (ft): 2640 ±10 | Depth (ft): 130 | 7.5’ | Quad: Viola |

| Latitude: 46.812709° | Longitude: -117.119812° | decimal degrees (WGS84) |

| ¼, NE ¼, SE ¼, Sec. 3, T. 15 N, R. 45 E |

**Well Address and (or) Other Location Information:**

9062 State Route 27, Pullman, Wash.; on west side of highway, opposite R Zakarison Road

**Location Method:**

Assumed location is for northernmost house (9062 SR 27) in tax parcel; Whitman County Assessor; Google Earth imagery; topographic map.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overburden</strong></td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0          – 2</td>
</tr>
<tr>
<td>Clay, tan</td>
<td>2          – 106</td>
</tr>
<tr>
<td><strong>Wanapum Basalt</strong></td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>106        – 115</td>
</tr>
<tr>
<td>Basalt, weathered</td>
<td>115        – 128</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>128        – 130</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515034903, 8992 SR 27, SE W 819' OF E 855' OF S 300' OF N 1/2 RD 2.99 5-94/38501 569004, owner now is ZAKARISON LTD PARTNERSHIP, 8992 SR 27, PULLMAN WA; 4.92 acres. There are two houses on this parcel: 8992 and 9062. One house was built in 1987.

Above left, 8992 SR 27, at elev. 2600 ft
Above, right, 9062 State Route 27, at elev. 2640 ft.

Sign at driveway lists 8992 and 9062.
Russell and Elaine Zakarison live at 9062 State Route 27, and Eric and Aaron Zakarison live at 8992 State Route 27 (Nuwber, Inc., 2018).

Russell and Elaine Zakarison are the parents of son Eric Zakarison (Tilth Producers of Washington [n.d.]). All are governors of Zakarison Partnership along with Eric’s wife Sheryl Hagen-Zakarison (Washington Secretary of State, 2018).

References Cited:


WATER WELL REPORT
STATE OF WASHINGTON

OWNER: Name | Russel F. Anderson
Address | 1206 SW 1st Ave, Seattle, WA

LOCATION OF WELL: County | Whatcom
Street Address of Well (or nearest address) | Same

PROPOSED USE: 
- Domestic
- Irrigation
- DeWater
- Other

TYPE OF WORK:
- Abandoned
- New well
- Deepened
- Reconditioned
- Rotated
- Jetted

METHOD: 
- Dug
- Bored
- Cable
- Driven

DIAMETERS:
- Diameter of well: 8 - 6 inches
- Drilled: 150 feet
- Depth of completed well: 130 ft.

CONSTRUCTION DETAILS:
- Casing installed: 8
- Diam. from: 11 ft. to 12 ft.
- Welded
- Diam. from: ft. to ft.
- Liner installed: Threaded
- Diam. from: ft. to ft.
- Perforated: Yes
- Size of perforations: in. by in.
- Screens: Yes
- Manufacturer's Name
- Model No.

WELL LOG or ABANDONMENT PROCEDEURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL | FROM | TO
--- | --- | ---
Clay - Gravel | 0 | 2
Sand - Gravel | 2 | 100
Basalt - Gravel | 100 | 115
Basalt - Field sand | 115 | 130

RECEIVED
NOV 5 1968

DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

PUMP: Manufacturer's Name
Type: H.P.

WATER LEVELS:
- Land-surface elevation above mean sea level: ft.
- Static level: 74 ft. below top of well Date
- Artesian pressure: lbs. per square inch Date

Artesian water is controlled by (Cap, valve, etc.)

WELL TESTS:
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes No
- If yes, by whom?
- Yield: g. p. m. Artifal
- Recovery date (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

Date of test

Bail test gal. / min. with ft. drawdown after hrs.
Art test gal. / min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date Temperature of water was a chemical analysis made? Yes No

WELL CONSTRUCTOR CERTIFICATION:
I hereby declare that I have constructed and/or accept responsibility for the construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME | McPherson & Wright Drilling
Address | 27240 Burwell
Licence No. | 0523
Date | 11-8-39
WALT ZAKARISON WELL

[Deepened in 1990]

Geologic Interpretation of Water Well Driller’s Log By
John H. Bush, August 18, 2016; November 9, 2017

Well Log ID: 174067
Elev (ft): 2555 ±10
Depth (ft): 342
Quad: Viola

Latitude: 46.807586
Longitude: -117.123957
decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 10 , T. 15 N , R. 45 E

Well Address and (or) Other Location Information:
8672 WA 27, Pullman, Wash., on northwest side of road

Location Method:
Location is for house; Whitman County Assessor; Google Earth imagery; topographic map. This well is Albion quadrangle Well 9 (Bush and Garwood, 2005 [2006]) which was incorrectly plotted at next house to the southwest, at 8232 WA 27.

