Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Idaho Panhandle National Forest: Volume IX, Section B: Sandpoint Ranger District, Bonner and Boundary Counties, Idaho

John Kauffman
Earl H. Bennett
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Field Inspection conducted by John Kauffman, William Rember and Ted Erdman
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1.0 PROJECT OVERVIEW

1.1 INTRODUCTION

In order to fulfill its obligations under the Clean Water Act and related legislation, the Northern Region of the United States Forest Service (USFS) needs to identify and characterize the abandoned and inactive mines with environmental, health, and/or safety problems that are on or that could impact U.S. Forest Service-administered lands. The Northern Region of the USFS administers National Forest lands in the northern part of Idaho, Montana, and parts of North and South Dakota. The Idaho Geological Survey (IGS) is the lead state agency for the collection, interpretation, and distribution of information about the geology and mineral resources of Idaho. The USFS and the IGS, having determined that an inventory and preliminary characterization of abandoned and inactive mines in Idaho would be beneficial to both agencies, have entered into a series of participating agreements to accomplish this work. The first area inventoried was the Panhandle National Forests. This volume presents work that was done in the Sandpoint Ranger District. Appendix E contains a list of all reports prepared for this project. For continuity, the general design of this report follows that used by the Montana Bureau of Mines and Geology for similar studies in Montana.

1.2 PROJECT OBJECTIVES

In 1992, the USFS and IGS entered into an agreement to inventory abandoned and inactive mines on or affecting Forest Service lands in Idaho. Work on the initial phase of the project included developing a computerized database of all such mines and prospects and plotting the locations of these properties on National Forest base maps. Phase 2 work conducted the following year provided the Forest Service with screening forms containing site information from the database and map overlays at 7.5-minute scale for areas of dense mining activity. Phase 3 started in the summer of 1996 and included field examination of properties in the Prichard Creek and Eagle Creek basins (Summit mining district) in Shoshone County, field examination of properties in the Gold Creek drainage (Lakeview mining district) in Bonner County, and preparation of reports discussing the ownership and operational history of selected mines. Field work in the summer of 1997 covered properties in the Coeur d'Alene River basin surrounding the Coeur d'Alene mining district that had not been examined the previous summer. Properties north and south of the Coeur d'Alene River drainage were examined during the 1998 field season.

The overall objectives of this inventory and preliminary characterization process, as defined by the USFS, are to:

1. Systematically identify all mine sites with possible human health, environmental, and/or safety related problems that either are on or affecting Forest Service lands.

2. Identify the human health and environmental risks at each location based on site characterization factors (see Section 1.5), including screening-level soil and water samples
taken and analyzed in accordance with Environmental Protection Agency (EPA) protocols and quality control procedures.

3. Based on site characterization factors, identify those sites that are not affecting Forest Service lands and that can therefore be eliminated from further consideration.

4. Cooperate with other state and federal agencies, and integrate the Northern Region program with their programs.

5. Develop and maintain a data file of site information that will allow the Region to pro-actively respond to governmental and public interest group concerns.

In addition to the USFS objectives outlined above, the IGS objectives include gathering new information associated with these abandoned and inactive mines. The Survey's enabling legislation (Sections 47-201–47-204 of the Idaho Code) designates the IGS as the lead state agency for the collection, interpretation, and distribution of all geologic and minerals data for Idaho.

1.3 ABANDONED AND INACTIVE MINES DEFINED

For the purposes of this study, mines, mills, or other processing facilities related to mineral extraction and/or processing are defined as abandoned or inactive as follows:

A mine is considered abandoned if there are no identifiable owners or operators for the facilities, or if the facilities have reverted to federal ownership.

A mine is considered to be inactive if there is an identifiable owner or operator of the facility, but the facility is not currently operating and there are no approved authorizations or permits to operate.

1.4 HEALTH AND ENVIRONMENTAL PROBLEMS AT MINES

A variety of safety, health, and environmental problems may occur at abandoned and inactive mines. These include metals that contaminate ground water, surface water, and soils; airborne dust from abandoned tailings impoundments; eroding mine and mill waste materials that contribute excessive amounts of sediment to surface waters; unstable waste piles with the potential for catastrophic failure; and physical hazards associated with mine openings and dilapidated structures. The most important environmental hazard is the contamination of both surface and subsurface water by metals, acid mine drainage, or sediment loading.

Metals are often transported from a mine by water (ground water discharge or surface runoff) and may be dissolved, suspended, or carried as part of the bedload. When sulfides are present, acid water can form; this, in turn, increases the solubility of metals. This condition, known as acid mine drainage (AMD), is a significant source of metal releases at some mine sites in Idaho.
1.4.1 Acid Mine Drainage

Trexler and others (1975) identified six factors that govern the formation of metal-laden acid mine waters. They are:

1) availability of acid-producing minerals, particularly pyrite,
2) presence of oxygen,
3) moisture in the atmosphere,
4) availability of leachable heavy metals,
5) availability of water to transport the dissolved constituents, and
6) mine characteristics, which affect movement of air and water through the mine workings.

These factors occur not only within the mines themselves, but also within mine dumps and mill tailings piles, making these waste materials potential sources of contamination as well. Formation of acid mine drainage can be reduced if minerals such as calcite, which can neutralize acidity, are present (Trexler and others, 1975; Marvin and others, 1995).

Acid mine drainage is formed by the oxidation and dissolution of sulfides, particularly pyrite (FeS₂) and pyrrhotite (Fe₁₋ₓS). Other sulfides play a minor role in acid generation. Oxidation of iron sulfides forms sulfuric acid (H₂SO₄), sulfate ions (SO₄²⁻), and reduced iron (Fe²⁺). When sulfide-bearing rock is mined, the sulfide minerals are exposed to atmospheric oxygen and oxygen-bearing water. Consequently, the sulfide minerals are oxidized, and acid mine waters are produced (Trexler and others, 1975; Marvin and others, 1995).

The oxidation of the reduced iron is the step that limits how much acid will form. The rate of this reaction can be greatly increased by iron-oxidizing bacteria (Thiobacillus ferrooxidans). The oxidized iron produced by biological activity promotes further oxidation and dissolution of pyrite, pyrrhotite, and marcasite (FeS₂, a dimorph of pyrite) (Trexler and others, 1975; Marvin and others, 1995).

Once formed, the acid can dissolve other sulfide minerals to produce high concentrations of copper, lead, zinc, and other metals. Minerals that can contribute heavy metals to acid mine drainage include arsenopyrite, FeAsS; chalcocyprite, CuFeS₂; galena, PbS; tetrachalcite, (CuFe)₁₂Sb₄S₁₃; and sphalerite, (Zn, Fe)S. Aluminum can be leached by the dissolution of aluminosilicates common in soils and waste material found in Idaho. The dissolution of any given metal is controlled by the solubility of that metal (Trexler and others, 1975; Marvin and others, 1995).

1.4.2 Solubility of Selected Metals

The following information is paraphrased from Marvin and others (1995, p. 5-6). This report cites the following references as sources for this material: Lindsay (1979), Stumm and Morgan (1981), Hem (1985), and Maest and Metesh (1993).
At a pH above 2.2, ferric hydroxide [Fe(OH)₃] produces a brownish orange color in surface waters and forms a precipitate with a similar color on rocks in affected streams. If other metals, such as copper, lead, cadmium, zinc, and aluminum, are present in the source rock, they may also precipitate with or adsorb onto the ferric hydroxide (Stumm and Morgan, 1981). Alunite [KAl₃(SO₄)₂(0H)₆] and jarosite [KFe₃(SO₄)₂(OH)₆] will precipitate at a pH of less than 4, depending on SO₄²⁻ and K⁺ activities (Lindsay, 1979).

Under acidic conditions, the solubility of the metal controls how much will be released into the environment:

**Manganese** solubility is strongly controlled by the redox state and is limited by the presence of minerals such as pyrolusite and manganite; under reducing conditions, pyrolusite [MnO₂] dissolves and manganite [MnO(OH)] precipitates. Manganese is found in mineralized environments as rhodochrosite [MnCO₃] and its weathering products.

**Aluminum** solubility is most often controlled by alunite [KAl₃(SO₄)₂(OH)₆] or by gibbsite [Al(OH)₃], depending on pH. Aluminum is one of the most common elements in rock-forming minerals such as feldspars, micas, and clays.

**Arsenic** tends to precipitate and adsorb with iron at low pH and de-sorb or dissolve at higher pH. Once oxidized, arsenic will be found in solution in higher pH waters. When the pH is between 3 and 7, the dominant arsenic compound is a monovalent arsenate, H₂AsO₄. Arsenic is abundant in metallic mineral deposits as arsenopyrite [FeAsS], enargite [Cu₃AsS₄], tennantite [Cu₁₁₂As₄S₁₃], and other minerals.

**Cadmium** solubility data are limited. When the pH of soils is above 7.5, the solubility of cadmium is controlled by the carbonate species octavite [CdCO₃]; when the pH of the soil is below 6, cadmium solubility is controlled by strengite [Cd₃(PO₄)₂]. Octavite is the dominant control on the solubility of cadmium in soils. In water, at low partial pressures of H₂S, CdCO₃ is easily reduced to CdS.