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well deepened</td>
<td></td>
</tr>
<tr>
<td>No description</td>
<td>0 – 205</td>
</tr>
<tr>
<td>Grande Ronde Basalt</td>
<td></td>
</tr>
<tr>
<td>N2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Sentinel Bluffs Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>205 – 262</td>
</tr>
<tr>
<td>Basalt, soft, fractured</td>
<td>262 – 273</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>273 – 281</td>
</tr>
<tr>
<td>R2 magnetostratigraphic unit</td>
<td></td>
</tr>
<tr>
<td>Meyer Ridge Member</td>
<td></td>
</tr>
<tr>
<td>Basalt, red cinders</td>
<td>281 – 327</td>
</tr>
<tr>
<td>Basalt, hard</td>
<td>327 – 335</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>335 – 342</td>
</tr>
</tbody>
</table>
Comments:

Whitman County Tax Parcel 200004515101290, 8692 SR 27, NE PT NW 1/4, owner is ZAKARISON, WALTER R INC, one story, 4-bedroom residence built in 1927, 1 acre.

Mailbox in front of fence is labeled "8672."

Mr. Walter Richard Zakarison died in 2003, aged 69 years (BillionGraves.com, 2016).

Bush and Garwood (2005 [2006]) incorrectly plotted the Walt Zakarison well at the next house to the southwest (in the adjacent Albion quadrangle), in Whitman County Tax Parcel 200004515102490, 8232 SR 27, PULLMAN, HODGE SHORT PLAT 4.62 ACRES M/L (whose owners now are MADER, KEVIN/SARA; 4.0 acres; grantors were NEILL, HOWARD/MARY JANE on 06/12/13).

References Cited:


## WATER WELL REPORT

**STATE OF WASHINGTON**

**OWNER:** Walt Zakarian

**Address:** Pullman

**LOCATION OF WELL:** County - Whitman

**STREET ADDRESS OF WELL:** (or nearest address)

**PROPOSED USE:**
- Domestic
- Irrigation
- DeWater
- Municipal
- Industrial
- Test Well
- Other

**TYPE OF WORK:**
- Abandoned
- New well
- Reconditioned
- Deepened
- Method: Dug
- Bored
- Cased and Cot
- Rotary
- Jetted

**DIMENSIONS:**
- Diameter of well: 6 inches
- Drilled: 137 feet
- Depth of completed well: 342 feet

**CONSTRUCTION DETAILS:**
- Casing installed: 120 ft. to 150 ft.
- Welded: 120 ft. to 150 ft.
- Liner installed: 120 ft. to 150 ft.
- Perforations: Yes □ No □
- Type of perforator used: rotary
- Size of perforations: in. by in.
- Screens: Yes □ No □
- Manufacturer's Name: 
- Type: 
- Model No: 
- Diam.: 8 in.
- Slot size: from ft. to ft.
- Diam.: 8 in.
- Slot size: from ft. to ft.
- Gravel packed: Yes □ No □
- Size of gravel: 
- Gravel placed from ft. to ft.
- Surface seal: Yes □ No □
- To what depth: ft.
- Material used in seal: 
- Did any strata contain unusable water? Yes □ No □
- Type of water: 
- Depth of strata: ft.
- Method of sealing strata off: 

**PUMP:**
- Manufacturer's Name: 
- Type: 
- H.P.

**WATER LEVELS:**
- Land-surface elevation: above mean sea level ft.
- Static level: 308 ft.
- below top of well Date: 6/11/90
- Artesian pressure: lbs. per square inch Date: 
- Artesian water is controlled by: (Cap, valve, etc.)

**WELL TESTS:**
- Drawdown is amount water level is lowered below static level
- Was a pump test made? Yes □ No □
- If yes, by whom?
- Yield: gal./min. with ft. drawdown after hrs.
- Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
- Time Water Level Time Water Level Time Water Level

**WELL CONSTRUCTOR CERTIFICATION:**

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

**NAME:** Walt Zakarian

**Address:** 619 Powers Lewiston

**WELL DRILLER:** (SIGNED) Regency

**LICENSE NO:** 0673

**CONTRACTOR'S REGISTRATION NO.:** 137 PB

**DATE:** 7/4/90

**(USE ADDITIONAL SHEETS IF NECESSARY)**
**WALT ZYLOWSKI WELL**

Geologic Interpretation of Water Well Driller’s Log  
By John H. Bush, March 27, 2016

<table>
<thead>
<tr>
<th>Well Log ID: 160117</th>
<th>Elev (ft): 2520 ±10</th>
<th>Depth (ft): 103</th>
<th>7.5’ Quad: Albion</th>
</tr>
</thead>
</table>

Latitude: 46.864009   Longitude: -117.218376   decimal degrees (WGS84)

½, NW ¼, NW ¼, Sec. 24 , T. 16 N , R. 44 E

**Well Address and (or) Other Location Information:**
1111 Kenoyer Road, Colfax, Wash., on west side of road

**Location Method:**
Located is for only house on Kenoyer Road; Whitman County Assessor; Google Earth imagery; topographic map

<table>
<thead>
<tr>
<th>GEOLOGIC UNITS — DESCRIPTION</th>
<th>DEPTH (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>Overburden</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td>0 – 2</td>
</tr>
<tr>
<td>Palouse Formation(?)</td>
<td></td>
</tr>
<tr>
<td>Clay, brown</td>
<td>2 – 31</td>
</tr>
<tr>
<td>Wanapum Basalt</td>
<td></td>
</tr>
<tr>
<td>Priest Rapids Member</td>
<td></td>
</tr>
<tr>
<td>Basalt of Lolo</td>
<td></td>
</tr>
<tr>
<td>Basalt</td>
<td>31 – 91</td>
</tr>
<tr>
<td>Basalt, fractured</td>
<td>91 – 101</td>
</tr>
<tr>
<td>Latah Formation</td>
<td></td>
</tr>
<tr>
<td>Vantage Member</td>
<td></td>
</tr>
<tr>
<td>Clay, gray</td>
<td>101 – 103</td>
</tr>
</tbody>
</table>
Comments:
Whitman County Tax Parcel 200004416242901, 1111 KENOYER RD, COLFAKX, NW1/4 PT 1AC R/W, owners are ZYLOWSKI, W/SKINNER Y; 5.0 acres; 1½ story, 5-bedroom residence built in 1912.

References Cited:
WATER WELL REPORT

STATE OF WASHINGTON

(1) OWNER: Name: Walt Zyzynski
Address: 1214 S. 9th Ave., Pullman, WA 99163

LOCATION OF WELL: County: Whitman
Section: Sec. 24

(3) PROPOSED USE: Domestic ☑ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) ☐
New well ☑ Method: Dug ☐ Drilled ☐ Dependent ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 36 inches
Drilled: 103 ft. Depth of completed well 103 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: Yes ☑ Diam. from +1 ft. to 38 ft.
Perforations: Yes ☑ Diameter from ft. to ft.
Screws: Yes ☑ Manufacturer's name

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and angle thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>FROM</th>
<th>TO</th>
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</thead>
<tbody>
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<td>Clay - Brown</td>
<td>31</td>
<td>47</td>
</tr>
<tr>
<td>Clay - 47</td>
<td>91</td>
<td>121</td>
</tr>
</tbody>
</table>

Screws placed from ft. to ft.

(7) PUMP: Manufacturer's name

(8) WATER LEVELS:
Stateline 41 ft. below top of well Date: 10/22
Artesian pressure Date: per square inch
Artesian water is controlled by (Cage, valve, etc.)

(9) WELL TESTS:
Yield: gal/min. with ft. drawn after hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level

NAME: Melvin W. Wright, Driller
Address: 2246 Russell, Pullman

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

[Signature]: Melvin W. Wright

Licenses No. [1945] Date: 12/21/87

DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE

RECEIVED
DEC 29 1987

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.
Important Rock Outcrops

Description and location information are provided for 22 important rock outcrops that were useful in supporting the geologic interpretations made for the wells. They are sites that display unit contacts or locations of basement rock that can be viewed along roadside cuts or river banks. Care must be taken in accessing these sites with respect to traffic and steep terrain; permission must be obtained before entering private property.
OUTCROP 1

APPROXIMATE CONTACT OF GRANDE RONDE AND ROZA

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2260

USGS 7½-minute quadrangle: Elberton

Latitude: 46.981799
Longitude: -117.217932

decimal degrees (WGS84)

¼, NE ¼, SE ¾, Sec. 11, T. 17 N, R. 44 E

Location Information:
Oral Smith Road, Elberton, Wash.