**Copper** solubility in natural waters is controlled primarily by the amount of carbonate present; malachite [Cu₂(OH)₂CO₃] and azurite [Cu₃(OH)₂(CO₃)₂] form when CO₃⁻ ions are available in sufficient concentrations. In soil, copper combines readily with iron to form cupric ferrite. Other compounds, such as sulfate and phosphates, may also control copper solubility in soils. Copper is present in many ore minerals, including chalcopyrite [CuFeS₂], bornite [Cu₉FeS₄], chalcocite [Cu₂S], and tetrachloride [Cu₁₂Sb₄S₁₃].
**Mercury** readily vaporizes under atmospheric conditions and thus is most often found in concentrations well below the 25 μg/L equilibrium concentration. The most stable form of mercury in soil is its elemental form. Mercury is found in low temperature hydrothermal ores as cinnabar [HgS], in epithermal (hot springs) deposits as native mercury, and as native mercury in man-made deposits where mercury was used to process gold ores.

**Lead** concentrations in natural waters are controlled by the formation of lead carbonate, which has an equilibrium concentration of 50 μg/L when the pH is between 7.5 and 8.5. As with other metals, concentrations in solution increase with decreasing pH. In sulfate soils with a pH of less than 6, the formation of anglesite determines how much lead will remain in solution. The formation of cerussite, a lead carbonate, controls solubility in buffered soils. Lead occurs in the common ore mineral galena [PbS].

**Zinc** solubility is controlled by the formation of zinc hydroxide and zinc carbonate in natural waters. When the pH is above 8, the equilibrium concentration of zinc in water with a high bicarbonate content is less than 100 μg/L. Franklinite may control solubility at pH less than 5 in water and soils, and its formation is strongly affected by sulfate concentrations. Thus, production of sulfate from acid mine drainage may ultimately control the solubility of zinc in water affected by mining. Sphalerite [ZnS] is common in mineralized systems.

### 1.4.3 The Use of pH and Specific Conductivity to Identify Water Quality Problems

Specific conductance (SC) and pH provide a rapid way to distinguish many “problem” mine sites from those that have no adverse water-related impacts. As a rough screening tool, low pH (<6.0) and high SC (variable) usually occur at sites with problems; neutral or higher pH and low SC indicate sites that are less likely to have serious problems.

Limiting data collection only to pH and SC largely ignores the various controls on solubility and can lead to overlooking some types of problems. Arsenic, for example, is most mobile in waters with higher pH values (>7), and its concentration is strongly dependent on the presence of dissolved iron. Cadmium and lead may also exceed standards in waters with pH values within acceptable limits.

Reliance on SC as an indicator of site conditions can also be misleading in certain situations. The SC value of a sample represents 55 to 75 percent of the total dissolved solids (TDS), depending on the concentration of sulfate. Also, it is necessary to have a statistically significant amount of SC data for a study area in order to define what constitutes a high or low SC value.

In some cases, a water sample with a near-neutral pH and a moderate SC could have one or more dissolved metal species that may exceed standards. The complete evaluation of a mine site for
adverse impacts on water and soil should include the collection of samples for analysis of metals, cations, and anions.

1.5 METHODOLOGY

1.5.1 Data Sources

The IGS began compiling a database of mining properties in Idaho in 1979. This work has continued to date, and the database (now digital) contains information on some 8,700 mines and prospects. All or parts of the following databases and information sources have been integrated into this digital information system:

1. the Mineral Industry Location Subsystem (MILS) database (U.S. Bureau of Mines)
2. the Mineral Resources Data System (MRDS) database (U.S. Geological Survey)
3. published compilations of mines and prospects data
4. state publications on Idaho mineral deposits
6. IGS mineral property files
7. mines and prospects noted on the appropriate USGS 7.5-minute quadrangle maps
8. data held in private collections or company information.

Most of the data for this project were collated with existing data in the IGS Mines and Prospects digital database. As noted, this is the most complete compilation available for information on Idaho’s mining properties. The IGS continues to update the database, which now contains an estimated 85-90 percent of the mining properties in the state. During the field visits, the IGS located some (but not many) mines and prospects for which no previous information existed. Also, a very few mines listed in the database were not found.

1.5.2 Pre-field Screening

Field crews visited almost all the mine sites in the study area, emphasizing the properties with the potential to release hazardous substances and those for which there was not enough information available to make that determination without a field visit. The IGS and the USFS developed screening criteria (Table 1.5-1) which they used to determine if a site had the potential to release hazardous substances or posed other environmental or safety hazards. The first page of the Field Form (Appendix A) contains the screening criteria. If any of the answers were “yes” or unknown, the site was visited. Personal knowledge of a site and published information were used initially to answer the questions. Forest Service mineral specialists used these criteria to “screen out” several sites using their knowledge of an area.

Mine sites which were not visited were retained in the database along with the data source(s) that were consulted. However, if these sites were close to a visited site, the geologist usually looked at them to verify that the screening information was correct.
Placer mines were not studied as part of this project. Although mercury was used in amalgamating free gold in placer mines, the complex nature of placer deposits makes detection of mercury difficult and is beyond the scope of this inventory. Due to their oxidized nature, placer deposits are not likely to contain other anomalous concentrations of heavy metals.

Table 1.5-1. Screening Criteria (answer Yes or No to each item).

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Screening Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mill site or tailings present.</td>
</tr>
<tr>
<td>2.</td>
<td>Adits with discharge or evidence of discharge.</td>
</tr>
<tr>
<td>3.</td>
<td>Evidence of or strong likelihood for metal leaching or AMD (water stains, stressed or lack of vegetation, waste below water table, etc.)</td>
</tr>
<tr>
<td>4.</td>
<td>Mine waste in floodplain or shows signs of water erosion.</td>
</tr>
<tr>
<td>5.</td>
<td>Residences, high public use area, or environmentally sensitive area (as listed in HRS) within 200 feet of the disturbance.</td>
</tr>
<tr>
<td>6.</td>
<td>Hazardous wastes/materials (chemical containers, explosives, etc.)</td>
</tr>
<tr>
<td>7.</td>
<td>Open adits/shafts, highwalls, or hazardous structures/debris.</td>
</tr>
</tbody>
</table>

If the answers to criteria 1 through 6 were all “NO” (based on literature, personal knowledge, or a site visit), the site was not investigated further.

1.5.3 Field Inspection Procedures

The sites which could not be screened out by using the criteria in Table 1.5-1 were visited by an IGS geologist. At sites for which little geologic or mining data existed, geologists characterized the geology, collected samples for geochemical analysis, evaluated the deposit, and described surface workings and processing facilities present. All information required to fill in the Field Questionnaire (Appendix A) was gathered.

When it was determined that a site had a possible environmental problem, more sampling and description were required. Information was collected concerning environmental degradation, hazardous mine openings, the presence of structures, and land ownership. After the potential problems were described, appropriate soil and water samples were collected. All site locations were refined using conventional field methods, and each site was located by latitude and longitude and by Township, Range, and Section. If previously determined, these values were checked and corrected, as needed.

On public lands, sites with ground-water discharge, flowing surface water, or contaminated soils (as indicated by impacts on vegetation) were mapped. Sketch maps show locations of the workings, exposed geology, dumps, tailings, and surface water and geologic sample locations. Oblique aerial photographs were sometimes substituted or used to supplement the field sketches.
The site was photographically recorded using both still images and videotape. The videotape record proved especially useful for site description and review, and is recommended for future studies.

1.5.3.1 Soil, Rock, Stream Sediment, and Mine Waste Sampling Procedures

At sites identified as having a potential problem, the geologist collected soil, rock, stream sediment, and waste samples, as appropriate. Sample locations were selected in areas where waste material was obviously impacting natural material. In most cases a composite sample was gathered to get as representative a sample as possible, or multiple samples were collected. All sample sites were located so as to assess conditions on National Forest lands. Three types of samples were collected:

1) select rock, soil, stream sediment, or waste samples—specimens representing a particular material taken for analysis;

2) composite samples—rock and soil taken systematically from a waste dump or tailings pile for analysis, representing the overall composition of material in the source;

3) leach samples—duplicates of selected composite samples (usually waste rock or mill tailings) for testing leachable metals.

The three types of samples were used to examine the metal content of dumps and tailings, and to check the availability of metals during leaching when sample sites were exposed to water. Outcrops and waste materials were not sampled extensively enough to provide reliable estimates of tonnages, grades, or economic feasibility.

1.5.3.2 Water Sampling Procedure

As noted, this project focused on the impacts of mining on surface water, ground water, and soils. The reasoning behind this approach was that a mine disturbance may have high total metal concentrations yet may be releasing few metals into the surface water, ground water, or soil. Conversely, another disturbance could have lower total metal content but be releasing metals in concentrations that adversely impact the environment.

The geologist selected and marked water sample sites based on field parameters (SC, pH, temperature) and observations (such as erosion and staining of soils or stream beds). Sample locations were chosen that would provide the best information on the relative impact of the site to surface water and soils. All sites were accurately located on topographic base maps. Surface water samples were collected at all discharge points at the site, as well as samples from upstream and downstream of the site.

At each water sampling site, the temperature, specific conductivity, and pH were measured. A unique sample number was affixed to the sample bottle. Two 125-ml samples were collected.
One sample was left raw and the other was acidified with 0.1N nitric acid. Both samples were stored in a secured ice box. The samples remained under constant refrigeration and security until submitted for analysis.