Description:
Approximate location of contact of Grande Ronde Basalt with Roza Member of the Wanapum Basalt

Site visit: November 21, 2015
Geologic map for area of outcrop from Bush and others (2005 [2006]).

light blue, Lolo flow of the Priest Rapids Member of the Wanapum Basalt
Tr, Roza Member of the Wanapum Basalt
TgrN2, N2 magnetostratigraphic unit of the Grande Ronde Basalt

Reference

OUTCROP 2

TOP OF THE ROZA

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2300

USGS 7½-minute quadrangle: Elberton

Latitude: 46.979407

Longitude: -117.241915
decimal degrees (WGS84)

¼, ¼, SE ¼, Sec. 10, T. 17 N, R. 44 E

Location Information:
Elberton Road, Elberton, Wash.; west of Elberton, north of Palouse River

Description:
Top of the Roza Member of the Wanapum Basalt; overlain by the basalt of Lolo, Priest Rapids Member of the Wanapum Basalt.

Site visit: November 21, 2015
Geologic map for area of outcrop from Bush and others (2005 [2006]).

- light blue, Lolo flow of the Priest Rapids Member of the Wanapum Basalt
- Tr, Roza Member of the Wanapum Basalt
- TgrN₂, N2 magnetostratigraphic unit of the Grande Ronde Basalt

Reference

OUTCROP 3

BELT QUARTZITE ALONG PALOUSE RIVER

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2350    USGS 7½-minute quadrangle: Elberton

Latitude: 46.951173    Longitude: -117.153557    decimal degrees (WGS84)

¼, ¼, SE ¼, Sec. 20, T. 17 N, R. 45 E

Location Information:
Westacott Road, Elberton, Wash.; west of the road; exposures occur along the eastern bank of the Palouse River.

Description:
Belt Supergroup quartzite. Laminated siltite and phyllite with muscovite. Strike 80° NE, dip 25° S.

Site visit: November 13, 2016

Photos:
OUTCROP 4
Contact of Roza and Priest Rapids
By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2240
USGS 7½-minute quadrangle: Colfax North
Latitude: 46.932223
Longitude: -117.311366
decimal degrees (WGS84)

¼, NE ¼, NW ¼, Sec. 31, T. 17 N, R. 44 E

Location Information:
Redtail Ridge Road, Colfax, Wash., on east (uphill) side of road; northeast of the Tom Hockett and Mark Miller wells

Description:
Contact between Roza and Priest Rapids members of the Wanapum Basalt

Site visit: April 18, 2016
OUTCROP 5

TOP OF THE GRANDE RONDE

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2090  USGS 7½-minute quadrangle: Colfax North
Latitude: 46.930804  Longitude: -117.284796  decimal degrees (WGS84)

 Sec. ¼, NW ¼, NE ¼, T. 17 N, R. 44 E

Location Information:
Glenwood Road, Colfax, Wash., on east side of road; opposite intersection with N Palouse River Road; north of the Palouse River; northwest of Glenwood well 1.

Description:
Top of the Grande Ronde Basalt (Bush and others, 2016, Stop 11): N₂, Sentinel Bluffs Member.

Site visit: August 28, 2015

Photos
Geologic map for area of outcrop from Bush and others (2005 [2006]).

- light blue, Lolo flow of the Priest Rapids Member of the Wanapum Basalt
- Tr, Roza Member of the Wanapum Basalt
- TgrN2, N2 magnetostratigraphic unit of the Grande Ronde Basalt
References


OUTCROP 6

BASALT COLUMNS IN THE GRANDE RONDE, WITH ROZA ON TOP

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2060  USGS 7½-minute quadrangle: Colfax North

Latitude: 46.924253  Longitude: -117.297435  decimal degrees (WGS84)

¼, NW ¼, SW ¼, Sec. 32, T. 17 N, R. 44 E

Location Information:
N Palouse River Road, Colfax, Wash., on north side of road

Description:
Basalt columns in the N2, Grande Ronde Basalt, with craggy exposures of the Roza Member of the Wanapum Basalt on top of hill (Bush and others, 2016, Stop 12).