Since monitoring wells were not installed as part of this investigation, the evaluation of metal contamination of ground water was limited to strategic sampling of surface water and soils. In most cases, reference water-quality data at a particular mine site was restricted to upstream surface water samples. However, in some drainages reference samples were collected at sites with no visible contamination and no known mining activity upstream from the sampling location. Reference soil samples were not collected. Laboratory leach tests were used to determine if metals might be released from mine waste material, which could provide additional insight to possible ground-water contamination.

1.5.4 Analytical Methods

The Analytical Sciences Laboratory at the University of Idaho performed all of the laboratory analyses using the following EPA-approved protocols and quality assurance standards:

Water Samples (acidified and unfiltered)—Total Recoverable Metal Screen (EPA Test 200.7).
Water Samples (acidified and unfiltered)—Arsenic (EPA Test 200.9), Lead (EPA Test 200.9), and Mercury (EPA Test 245.1).
Water Samples (raw and filtered 0.45 micron filter)—Dissolved Metal Screen (EPA Test 200.7).
Soil and Waste Material—Element Screen (EPA Test 3050/6010), Leachable Metals [Toxicity Characteristic Leaching Procedure (TCLP) for Metals] Screen (EPA Test 1311/6010).

1.5.5 Standards

EPA and various state agencies have developed human health and environmental standards for various metals. In an attempt to put the metal concentrations that were measured into some perspective, they were compared to these developed standards. However, it is understood that the background metal concentrations in mineralized areas may exceed these standards.

1.5.5.1 Water-Quality Standards

The Safe Drinking Water Act (SDWA) directs EPA to develop standards for potable water. Some of these standards are mandatory (primary) and some are desired (secondary). The standards established under the SDWA are often referred to as primary and secondary maximum contaminant levels (MCLs). Similarly, the Clean Water Act (CWA) directs EPA to develop water-quality standards (acute and chronic) that will protect aquatic organisms. These standards may vary with water hardness and are often referred to as the Aquatic Life Standards. The primary and secondary MCLs along with the acute and chronic Aquatic Life Standards for selected metals are listed in Table 1.5-2. As these standards can vary with water hardness, a range of values is given for some elements. Hardness was not measured for this study.
Table 1.5-2. Standards for contaminants in water.

<table>
<thead>
<tr>
<th>Element</th>
<th>Primary MCL (mg/L)</th>
<th>Secondary MCL (mg/L)</th>
<th>Aquatic Life, Acute (mg/L)</th>
<th>Aquatic Life, Chronic (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>---</td>
<td>0.05-0.2</td>
<td>0.75</td>
<td>0.087</td>
</tr>
<tr>
<td>Arsenic</td>
<td>0.05</td>
<td>---</td>
<td>0.36</td>
<td>0.19</td>
</tr>
<tr>
<td>Barium</td>
<td>2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.005</td>
<td>---</td>
<td>0.004/0.009</td>
<td>0.001/0.002</td>
</tr>
<tr>
<td>Chromium</td>
<td>0.1</td>
<td>---</td>
<td>1.7/3.1</td>
<td>0.21/0.37</td>
</tr>
<tr>
<td>Copper</td>
<td>1.3</td>
<td>1</td>
<td>0.018/0.034</td>
<td>0.012/0.021</td>
</tr>
<tr>
<td>Iron</td>
<td>---</td>
<td>0.3</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td>Lead</td>
<td>0.015</td>
<td>---</td>
<td>0.082/0.2</td>
<td>0.003/0.008</td>
</tr>
<tr>
<td>Manganese</td>
<td>---</td>
<td>0.05</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.002</td>
<td>---</td>
<td>0.0024</td>
<td>0.000012</td>
</tr>
<tr>
<td>Nickel</td>
<td>0.1</td>
<td>---</td>
<td>1.4/2.5</td>
<td>0.16/0.28</td>
</tr>
<tr>
<td>Zinc</td>
<td>---</td>
<td>5</td>
<td>0.12/0.21</td>
<td>0.11/0.19</td>
</tr>
</tbody>
</table>

1.5.5.2 Soil and Rock Background Standards

It is useful to have some idea about the natural background values of rocks and soils when interpreting geochemical data. Although no whole rock or soil samples were run for this study, an estimate can be made from the analyses presented by Gott and Cathrall (1980). They analyzed both rock samples from the parent formation and soil samples from above the parent material. The median results from these analyses are presented in Tables 1.5-3 and 1.5-4, which show data for the Prichard, Burke, Revett, St. Regis, and Wallace Formations. These samples were analyzed by emission spectrophotometry, a much less accurate technique than we use today. However, due to the large number of analyses, the data are still useful, especially for estimating background values. For example, an average sample of soil above the Wallace Formation might contain 45 ppm (mg/Kg) lead, 115 ppm (mg/Kg) zinc, 29 ppm (mg/Kg) copper, 0.13 ppm (mg/Kg) mercury, and no detectable arsenic. These data were used by the Environmental Protection Agency as background data for their studies of the Bunker Hill Superfund Site (Nick Ceto, 1997, personal communication).

There are no federal standards for concentrations of metals and other constituents in soils; acceptable limits for such are often based on human and/or environmental risk assessments for an area. Since no assessments of this kind have been done, concentrations of metals in soils were
Table 1.5-3. Median values of metals in rock samples from various units of the Belt Supergroup (data from Gott and Cathrall, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Rock Unit</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prichard</td>
<td>Burke</td>
<td>Revett</td>
<td>St. Regis</td>
<td>Wallace</td>
</tr>
<tr>
<td></td>
<td>Formation</td>
<td>Formation</td>
<td>Formation</td>
<td>Formation</td>
<td>Formation</td>
</tr>
<tr>
<td>Iron (percent)</td>
<td>3</td>
<td>1.8</td>
<td>1.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.4</td>
<td>0.1</td>
<td>0.05</td>
<td>0.19</td>
<td>0.48</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.05</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.3</td>
<td>0.19</td>
<td>0.13</td>
<td>0.19</td>
<td>0.21</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>224</td>
<td>386</td>
<td>381</td>
<td>600</td>
<td>360</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>343</td>
<td>360</td>
<td>235</td>
<td>543</td>
<td>378</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.3</td>
<td>---</td>
<td>---</td>
<td>0.9</td>
<td>0.89</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3.9</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>40</td>
<td>13</td>
<td>8.3</td>
<td>20</td>
<td>23.8</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>10</td>
<td>5.5</td>
<td>4.2</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>54</td>
<td>26</td>
<td>20</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>.01</td>
<td>0.007</td>
<td>0.006</td>
<td>0.007</td>
<td>0.009</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>.03</td>
<td>---</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>22</td>
<td>6.2</td>
<td>8</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>34</td>
<td>14</td>
<td>10</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>60</td>
<td>31</td>
<td>15</td>
<td>20</td>
<td>41</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.4</td>
<td>0.36</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>109</td>
<td>1.1</td>
<td>1.6</td>
<td>2.2</td>
<td>1.1</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>727</td>
<td>402</td>
<td>455</td>
<td>839</td>
<td>998</td>
</tr>
</tbody>
</table>
Table 1.5-4. Median values of metals in soil samples from various units of the Belt Supergroup (data from Gott and Cathrall, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Prichard Formation</th>
<th>Burke Formation</th>
<th>Revett Formation</th>
<th>St. Regis Formation</th>
<th>Wallace Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (percent)</td>
<td>3.1</td>
<td>3.3</td>
<td>3.8</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.61</td>
<td>0.60</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>0.57</td>
<td>0.59</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.56</td>
<td>0.49</td>
<td>0.5</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>1,285</td>
<td>1,373</td>
<td>1,730</td>
<td>1,809</td>
<td>1,377</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>647</td>
<td>647</td>
<td>616</td>
<td>684</td>
<td>586</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.4</td>
<td>1.1</td>
<td>1</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>14</td>
<td>10</td>
<td>8.8</td>
<td>9.5</td>
<td>9.4</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>43</td>
<td>32</td>
<td>34</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Niobium (ppm)</td>
<td>9</td>
<td>9</td>
<td>---</td>
<td>---</td>
<td>8</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>29</td>
<td>21</td>
<td>20</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>159</td>
<td>178</td>
<td>157</td>
<td>164</td>
<td>154</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>98</td>
<td>90</td>
<td>97</td>
<td>90</td>
<td>94</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>0.13</td>
<td>0.09</td>
<td>0.08</td>
<td>0.1</td>
<td>0.13</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>21</td>
<td>20</td>
<td>29</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>54</td>
<td>35</td>
<td>41</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>140</td>
<td>89</td>
<td>77</td>
<td>86</td>
<td>115</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>1.3</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>10</td>
<td>8.6</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>1</td>
<td>1</td>
<td>1.8</td>
<td>1.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>0.029</td>
<td>0.035</td>
<td>0.053</td>
<td>0.049</td>
<td>0.046</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>1,705</td>
<td>573</td>
<td>699</td>
<td>1,586</td>
<td>2,298</td>
</tr>
</tbody>
</table>
compared to the limits postulated by the U.S. EPA for the Clark Fork Superfund site (Table 1.5-5). The proposed upper limit for lead in soils is 1,000 mg/Kg to 2,000 mg/Kg, and 80 to 100 mg/Kg for arsenic in residential areas.

Table 1.5-5. Clark Fork Superfund background levels for selected elements.