Site visit: August 28, 2015

Photos

1957
References

OUTCROP 7

PRECAMBRIAN BASEMENT ROCK IN DITCH

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2650  USGS 7½-minute quadrangle: Elberton

Latitude: 46.920116  Longitude: -117.191475  decimal degrees (WGS84)

  ¼,  SW  ¼,  SW  ¼,  Sec. 31,  T. 17 N,  R. 45 E

Location Information:
Swanson Road, Colfax, Wash., on northwest side of road, in ditch; about 0.15 mi southwest of junction with Ickes Road

Description:
Precambrian basement rock; rusty phyllite growing metamorphic minerals; strike 290°, dip ~50° SW

Site visit: November 13, 2016

Photos
OUTCROP 8

CONTACT OF PRIEST RAPIDS AND ROZA

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2250  USGS 7½-minute quadrangle: Colfax North

Latitude: 46.913807  Longitude: -117.275417  decimal degrees (WGS84)

¼, NW ¼, NE ¼, Sec. 4, T. 16 N, R. 44 E

Location Information:
WA 272, Colfax, Wash., on northwest side of highway; just west of junction with Glenwood Road

Description:
Contact of Priest Rapids and Roza members of the Wanapum Basalt

Site visit: November 13, 2015
OUTCROP 9

FLOW TOP OF THE ROZA; CONTACT WITH PRIEST RAPIDS

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2200  USGS 7½-minute quadrangle: Colfax North

Latitude: 46.912023  Longitude: -117.269883  decimal degrees (WGS84)

¼, ¼, NE ¼, Sec. 4, T. 16 N, R. 44 E

Location Information:
Clear Creek Road, Colfax, Wash., on northeast side of road; just south of junction with WA 272

Description:
Flow top of the Roza Member of the Wanapum Basalt, in contact with Priest Rapids Member of the Wanapum Basalt; iron-stained, vesicle filling in both Priest Rapids and Roza members, no noticeable interbed, coarse lower Priest Rapids.

Site visit: November 13, 2015

1962
OUTCROP 10

GRANDE RONDE AND ROZA

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft):  1990          USGS 7½-minute quadrangle:  Colfax North

Latitude:  46.890704        Longitude:  -117.364679        decimal degrees (WGS84)

          ¼,          ¼,     SW  ¼,     Sec.  11 ,     T.  16 N ,     R.  43 E

Location Information:
WA 26, Colfax, Wash., on north side; just west of intersection with US 195

Description:
Cliff of Sentinel Bluffs Member of the Grande Ronde Basalt and Roza Member of the Wanapum Basalt Colfax (Bush and others, 2016, Stop 14). Conrey and others (2013) originally identified unit as basalt of California Creek; however, chemical analysis of a sample collected here by John H. Bush in 2015 placed the flow unit in the basalt of Spokane Falls.

Site visit: August 28, 2015
References


OUTCROP 11

LOLO–ROZA CONTACT

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2220  
USGS 7½-minute quadrangle: Colfax South

Latitude: 46.873889  
Longitude: -117.308443  
decimal degrees (WGS84)

¼, ¼, SE ¼, Sec. 18, T. 16 N, R. 44 E

Location Information:
Chicken Ranch Road, Colfax, Wash., on west side of road; just north of the Ada Biddle well.

Description:
Contact between the basalt of Lolo (Priest Rapids Member of the Wanapum Basalt) and the Roza Member of the Wanapum Basalt; thin, gray interbed (1-ft-thick).

Site visit: September 13, 2016
OUTCROP 12

Basalt Against Quartzite

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2290  USGS 7½-minute quadrangle: Colfax South

Latitude: 46.79278  Longitude: -117.26712  decimal degrees (WGS84)

Sec. 16, T. 15 N, R. 44 E

Location Information:
Albion Road, Albion, Wash., on northeast side of road

Description:
Small outcrop of basalt against Precambrian quartzite is the only known exposure in the Moscow-Pullman area of older rocks in direct contact with flows of the Columbia River Basalt Group; the weathered basalt is part of the Lolo flow of Priest Rapids Member of the Wanapum Basalt; the quartzite is very coarsely crystalline, typical of exposures on Smoot Hill north of Albion (Bush and others, 2016, Stop 7).

Site visit: August 28, 2015
References

OUTCROP 13

CONTACT OF PRIEST RAPIDS AND ROZA

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2260
USGS 7½-minute quadrangle: Albion

Latitude: 46.785531
Longitude: -117.246595
decimal degrees (WGS84)

¼, NE ¼, SE ¼, Sec. 15, T. 15 N, R. 44 E

Location Information:
Pullman-Albion Road, Albion, Wash., on northeast side of road, at a city limits of Albion sign

Description:
Contact of the Priest Rapids Member of the Wanapum Basalt with the Roza Member of the Wanapum; brush on hillside is at the top of the Roza.

Site visit: November 20, 2015

Photos
Geologic map for area of outcrop from Bush and Garwood (2005 [2006]).

Tpr, Lolo flow of the Priest Rapids Member of the Wanapum Basalt
dark blue, Roza Member of the Wanapum Basalt

References

OUTCROP 14

ROZA–PRIEST RAPIDS CONTACT

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2320  USGS 7½-minute quadrangle: Albion

Latitude: 46.780158  Longitude: -117.245803  decimal degrees (WGS84)

¼, ¼, ¼, Sec. 15, T. 15 N, R. 44 E

Location Information:
Pullman-Albion Road, Albion, Wash., on north side of road

Description:
There are three units exposed in these steep cliffs, from the base upward they are the Roza Member of the Wanapum Basalt, an unnamed interbed of the Latah Formation, and the Lolo flow of the Priest Rapids Member of the Wanapum (Bush and others, 2016, Stop 6).

Site visits: August 30, 2015; September 1, 2015

Photos

White layer and overlying iron-stained layer belong to the unnamed interbed (photos, above).
Geologic map for area of outcrop from Bush and Garwood (2005 [2006]).

Tpr, Lolo flow of the Priest Rapids Member of the Wanapum Basalt
dark blue, Roza Member of the Wanapum Basalt


References


OUTCROP 15

ROZA MEMBER

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2060 USGS 7½-minute quadrangle: Colfax South

Latitude: 46.771536 Longitude: -117.356662 decimal degrees (WGS84)

¼, NW ¼, SE ¼, Sec. 23, T. 15 N, R. 43 E

Location Information:
Upper Union Flat Road, Pullman, Wash., on northeast side of road; opposite entrance to Klemgard County Park

Description:
The Roza Member of the Wanapum Basalt crops out here; it is interpreted that the valley floor is on the Grande Ronde Basalt. Swanson and others (1980) mapped the Roza here; they extended the unit northwest and southwest along Upper Union Flat Road.

Site visit: September 13, 2016
References

OUTCROP 16

N₂, GRANDE RONDE BASALT

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2306  USGS 7½-minute quadrangle: Pullman

Latitude: 46.749150  Longitude: -117.205170  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 36, T. 15 N, R. 44 E

Location Information:
Brayton Road, Pullman, Wash., south of road; on north bank of South Fork Palouse River.

Description:
Vesicular basalt (from the upper flow contact) belonging to the N₂, Grande Ronde Basalt and most likely from the Sentinel Bluffs Member (Moxley, 2012, p. 37). Location from Moxley (2012, p. 73, "basalt-2" sample).

Site visit: Drove by site in 2016, but it appeared to be on private property and we did not attempt to gain permission to field check.
References

Appendix F. Selected Photographs

Figure 23. Basalt Sample Location for ‘Basalt-2’

Basalt-2 is immediately south of DW-04 (Figure 3), near the SFPR stream channel on the north side of the stream, just north of the railroad bridge crossing the SFPR. View is looking west. The vesicular nature of the flow top is visible, and the contact is confirmed by the well log for DW-04 (Appendix D).

Extracted from Moxley (2012, p. 106); SFPR, South Fork Palouse River.
OUTCROP 17

VANTAGE MEMBER

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2360  USGS 7½-minute quadrangle: Pullman

Latitude: 46.740647  Longitude: -117.194596  decimal degrees (WGS84)

¼, NE ¼, SW ½, Sec. 31, T. 15 N, R. 45 E

Location Information:
Brayton Road, Pullman, Wash., on northeast side of road

Description:
Poorly exposed siltstone and claystone of the Vantage Member of the Latah Formation; plant debris and broken pieces of fossil leaves were found at this locality (Bush and others, 2016, Stop 4). These exposures are the only outcrops of the Vantage in the Moscow-Pullman area. (The quarry above (north of) this outcrop is in the Lolo flow of the Wanapum Basalt; exposures of the Grande Ronde Basalt occur along the road near the base of the hill.)