<table>
<thead>
<tr>
<th>Material</th>
<th>As (mg/Kg)</th>
<th>Cd (mg/Kg)</th>
<th>Pb (mg/Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Mean Soil</td>
<td>6.7</td>
<td>0.7</td>
<td>20.0</td>
</tr>
<tr>
<td>Helena Valley Mean Soil</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Missoula Lake Bed Sediments</td>
<td>n.a.</td>
<td>0.2</td>
<td>34.0</td>
</tr>
<tr>
<td>Blackfoot River</td>
<td>4.0</td>
<td>&lt;0.1</td>
<td>n.a.</td>
</tr>
<tr>
<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1,000.0</td>
</tr>
</tbody>
</table>

1.5.6 Analytical Results

The results of the sample analyses were used to estimate the nature and extent of potential impacts to the environment and human health. Selected results for each site are presented in the discussion; a complete listing of water quality, soil chemistry, and leach test results are presented in Appendix C. It should be noted that the sampling for this study was of a reconnaissance nature only, sufficient for outlining possible problem areas for future study. Sampling density was not sufficient to provide a statistically valid description of any specific site.

The data fields in the current database are presented in Appendix B, and the format (dBase IV) is compatible with the widely used ARC/INFO Geographical Information System (GIS). In addition, all of the field observations and analytical data were entered into a database compatible with other studies under way by the U.S. Forest Service.

1.5.7 Sample and Site Identification Numbers

All water, tailings, and dump samples were assigned unique numbers. These were constructed according to the following system: 1) an initial letter code identifying the person who took the sample (usually the first letter of the last name); 2) one or two digits for the month (some sample numbers contain a leading zero); 3) two digits for the day on which the sample was taken; 4) the last two digits in the year in which the sample was taken (i.e., “98,” if the sample was taken in 1998); and 5) one to three digits, including leading zeros, identifying the individual sample. Site numbers for properties that did not have a database identification number assigned to them were generated in the same manner.
2.0 SANDPOINT RANGER DISTRICT, BONNER COUNTY, IDAHO

2.1 INTRODUCTION

This volume of the Idaho Panhandle National Forests report describes fifty-four properties in the Sandpoint Ranger District of the Kaniksu National Forest, which includes the mining areas around Lake Pend Oreille in Bonner County, Idaho. Twenty properties discussed in this volume reported production, and four of these had over 1,000 tons of total output. The study area extends from the district boundary on the west to the district boundary [the drainage divide between the Kootenai River (on the eastern side of the divide) and Clark Fork River and Lake Pend Oreille (on the western side of the divide)] or the Idaho-Montana state line on the east. The northern boundary of the district is roughly parallel to the Boundary-Bonner county line. The southern boundary is the Bonner-Shoshone county line. Access to the area is by paved and unpaved roads from U.S. Highway 95, which traverses the western side of the area in a north-south direction, and State Highway 200, which follows the Clark Fork River and the northern edge of Lake Pend Oreille. Most of the secondary drainages, especially those with past mining activity, have dirt roads.

The study area is in the Sandpoint District of the Kaniksu National Forest, and most of the land is administered by the U.S. Forest Service (USFS). There are enclaves of private land, mostly on patented mining claims, and of state land. The part of the Sandpoint Ranger District that includes the Gold Creek drainage was discussed in Volume II of the report on abandoned and inactive mines in the Idaho Panhandle National Forests.

The fifty-four mines and prospects described in this volume are located on twelve 7.5-minute topographic maps (U.S. Geological Survey). The locations of these properties are shown in Figure 2.1-1. Elevations in the study area range from about 2,062 feet on Lake Pend Oreille to 6,744 feet at Mount Pend Oreille on the eastern border of the study area. The area is heavily forested with dense brush and conifers, and the topography is generally very steep.

2.1.1 Summary of the Sandpoint Study Area

There were fifty-four mining properties (Table 2.1.1-1) examined in the Sandpoint Ranger District. Of these mines, nineteen have the potential to have an environmental impact on or near USFS lands. Nine of these properties have water discharges that exceed one or more water quality standards, three properties have waste rock impinging on an active drainage, and six properties have both water quality concerns and waste rock impinging on an active waterway. In addition, mill tailings were found at three sites; at one of these three sites, mill tailings were the only potential environmental problem noted. Of the twenty-five sites discussed in this section of the report (Section B of Volume IX), five properties have water discharges that exceed one or more water quality standards, three properties had waste rock impinging on an active drainage, and three have both water quality concerns and waste rock impinging on an active waterway. In addition, mill tailings were found at one site.
Table 2.1-1. Summary of properties visited in the Sandpoint District. The properties are arranged according to site number. Most sites were visited in 1998, although some were visited in 1997 or 1999. Properties shown in gray are discussed in Sections A, C, or D of this volume.

**Explanation:**

**Site Number:** Idaho Geological Survey file number, or field designation number.

**Surface Owner:** FS = Forest Service; BLM = Bureau of Land Management; S = State; P = Private or Patented claims; ? where ownership is uncertain

**Water/Solid Sample:** numbers indicate the number of samples collected.

**Environmental Concerns:** W = water; D = waste dump; T = mill tailings. Environmental concerns are noted as follows: W - samples of adit water or seeps from waste dumps that exceed one or more water quality standards in the Dissolved Metals Screen, the Total Recoverable Metals Screen, or the arsenic, lead or mercury tests; D or T - dump or tailings samples that exceed background or environmental standards for one or more elements in the Element Screen, and/or dump or tailings samples that show significant leaching of one or more metals in the TCLP for Metals Screen.