Site visit: August 27, 2015

Photos
References

OUTCROP 18

SEDIMENTS OF BOVILL

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2620  USGS 7½-minute quadrangle: Moscow East

Latitude: 46.729818  Longitude: -116.978535  decimal degrees (WGS84)

NW ¼, NW ¼, NW ¼, Sec. 16, T. 39 N, R. 5 w

Location Information:
E Sixth Street, Moscow, Idaho, on north side of street

Description:
Weathered slope exposure of the sediments of Bovill, an informal member of the Latah Formation, represents a coarse-grained facies of the unit with alternating brown and yellow-white "bands" of sediment; the brown bands consist of iron-stained, micaceous, poorly sorted sand and granule beds, each capped by a white-yellow kaolinite layer (Bush and others, 2016, Stop 2).

Site visit: August 31, 2015

Photos
Latah County Tax Parcel RPM0885002002A; owner is RAUCH, RANDY R.

Geologic map (Bush and others, 2000) showing area of outcrop
Qac, alluvium and colluvium
Tsb, sediments of Bovill
References


OUTCROP 19

PRECAMBRIAN AND MESOZOIC BASEMENT ROCKS

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2660
USGS 7½-minute quadrangle: Moscow East

Latitude: 46.726454
Longitude: -116.940227
decimal degrees (WGS84)

¼, E ½, NE ¾, Sec. 15, T. 39 N, R. 5 W

Location Information:
3080 ID 8, Moscow, Idaho, Elks Lodge golf course, on north side of highway; the quarry is east of the maintenance buildings and golf cart storage sheds and northeast of the club house; this is private property and permission must be obtained to enter the quarry.

Description:
Quartzite, schist, granodiorite, and gneiss; loose material at the base of the quarry consists of granule-size quartz in a matrix of white, yellow, pink, and brown clay; most samples are weakly coherent, and in places, appear to be weathered granite (Bush and others, 2016, Stop 1).
These rocks were mapped as mixed rocks of Precambrian and Mesozoic age by Bush and others (2000), and as quartzite and calc-silicate Precambrian rocks of the Wallace Formation(?) by Lewis and others (2005).

Site visits: August 28 and 30, 2015

Photos
Latah County Tax Parcel RP39N05W150015, owner is BPOE #249.

Geologic map (Bush and others, 2000) showing area of outcrop
Qac, alluvium and colluvium (Holocene)
pale lavender, sediments of Bovill (Miocene)
Kgr, undifferentiated intrusive rocks (Cretaceous)
KpCm, mixed rocks (Precambrian–Cretaceous) (C with a bar through it)
pCqsg, quartzite, schist, and gneiss (Precambrian) (C with a bar through it)
References


OUTCROP 20

TOP OF THE GRANDE RONDE

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft):  1600  USGS 7½-minute quadrangle:  Almota

Latitude:  46.724368  Longitude:  -117.486060  decimal degrees (WGS84)

____ ¼, ____ ¼,  SE ¼,  Sec. 2,  T. 14 N,  R. 42 E

Location Information:
Almota Road (WA 194), Almota, Wash., on east side of road

Description:
Top of the N2, Grande Ronde Basalt, overlain by a rust colored saprolite horizon, in turn overlain by
the Roza Member of the Wanapum Basalt; area was mapped by Swanson and others (1980).

Site visit: November 21, 2015

Photos

Grande Ronde is below the rust colored saprolite horizon; Roza Member is above it.
References

OUTCROP 21

SADDLE MOUNTAINS BASALT

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2410  USGS 7½-minute quadrangle: Ewartsville

Latitude: 46.720884  Longitude: -117.283490  decimal degrees (WGS84)

¼, SW ¼, SW ¼, Sec. 4, T. 14 N, R. 44 E

Location Information:
WA 194, Pullman, Wash., on northeast side of highway

Description:
Saddle Mountains Basalt

Site visit: November 19, 2016

1988
OUTCROP 22

BASALT OF TENMILE CREEK, DIKE INTRUDES THE LOLO FLOW

By John H. Bush and Pamela Dunlap, January 2017

Elevation (ft): 2410  USGS 7½-minute quadrangle: Pullman

Latitude: 46.71597  Longitude: -117.163880  decimal degrees (WGS84)