**Physical Conditions:** AO = open adit; AC = caved or otherwise closed adit; AG = gated adit; SO = open shaft; SC = caved shaft; IsO = internal shaft, open; T = trench or bulldozer cut; P = prospect pit; OP = open pit. Numbers indicate how many of each are at the site; queried when type or condition of work is uncertain or unknown.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Mine Name</th>
<th>Surface Owner</th>
<th>Water Samples</th>
<th>Solid Samples</th>
<th>Environmental Concerns</th>
<th>Physical Conditions/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA-170</td>
<td>Dougherty Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2P</td>
</tr>
<tr>
<td>SA-172</td>
<td>Flume Creek Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>OP</td>
</tr>
<tr>
<td>SA-180</td>
<td>Marguerite Prospect</td>
<td>FS or P</td>
<td></td>
<td></td>
<td></td>
<td>1AO (IsO); 1AC; 1SC</td>
</tr>
<tr>
<td>SA-181</td>
<td>Trestle Creek Claims</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>SA-184</td>
<td>Lightning Peak Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>Several P</td>
</tr>
<tr>
<td>SA-194</td>
<td>Auxer Mine</td>
<td>FS</td>
<td>4</td>
<td>1</td>
<td>W</td>
<td>1AC; T (with AC?)</td>
</tr>
<tr>
<td>SA-198</td>
<td>Delorah Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2AO</td>
</tr>
<tr>
<td>SA-199</td>
<td>Campbell Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>SA-200</td>
<td>Little Jim Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>SA-203</td>
<td>Regal Group</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>SA-205</td>
<td>Goat Mountain Prospect</td>
<td>FS</td>
<td>4</td>
<td>2</td>
<td>W, D</td>
<td>1AO</td>
</tr>
<tr>
<td>SA-206</td>
<td>Lucky Strike Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>Site Number</td>
<td>Mine Name</td>
<td>Surface Owner</td>
<td>Water Samples</td>
<td>Solid Samples</td>
<td>Environmental Concerns</td>
<td>Physical Conditions/Comments</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>SA-207</td>
<td>Ponderosa Group</td>
<td>FS</td>
<td></td>
<td></td>
<td>3AO; 3AC; 1SC; several P</td>
<td></td>
</tr>
<tr>
<td>SA-209</td>
<td>Gabriel Mine</td>
<td>P ?</td>
<td></td>
<td></td>
<td>1AC</td>
<td></td>
</tr>
<tr>
<td>SA-211</td>
<td>Homestake Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td>2AO</td>
<td></td>
</tr>
<tr>
<td>SA-223/SA-224</td>
<td>Lawrence Mine/</td>
<td>FS</td>
<td>2</td>
<td>2</td>
<td>W, T</td>
<td>26AO; 16AC; 3AG; numerous P and T</td>
</tr>
<tr>
<td></td>
<td>Little Senator Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-226</td>
<td>Ralph Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td>1AC; 1AC?</td>
<td></td>
</tr>
<tr>
<td>SA-229</td>
<td>Weir Prospect</td>
<td>P ?</td>
<td></td>
<td></td>
<td>1AC</td>
<td></td>
</tr>
<tr>
<td>SA-234</td>
<td>Sulfide Mine</td>
<td>P &amp; FS</td>
<td></td>
<td></td>
<td>1AO; 25C</td>
<td></td>
</tr>
<tr>
<td>SA-244</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td>1</td>
<td>D</td>
<td>1AG</td>
<td></td>
</tr>
<tr>
<td>SA-245</td>
<td>Payrock Sunrise Mine</td>
<td>FS</td>
<td>3</td>
<td></td>
<td>5AO; 1SO (water filled)</td>
<td></td>
</tr>
<tr>
<td>SA-246</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td>2AG (FS gates)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(part of Payrock)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-259</td>
<td>Hope and Faith Shaft</td>
<td>S</td>
<td></td>
<td></td>
<td>1SO</td>
<td></td>
</tr>
<tr>
<td>SA-260</td>
<td>Catherine Mine</td>
<td>S</td>
<td>1</td>
<td>1</td>
<td>W, D</td>
<td>3AO; 2AC</td>
</tr>
<tr>
<td>SA-261</td>
<td>Brown Bear Mine</td>
<td>S, FS</td>
<td>3</td>
<td></td>
<td>W</td>
<td>1AG; 3AO; 4AC</td>
</tr>
<tr>
<td>SA-262</td>
<td>Iron Mask Mine</td>
<td>S</td>
<td></td>
<td></td>
<td>1AO; 1SO</td>
<td></td>
</tr>
<tr>
<td>SA-264</td>
<td>Stemwinder Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td>1AO; 1SO</td>
<td></td>
</tr>
<tr>
<td>SA-266</td>
<td>Black Jack Mine</td>
<td>FS</td>
<td>1</td>
<td>1</td>
<td>W, D</td>
<td>6AC; 1AO; 1SO; 1SC</td>
</tr>
<tr>
<td>SA-267</td>
<td>Talache Mine</td>
<td>P</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AG</td>
</tr>
<tr>
<td>SA-268</td>
<td>Surprise Mine</td>
<td>P &amp; FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO; 1AC</td>
</tr>
<tr>
<td>SA-269</td>
<td>Blue Bird Mine</td>
<td>FS ?</td>
<td>1</td>
<td></td>
<td></td>
<td>2AO; 1AG; 1SC; several P and T</td>
</tr>
<tr>
<td>SA-271</td>
<td>Anderson Prospect</td>
<td>FS</td>
<td>1</td>
<td>1</td>
<td>W, D</td>
<td>1AC</td>
</tr>
</tbody>
</table>
Table 2.1-1 (continued). Summary of properties visited in the Sandpoint District.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Mine Name</th>
<th>Surface Owner</th>
<th>Water Samples</th>
<th>Solid Samples</th>
<th>Environmental Concerns</th>
<th>Physical Conditions/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA-272</td>
<td>Snowbird Mine</td>
<td>FS</td>
<td>2</td>
<td>1</td>
<td>W, D</td>
<td>1AO</td>
</tr>
<tr>
<td>SA-273</td>
<td>Better Times Prospect</td>
<td>FS</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AO</td>
</tr>
<tr>
<td>SA-274</td>
<td>Wisconsin Prospect</td>
<td>FS</td>
<td>1</td>
<td>D</td>
<td></td>
<td>1AG</td>
</tr>
<tr>
<td>SA-276</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2AO</td>
</tr>
<tr>
<td>SA-277</td>
<td>Maiden Rock</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2AG (FS gates)</td>
</tr>
<tr>
<td>SA-278</td>
<td>American Eagle</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>SA-279</td>
<td>M B Prospect</td>
<td>FS</td>
<td>1</td>
<td>D</td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>SA-286</td>
<td>Green Monarch Mine</td>
<td>FS</td>
<td>1</td>
<td></td>
<td></td>
<td>1AG</td>
</tr>
<tr>
<td>SA-289</td>
<td>Moss Prospect</td>
<td>P ?</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>SA-291</td>
<td>Bumble Bee Prospect</td>
<td>---</td>
<td></td>
<td></td>
<td>No workings found</td>
<td></td>
</tr>
<tr>
<td>SA-293</td>
<td>Phil Sheriden Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>SA-297</td>
<td>Valid Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2AO; 1T</td>
</tr>
<tr>
<td>SA-298</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td>Quarry</td>
<td></td>
</tr>
<tr>
<td>SA-299</td>
<td>Falls Creek Mine</td>
<td>FS</td>
<td>4</td>
<td>2</td>
<td>W, D, T</td>
<td>1AO</td>
</tr>
<tr>
<td>SA-307</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2AC; 1SO</td>
</tr>
<tr>
<td>E9079901</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>ISO</td>
</tr>
<tr>
<td>R8199801</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td>1</td>
<td></td>
<td></td>
<td>1T, mill site</td>
</tr>
<tr>
<td>R8199804</td>
<td>Unnamed Prospect</td>
<td>P ?</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>K9109802</td>
<td>Unnamed Prospect (part of Payrock)</td>
<td>FS</td>
<td></td>
<td></td>
<td>1AG (FS gate); 1AO; 3SC</td>
<td></td>
</tr>
<tr>
<td>K9109803</td>
<td>Unnamed Prospect (part of Payrock)</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>K9149803</td>
<td>Unnamed Prospect</td>
<td>FS &amp; P</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AC</td>
</tr>
<tr>
<td>K10079801</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AG (FS gate)</td>
</tr>
<tr>
<td>K10079804</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>K10079805</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1P</td>
</tr>
</tbody>
</table>
Table 2.1-1 (continued). Summary of properties visited in the Sandpoint District.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Mine Name</th>
<th>Surface Owner</th>
<th>Water Samples</th>
<th>Solid Samples</th>
<th>Environmental Concerns</th>
<th>Physical Conditions/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reference sample (On Mosquito Creek at mouth of canyon below Scotchman Peak)</td>
<td>---</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (On Webb Creek)</td>
<td>---</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (On Cascade Creek just east of Lightning Creek Road)</td>
<td>---</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (On East Fork Creek ¼ mile east of Lightning Creek Road)</td>
<td>---</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (On North Fork of Wellington Creek in Auxor Basin, 1 mile east of Round Top Mountain)</td>
<td>---</td>
<td>1</td>
<td></td>
<td>W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (On tributary to Rattle Creek, ½ mile south of Rattle Creek)</td>
<td>---</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (On tributary to Strong Creek where pack trail crosses tributary)</td>
<td>---</td>
<td>1</td>
<td></td>
<td>W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reference sample (on Pearl Creek, where FS road crosses creek)</td>
<td>---</td>
<td>1</td>
<td></td>
<td>W</td>
<td></td>
</tr>
</tbody>
</table>
Of the fifty-four sites discussed in this volume, thirty-six have open adits or shafts. Fifteen of these properties have multiple open workings. Several of these openings pose significant safety hazards. Of the twenty-five sites discussed in this section of the report (Section B of Volume IX), seventeen had open adits or shafts, eight of which had gated openings, and six properties had multiple openings. Two properties had more than one gated opening.

2.2 GEOLOGY

The most recent general reference showing the geology of the Sandpoint area is Aadland and Bennett (1979). The geology and ore deposits of the area are discussed in Anderson (1930, 1947), Savage (1967), and a number of unpublished reports on individual deposits. Gott and Cathrall (1980) discussed the geochemistry of the Coeur d'Alene district, which is underlain by many of the same rock units as the Sandpoint area. A brief description of the geologic framework of the area follows.

Most of the mines and prospects in the study area are hosted by metasedimentary rocks of the Belt Supergroup of Precambrian age (Figure 2.2-1) or in Precambrian diabase dikes that have intruded the Prichard Formation. The characteristics of the various units comprising the supergroup are shown in Table 2.2-1. Key references to the Prichard are Cressman (1982) and Cressman (1989). Hobbs and others (1965) described the Belt Supergroup units in the Coeur d'Alene area, and Harrison and Jobin (1963) discussed these rocks in part of the study area. Recent work on various units in the Belt Supergroup is summarized in Roberts (1986) and Berg (1993). The Purcell sills and related mineral deposits are discussed in Kiilsgaard (1951) and Miller (1973); both these publications describe areas north of the Sandpoint district.

Granitic rocks of Cretaceous or early Tertiary age intrude the Belt Supergroup throughout most of the area (Aadland and Bennett, 1979). A large mass of these granitic rocks (the Selkirk igneous complex) intrudes the area west and northwest of the study area (Miller, 1982; Aadland and Bennett, 1979).

The Hope fault, a regional northwest-trending fault zone with an estimated 18,000–22,000 feet of vertical offset and 10-16 miles of right-lateral movement, crosses the study area (Savage, 1967; Harrison and Jobin, 1963; Anderson, 1930). The Purcell trench, which marks the location of a regional thrust fault, cuts through the area from north to south (Miller, 1982; Anderson, 1930; Savage, 1967). South of the Hope fault, the study area is broken by northeast- and north-northwest-trending block faults. This block faulting is present to a lesser extent north of the Hope fault (Harrison and Jobin, 1963; Aadland and Bennett, 1979). A third group of faults, usually showing minor displacement, are mineralized (Harrison and Jobin, 1963).

2.3 ECONOMIC GEOLOGY

2.3.1 General Characteristics of the Ore

The metal mines in the district are hosted by metasedimentary rocks of the Belt Supergroup of Precambrian age (Figure 2.2-1). Most of the mines are lead-zinc-silver deposits, sometimes
Figure 2.2-1. Geology of the Sandpoint Ranger District, Idaho (Aadland and Bennett, 1979). pCm = Precambrian rocks of uncertain age; pCp = Middle Proterozoic Prichard Formation; pCrv = Middle Proterozoic Ravalli Group, undifferentiated; pCb = Middle Proterozoic Burke Formation; pCr = Middle Proterozoic Revett Formation; pCsr = Middle Proterozoic St. Regis Formation; pCsw = Middle Proterozoic Wallace Formation; pCs = Middle Proterozoic Striped Peak Formation; pCll = Middle Proterozoic Libby Formation; pCmg = Middle Proterozoic metadiorite, diabase, and quartz diorite dikes and sills; Kd = Cretaceous diabase and diorite dikes and sills; Kt, Ks, Kgd = Cretaceous granitic rocks; Tsp, Tsq = Tertiary granitic rocks; Tdg = Tertiary granodiorite and dacite porphyry dikes; Qs = Quaternary glacial deposits, Qal = Quaternary stream alluvium.
<table>
<thead>
<tr>
<th>Group</th>
<th>Formation</th>
<th>Lithology</th>
<th>Thickness (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missoula</td>
<td>Libby Formation</td>
<td>Laminated black argillite and white siltite, green to gray cherty argillite and siltite, and green to tan silty limestone and dolomite. Mud cracks and ripple marks abundant. Top eroded (Harrison and Jobin, 1963).</td>
<td>1,000+</td>
</tr>
<tr>
<td></td>
<td>Striped Peak</td>
<td>Interbedded quartzite and argillite with some arenaceous dolomitic beds. Purplish gray and pink to greenish gray. Ripple marks, mud cracks common. Top eroded [in Coeur d’Alene area].</td>
<td>1,500+</td>
</tr>
<tr>
<td></td>
<td>Formation</td>
<td>wallace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper part</td>
<td>Mostly medium- to greenish-gray finely laminated argillite. Some arenaceous dolomite and impure quartzite, and minor gray dolomite and limestone in the middle part.</td>
<td>4,500-6,500</td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td>Light-gray more or less dolomitic quartzite interbedded with greenish-gray argillite. Ripple marks, mud cracks abundant.</td>
<td></td>
</tr>
<tr>
<td>Ravalli</td>
<td>St. Regis Formation</td>
<td>Upper part Light greenish-yellow to light green-gray argillite; thinly laminated. Some carbonate-bearing beds.</td>
<td>1,400-2,000</td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td>Gradational from thick-bedded pure quartzite at base to interbedded argillite and impure quartzite at top. Red-purple color characteristic; some green-gray argillite. Some carbonate-bearing beds. Ripple marks, mud cracks, and mud-chip breccia common.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Revett Quartzite</td>
<td>Thick-bedded vitreous light yellowish-gray to nearly white pure quartzite. Grades into nearly pure and impure quartzite at bottom and top. Cross-stratification common.</td>
<td>1,200-3,400</td>
</tr>
<tr>
<td></td>
<td>Burke Formation</td>
<td>Light greenish-gray impure quartzite. Some pale red and light yellowish-gray pure to nearly pure quartzite. Ripple marks, swash marks, and pseudo-conglomerate.</td>
<td>2,200-3,000</td>
</tr>
<tr>
<td></td>
<td>Prichard Formation</td>
<td>Upper part Interbedded medium-gray argillite and quartzose argillite and light-gray impure to pure quartzite. Some mud cracks and ripple marks.</td>
<td>12,000+</td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td>Thin- to thick-bedded, medium gray argillite and quartzose argillite; laminated in part. Pyrite abundant. some discontinuous quartzite zones. Base buried.</td>
<td></td>
</tr>
</tbody>
</table>
containing copper and gold, or silver-copper deposits with lesser amounts of lead, zinc, and gold. Gold was the primary ore mineral in a few prospects (Anderson, 1930; Savage, 1967). One group of deposits is in the Prichard Formation, and some of these mines are associated with dioritic or diabasic dikes and sills. Another major group of mines is in the Wallace Formation. However, mineral deposits in the study area occur in all units of the Belt Supergroup. Many of the prospects in this report were worked in the early 1900s, and geological and historical information is not uniformly available for all properties. Quartz veins, fissure fillings, mineralized shear zones, and replacement deposits have been described. Most of the gold deposits in the area occur along shear zones or in quartz veins in basic sills (Savage, 1967; Anderson, 1930). Production was recorded from twenty mines in the study area, and four of these produced over 1,000 tons of ore. Production was reported from eight of the mines in this section of the report (Section B of Volume IX), and two of these properties produced over 1,000 tons of ore.

2.3.2 Summary of Mill Development

The location and history of ore processing mills in the study area is important because a major source of environmental problems in many mining camps is old mill tailings disposal sites. These problems include high metal loadings, which could contaminate waterways, and fine sediment, which could increase loading of the streams or provide a source of wind-blown material. At one time or another, mills were present at the following properties in the study area (ranked by decreasing quantity of mill tailings noted at the site):

Talache Mine — flotation tailings
Site R8199801 — jig and flotation tailings
Lawrence Mine — jig tailings
Falls Creek Mine — flotation tailings
Sulfide Mine

The Talache mill began operation at the end of February 1922 at a rate of 50 tons per day (tpd), and production increased to 150 tpd by the end of June. Production continued at that rate for the next year. Ore shipments were discontinued in mid-1923, and all operations were suspended on October 31, 1926, after which time most of the equipment was moved to southern Idaho. In 1953, portions of the Talache mine dump were being milled in a small flotation mill constructed below the lowest of the Talache dumps.

A large amount of jig and flotation tailings were found at Site No. R8199801. It is not certain what mine was associated with this millsite.

A 50-tpd gravity concentrator was installed at the Lawrence Mine in 1913. The mill operated steadily for the next six years and intermittently thereafter.

In 1918 a 50-tpd flotation mill was built at the Falls Creek Mine. Several test runs were made, and a small amount of production was reported. Costs were said to have exceeded the returns on the milled ore.

A 25-tpd mill was built at the Sulfide Mine. This mill probably never operated.
2.4 HYDROLOGY AND HYDROGEOLOGY

The study area covers the Forest Service lands in the watershed of Lake Pend Oreille (Figure 2.1-1). The Clark Fork River enters Idaho from Montana and flows west-northwest to the town of Clark Fork, where it enters Lake Pend Oreille. Most of the smaller drainages in the study area flow into the lake.

As noted, a number of the lead-zinc mines in the study area are hosted by rocks of the Prichard Formation. These rocks also contain significantly higher values of base metals than some of the other Belt rocks. Table 1.5-3 (based on 727 samples taken in the Coeur d’Alene mining district) shows that rocks in the Prichard Formation contain 60 ppm zinc, 34 ppm lead, 3 percent iron, 22 ppm copper, and 0.5 ppm cadmium, and soils developed on the Prichard reflect this metal content (Table 1.5-4, based on 1,705 samples) with 140 ppm zinc, 54 ppm lead, 3.1 percent iron, 21 ppm copper, 1.3 ppm cadmium, and 10 ppm arsenic. Tables 1.5-3 and 1.5-4 show similar data for the other formations in the Belt Supergroup in the Coeur d’Alene mining district. As noted above, all formations in the Belt Supergroup are hosts for mineral deposits.

To test whether the high metal content from the Belt Supergroup, especially the Prichard Formation, was impacting stream waters, eight reference water samples were collected. The chemical analyses for these sample are shown in Tables 2.4-1 and 2.4-2, along with water quality standards suggested by the Environmental Protection Agency (EPA). The following reference water samples were collected:

- E10199801—Tributary to Strong Creek, where the pack trail crosses the tributary
- K9089805—Pearl Creek, where the FS road crosses the creek
- R09099706—North Fork Wellington Creek, in Auxor Basin 1 mile east of Round Top Mountain
- R10059801—Tributary to Rattle Creek, ½ mile east of Lightning Creek Road
- R8079801—Mosquito Creek, at the mouth of the canyon below Scotchman Peak
- R8089801—Webb Creek
- R8199803—East Fork Creek, 1¾ mile east of Lightning Creek Road
- R8209801—Cascade Creek, just east of Lightning Creek Road

Samples E10199801, K9089805, R8199803, and R8209801 exceed the Aquatic Life Chronic standard for cadmium in the total recoverable metals screen. Sample R09099706 equals or exceeds both Aquatic Life standards for cadmium in the dissolved metals screen.

2.5 SUMMARY OF THE SANDPOINT RANGER DISTRICT

2.5.1 Summary of Environmental Observations

Most of the samples from properties with water discharge exceeded EPA water standards for one or more elements (Tables 2.5-1 and 2.5-2). Water quality variances include significant amounts of manganese, iron and mercury from the Payrock Sunrise Mine; zinc from the Snowbird Mine;
Table 2.4-1. Dissolved metals in reference water samples from the Sandpoint Ranger District. Numbers in bold-face type exceed one or more water quality standards.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<tr>
<td>E10199801</td>
<td>Tributary to Strong Creek, where park trail crosses tributary</td>
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<tr>
<td>K9089805</td>
<td>Pearl Creek, where FS road crosses creek</td>
<td>-- 0.0660</td>
<td>--</td>
<td>--</td>
<td>0.0033</td>
<td>--</td>
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<td>R8079801</td>
<td>Mosquito Creek, at mouth of canyon below Scotchman Peak</td>
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<td>East Fork Creek, 1/4 mile east of Lightning Creek Road</td>
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<tr>
<td>R8209801</td>
<td>Cascade Creek, just east of Lightning Creek Road</td>
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<td>--</td>
<td>0.0044</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is --

**WATER QUALITY STANDARDS**

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<th>Cu (mg/L)</th>
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<td>0.087</td>
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Table 2.4-2. Total recoverable metals in reference water samples from Sandpoint Ranger District. Numbers in bold-face type exceed one or more water quality standards.