¼, NE ¼, NE ¼, Sec. 8, T. 14 N, R. 45 E

Location Information:
Johnson Road, Pullman, Wash., on east side of road

Description:
Lolo flow of the Priest Rapids Member of the Wanapum Basalt is intruded by a narrow (3-ft wide) dike of the basalt of Tenmile Creek of the Weissenfels Ridge Member of the Saddle Mountains Basalt; dike trends north-northwest (Bush and others, 2016, Stop 3).

Site visits: August 28 and 30, 2015

Photos

[Images of dike and outcrop]

Left, closer view of dike; note ends of columnar joints in dike, lower center of photo.  Right, area of outcrop.
References

Spatial Database for Wells and Important Rock Outcrops

The digital spatial data files released in this report are listed and briefly described in Table 2. The spatial database and associated files for use in Esri ArcGIS 10.6 (or higher) software were packaged in the compressed archive file, MPBdataGIS.zip; an Esri shapefile was packaged separately in MPBsitesSHP.zip. The data are also available for use in Google Earth Pro (in the file MPBsitesKML.kml).

The spatial database consists of a feature class (MPBsites) of points for site locations in a feature dataset (WellsOtcs) and a table of vertical downhole data (BoreHole) all stored in the file geodatabase MPBsites.gdb. The location data are provided in geographic coordinates (horizontal datum World Geodetic System of 1984, WGS84) with Z coordinates for elevation (North American vertical datum of 1988). These data are ready to use in an ArcMap map document (MPBasin.mxd) along with a folder of geologic reports for each site. A hyperlink was set within the map document that points to an individual site report in the folder \Geol_Logs\. After invoking the Identity tool, one can click on a point to view the data in a pop-up window. Clicking on the file listed in the Geol_Log field of the Identify window will open the respective geologic report for the reader to view in Adobe Portable Document Format (PDF).

The attribute table for the feature class MPBsites includes site name, latitude, longitude, well depth, year drilled, and property parcel information. Site location data were derived from a variety of sources, as noted in the site reports. When wells were not actually observed during our site visits or when the coordinates were not provided by the well driller or previous researchers, a feature was chosen as surrogate site within the property parcel that matched the well address on the driller's report and the latitude and longitude were derived using Google Earth Pro imagery (dated 30 June 2015). Site elevations were derived from US Topo quadrangle maps.

The feature class MPBsites was exported to a shapefile of the same name from which the Google Earth-compatible KML (Keyhole Markup Language) file MPBsitesKML.kml was constructed. Additionally, the feature class MPBsites and the table BoreHole were exported to an Excel format and copied to two worksheets (Sites_XYZ and BoreHole_Z, respectively) in the workbook MPBasin.xlsx.

Metadata provide information about the data. Embedded metadata in Extensible Markup Language (XML) format can be viewed in ArcGIS. Metadata are also provided in standalone Adobe PDF files for the site location and downhole geologic data (MPBsites_Metadata.pdf and BoreHole_Metadata.pdf).
Table 2. Description of digital files

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**Disclaimer**

The location data and geologic interpretations given in this file are considered to be the best available at this time. However, the user needs to be aware that it is possible that the well log used may not match the well location. Our review of the data was extensive but during the entire project there were many examples of misspelled names of owners and mislocated wells with respect to Public Land Survey System notation, and even of owners who were not sure of the match between their existing well and the driller's report. Also, the geologic information on the drillers' reports is, by nature, interpretative.
Acknowledgments

The Palouse Basin Aquifer Committee (PBAC) provided funding through the University of Idaho, Department of Geology, to gather information and prepare interpretive reports from well data. Steve Robischon, former Executive Manager, PBAC, provided spatial digital data for wells in the committee's groundwater monitoring well network. Stephen P. Reidel, Washington State University Tri-Cities, assisted with stratigraphic interpretations of deep wells (>500 ft) from which rock chemistry of basalt chips were obtained. Several landowners provided well information and access to their property. Elmer Johnson, Water Systems Manager, University of Idaho, provided well cuttings for some of the university and Moscow city wells.

References (other than those listed in individual site geologic interpretations)