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<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<tr>
<td>E10199801</td>
<td>Tributary to Strong Creek, where pack trail crosses tributary</td>
<td>0.0008</td>
<td>0.0030</td>
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<td>--</td>
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<tr>
<td>K9089805</td>
<td>Pearl Creek, where FS road crosses creek</td>
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<td>0.0670</td>
<td>0.0030</td>
<td>0.0077</td>
<td>0.1200</td>
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<td>0.0009</td>
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<tr>
<td>R09099706</td>
<td>North Fork Wellington Creek, in Auxor Basin 1 mile east of Round Top Mountain</td>
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<td>--</td>
<td>--</td>
<td>--</td>
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<td>--</td>
<td>0.0260</td>
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<tr>
<td>R8079801</td>
<td>Mosquito Creek, at mouth of canyon below Scotchman Peak</td>
<td>--</td>
<td>0.0030</td>
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<td>--</td>
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<tr>
<td>R8098901</td>
<td>Webb Creek</td>
<td>--</td>
<td>0.0030</td>
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<tr>
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<td>0.0040</td>
<td>0.0020</td>
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<td>Cascade Creek, just east of Lightning Creek Road</td>
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<td>0.0020</td>
<td>0.0030</td>
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<tr>
<td>R10059801</td>
<td>Tributary to Rattle Creek, ½ mile south of Rattle Creek</td>
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<td>0.0060</td>
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<td>0.0470</td>
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<td>0.0058</td>
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**EXPLANATION**

Blank space equals no analysis
Below Detection Limit is --

**WATER QUALITY STANDARDS**

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<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<td>Primary MCL</td>
<td>0.0500</td>
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<td>0.100</td>
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<td>0.002</td>
<td>0.100</td>
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<td>Secondary MCL</td>
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<td>0.100</td>
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<td>0.050</td>
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<td>5.000</td>
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<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
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<td>0.018</td>
<td>1.000</td>
<td>0.082</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td>0.000012</td>
<td>0.16-0.28</td>
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<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.1900</td>
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Table 2.5-1. Dissolved metals in water samples from the Sandpoint Ranger District. Numbers in bold-face type exceed one or more water quality standards. Properties shown in gray are discussed in sections A, C, and D of this report.

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<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
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<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<td>K9079801</td>
<td>Black Jack Mine (SA-266), Adit 3, water</td>
<td>0.027</td>
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<td>—</td>
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<td>Anderson Prospect (SA-271), adit water</td>
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<tr>
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<td>Snowbird Mine (SA-272), adit water</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is —

**WATER QUALITY STANDARDS**

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<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
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<td>1.7-3.1</td>
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mg/L = ppm
Table 2.5-1 (continued). Dissolved metals in water samples from the Sandpoint Ranger District.

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**EXPLANATION**

Blank space equals no analysis

mg/L = ppm

**WATER QUALITY STANDARDS**

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<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
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<th>Zn (mg/L)</th>
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<td>Primary MCL</td>
<td>0.050</td>
<td>2.000</td>
<td>0.005</td>
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<tr>
<td>Aquatic Life, Acute</td>
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<td>Estimated Detection Level (33% confidence)</td>
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Table 2.5-2. Total recoverable metals in water samples from the Sandpoint Ranger District. Numbers in bold-face type exceed one or more water quality standards. Properties shown in gray are discussed in sections A, C, and D of this report.

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<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
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<th>Mn (ppm)</th>
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<th>Zn (ppm)</th>
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<td>Black Jack Mine (SA-266), Adit 3, water</td>
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<td>0.0045</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<th>Hg (mg/L)</th>
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Table 2.5-2 (continued). Total recoverable metals in water samples from the Sandpoint Ranger District.

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<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
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<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K10079802</td>
<td>Unnamed Prospect (K10079801), adit water</td>
<td>0.0008</td>
<td>0.010</td>
<td>—</td>
<td>0.0100</td>
<td>—</td>
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<td>—</td>
<td>1.0000</td>
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<td>0.0160</td>
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</tr>
<tr>
<td>R09099701</td>
<td>Auxer Mine (SA-194), adit water</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.0050</td>
</tr>
<tr>
<td>R09099702</td>
<td>Auxer Mine (SA-194), dump seep</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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</tr>
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<td>R09109701</td>
<td>Falls Creek Mine (SA-199), adit water</td>
<td>0.0120</td>
<td>0.038</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.0470</td>
<td></td>
</tr>
<tr>
<td>R09109704</td>
<td>Falls Creek Mine (SA-299), mill tails seep</td>
<td>0.0170</td>
<td>0.054</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.0041</td>
<td>0.0060</td>
<td>—</td>
<td>—</td>
<td>0.0470</td>
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<td>0.022</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.0020</td>
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<tr>
<td>R09109706</td>
<td>Falls Creek Mine (SA-299), downstream</td>
<td>0.0074</td>
<td>0.041</td>
<td>0.007</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.0030</td>
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<td>0.020</td>
<td>0.0110</td>
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<tr>
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<td>Regal Mine (SA-203), upstream</td>
<td>—</td>
<td>0.004</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.019</td>
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<td>—</td>
<td>—</td>
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<td>—</td>
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<td>0.0039</td>
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<td>Goat Mountain Prospect (SA-205), adit water</td>
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<td>0.005</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R8089803</td>
<td>Goat Mountain Prospect (SA-205), dump seep</td>
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<td>0.011</td>
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<td>—</td>
<td>—</td>
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<td>0.053</td>
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<td>0.0058</td>
<td>0.0017</td>
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</tr>
<tr>
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<td>Goat Mountain Prospect (SA-205), upstream</td>
<td>0.0007</td>
<td>0.006</td>
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<td>—</td>
<td>—</td>
<td>—</td>
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<td>0.026</td>
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<td>0.0015</td>
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<tr>
<td>R8089805</td>
<td>Goat Mountain Prospect (SA-205), downstream</td>
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<td>0.005</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.020</td>
<td>0.0061</td>
<td>0.0024</td>
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<td>0.013</td>
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<td>R8099801</td>
<td>Lawrence Mine (SA-223), Adit 2, water</td>
<td>0.0015</td>
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<td>—</td>
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<td>0.0046</td>
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<td>0.016</td>
<td>0.0370</td>
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<td>R10019801</td>
<td>Lawrence Mine (SA-223), Adit 7, water</td>
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<td>0.065</td>
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<td>0.0061</td>
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<td>—</td>
<td>0.0780</td>
<td>0.0029</td>
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<td>0.020</td>
<td>0.0420</td>
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<td>R1069801</td>
<td>Green Monarch Mine (SA-286), adit water</td>
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<td>0.004</td>
<td>—</td>
<td>0.0069</td>
<td>—</td>
<td>0.027</td>
<td>—</td>
<td>0.0010</td>
<td>—</td>
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<td>0.0095</td>
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</tbody>
</table>

**EXPLANATION**

Blank space equals no analysis;
Below Detection Limit is —

**mg/L = ppm**

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th>WATER QUALITY STANDARDS</th>
<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary MCL</td>
<td>0.0500</td>
<td>2.0000</td>
<td>0.005</td>
<td>0.100</td>
<td>0.0500</td>
<td>0.002</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.3600</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.012-0.021</td>
<td>0.003-0.008</td>
<td>0.000012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.1900</td>
<td>0.0047</td>
<td>0.150</td>
<td>0.019</td>
<td>0.0049</td>
<td>0.0006</td>
<td>0.0005</td>
<td>0.012</td>
<td>0.0028</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
and mercury from the Better Times and Anderson Prospects. Cadmium in excess of one or more water quality standards is the most prevalent water quality variance in the Sandpoint district. At eleven out of the seventeen properties sampled, cadmium exceeds one or more standards. Usually, one or more other elements also exceed at least one standard in these samples. The elements detected in the water samples are also found in the rock units underlying the drainages.

2.5.2 Mine Waste Samples

Samples were collected from most of the properties where the mine waste dump impinged on an active waterway (Tables 2.5-3 and 2.5-4). As expected, many of these samples contain metal loadings, including arsenic, copper, lead, and zinc, which exceed the Clark Fork Superfund Background Levels. Samples of mill tailings were collected from three of the mines examined in this volume. As expected, these samples also contain high metal loadings, particularly of copper, lead, zinc, and in some samples, arsenic.
Table 2.5-3. Element screen for dump and tailings samples from properties in the Sandpoint Ranger District. Properties shown in gray are discussed in sections A, C, and D of this report.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K9079802</td>
<td>Black Jack Mine (SA-266), Adit 7, dump</td>
<td>NA</td>
<td>1,200</td>
<td>130.0</td>
<td>15.0</td>
<td>11.0</td>
<td>410.00</td>
<td>32,000</td>
<td>3,600</td>
<td>4,900</td>
<td>NA</td>
<td>19.0</td>
<td>920.0</td>
</tr>
<tr>
<td>K9079804</td>
<td>Anderson Prospect (SA-271), dump</td>
<td>NA</td>
<td>200</td>
<td>640.0</td>
<td>5.20</td>
<td>11.0</td>
<td>290.00</td>
<td>29,000</td>
<td>870</td>
<td>5,000</td>
<td>NA</td>
<td>24.0</td>
<td>290.0</td>
</tr>
<tr>
<td>K9089803</td>
<td>Snowbird Mine (SA-272), dump</td>
<td>NA</td>
<td>380</td>
<td>220.0</td>
<td>2.60</td>
<td>7.7</td>
<td>120.00</td>
<td>36,000</td>
<td>1,000</td>
<td>32</td>
<td>NA</td>
<td>7.8</td>
<td>86.0</td>
</tr>
<tr>
<td>K9089807</td>
<td>Wisconsin Prospect (SA-274), dump</td>
<td>NA</td>
<td>6,500</td>
<td>64.0</td>
<td>32.00</td>
<td>28.0</td>
<td>440.00</td>
<td>280,000</td>
<td>43,000</td>
<td>340</td>
<td>NA</td>
<td>48.0</td>
<td>4,100.0</td>
</tr>
<tr>
<td>K9109804</td>
<td>Unnamed Prospect (SA-244), dump</td>
<td>NA</td>
<td>91</td>
<td>180.0</td>
<td>3.10</td>
<td>13.0</td>
<td>50.00</td>
<td>26,000</td>
<td>140</td>
<td>1,700</td>
<td>NA</td>
<td>22.0</td>
<td>230.0</td>
</tr>
<tr>
<td>K9159802</td>
<td>Catherine Mine (SA-260), Adit 1, dump</td>
<td>NA</td>
<td>89</td>
<td>240.0</td>
<td>2.00</td>
<td>13.0</td>
<td>29.00</td>
<td>23,000</td>
<td>81</td>
<td>680</td>
<td>NA</td>
<td>22.0</td>
<td>85.0</td>
</tr>
<tr>
<td>K1009803</td>
<td>M B Prospect (SA-279), dump</td>
<td>NA</td>
<td>180</td>
<td>110.0</td>
<td>7.30</td>
<td>29.0</td>
<td>94.00</td>
<td>35,000</td>
<td>250</td>
<td>710</td>
<td>NA</td>
<td>29.0</td>
<td>570.0</td>
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<tr>
<td>R0909705</td>
<td>Auxer Mine (SA-194), dump</td>
<td>NA</td>
<td>200</td>
<td>43.0</td>
<td>6.60</td>
<td>8.6</td>
<td>470.00</td>
<td>130,000</td>
<td>490</td>
<td>1,800</td>
<td>NA</td>
<td>73.0</td>
<td>240.0</td>
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<td>Falls Creek Mine (SA-299), dump</td>
<td>NA</td>
<td>7,800</td>
<td>130.0</td>
<td>68.00</td>
<td>44.0</td>
<td>470.00</td>
<td>55,000</td>
<td>10,000</td>
<td>9,400</td>
<td>NA</td>
<td>51.0</td>
<td>9,100.0</td>
</tr>
<tr>
<td>R809806</td>
<td>Goat Mountain Prospect (SA-205), lower dump</td>
<td>NA</td>
<td>80</td>
<td>110.0</td>
<td>1.90</td>
<td>20.0</td>
<td>33.00</td>
<td>30,000</td>
<td>62</td>
<td>470</td>
<td>NA</td>
<td>26.0</td>
<td>99.0</td>
</tr>
<tr>
<td>R809807</td>
<td>Goat Mountain Prospect (SA-205), upper dump</td>
<td>NA</td>
<td>100</td>
<td>81.0</td>
<td>2.10</td>
<td>26.0</td>
<td>47.00</td>
<td>34,000</td>
<td>68</td>
<td>550</td>
<td>NA</td>
<td>35.0</td>
<td>130.0</td>
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<table>
<thead>
<tr>
<th>Tailings Samples</th>
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</thead>
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<tr>
<td>R09109703</td>
</tr>
<tr>
<td>R8099802</td>
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<tr>
<td>R8099803</td>
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<tr>
<td>R8199802</td>
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Clark Fork Superfund Background Levels (ng/g) ppm

<table>
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<tr>
<th></th>
<th>As</th>
<th>Cd</th>
<th>Pb</th>
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<td>U.S. Mean Soil</td>
<td>6.7</td>
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<td>Helena Valley Mean Soil</td>
<td>16.5</td>
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<td>11.5</td>
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<tr>
<td>Missoula Lake Bed Sediments</td>
<td>NA</td>
<td>0.2</td>
<td>34.0</td>
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<td>Blackfoot River</td>
<td>4.0</td>
<td>&lt;0.1</td>
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<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1000.0</td>
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Explanation:
Below Detection Limit is ---
Not analyzed equals NA
Table 2.5-4  Toxicity Characteristic Leaching Procedure for dump and tailings samples from properties in the Sandpoint Ranger District. Properties shown in gray are discussed in sections A, C, and D of this report.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>As (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Pb (ppm)</th>
<th>Hg (ppm)</th>
<th>Se (ppm)</th>
<th>Ag (ppm)</th>
<th>Ba (ppm)</th>
<th>pH</th>
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<td></td>
<td></td>
<td>0.900</td>
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<td>Anderson Prospect (SA-271), dump</td>
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<td>K9089807</td>
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<td>Unnamed Prospect (SA-244), dump</td>
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<tr>
<td>K9159802</td>
<td>Catherine Mine (SA-260), Adit 1, dump</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K10079803</td>
<td>M B Prospect (SA-279), dump</td>
<td>0.038</td>
<td>1.100</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1.300</td>
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<td>R09099705</td>
<td>Auxer Mine (SA-194), dump</td>
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</tr>
<tr>
<td>R09109702</td>
<td>Falls Creek Mine (SA-299), dump</td>
<td>0.430</td>
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<td>10.000</td>
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<td></td>
<td></td>
<td></td>
<td>0.910</td>
<td>7.0</td>
</tr>
<tr>
<td>R8089806</td>
<td>Goat Mountain Prospect (SA-205), lower dump</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>R8089807</td>
<td>Goat Mountain Prospect (SA-205), upper dump</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tailings Samples</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R09109703</td>
<td>Falls Creek Mine (SA-299), flotation tailings</td>
<td>0.044</td>
<td>23.000</td>
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<td></td>
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<td>0.100</td>
<td>4.4</td>
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<td>Lawrence Mine (SA-223), flotation tailings</td>
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<td>850.000</td>
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<td></td>
<td></td>
<td>0.100</td>
<td></td>
</tr>
<tr>
<td>R8099803</td>
<td>Lawrence Mine (SA-223), jig tailings</td>
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<td>0.088</td>
<td>580.000</td>
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<td></td>
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<td>0.290</td>
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<tr>
<td>R8199802</td>
<td>Unnamed Prospect (R8199801), tailings</td>
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<td>0.046</td>
<td>180.000</td>
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<td>1.600</td>
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</table>

**EXPLANATION**

Blank space equals no analysis

Not Detected is ND

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th>As (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Se (mg/L)</th>
<th>Ag (mg/L)</th>
<th>Ba (mg/L)</th>
<th>MCL</th>
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<tr>
<td>Primary MCL</td>
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<td>0.005</td>
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<td>0.050</td>
<td>2.000</td>
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<td>Secondary MCL</td>
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<td>Aquatic Life, Acute</td>
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<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.082-0.2</td>
<td>0.002</td>
<td>0.0041-0.0134</td>
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<tr>
<td>Aquatic Life, Chronic</td>
<td>0.190</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.003-0.008</td>
<td>0.000012</td>
<td>0.00012</td>
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<tr>
<td>Estimated Detection Level (33% confidence)</td>
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<td>0.0017</td>
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</table>
3.0 SANDPOINT DISTRICT MINE DESCRIPTIONS

3.10 ANDERSON MINE (Site No. SA-271)
Alternate names—Old Cabin; Peak Lode.

Green (1974) includes an adit labeled “Old Cabin” on Plate 2 of his report. The Old Cabin is at
the same location as the Anderson Mine on his 1976 dissertation map (Green, 1976, Plate 1).

3.10.1 Site Location and Access (Figure 2.1-1)

The Anderson Mine is along Pearl Creek in the SE¼ of the NE¼, section 12, T. 55 N., R. 2 W.,
on the Sagle 7.5-minute quadrangle (Figure 3.10-1). A jeep road follows the slope north of Pearl
Creek and eventually leads to Butler Mountain. After about 1¼ miles, a spur road branches off
the south side of the jeep road and terminates at the mine on Pearl Creek. The Anderson Mine is
on Forest Service land.

3.10.2 Geologic Features (Figure 2.2-1)

The regional geologic setting for this property is the same as that for the Talache Mine, described
in section 3.1.2 (in section A of this volume). The Anderson adit is driven northward across the
Pearl Creek fault into upper units of the St. Regis Formation (Green, 1976, Plate 1). The Pearl
Creek fault is a west-northwest-trending structure with right-lateral displacement (Green, 1976).

3.10.3 Site History

Nugent (1953) mentioned that V. Anderson’s “Peak Lode” milling operation on the Talache
dumps mostly processed rock that came from drift development. This suggests that Anderson
may have been developing a separate property and milling material from the Talache dumps to
supplement his development ore. Green (1974, 1977) included a “Peak” claim on his list of
un patented claims held by F C Goldsilver and Silver Butte Mining Company, and Green (1974)
proposed that numerous old workings, including the Old Cabin (Anderson Mine), be reopened as
part of an exploration program.

3.10.4 Environmental Conditions

3.10.4.1 Site Features

The Anderson Mine was visited by John Kauffman on September 7, 1998. A video segment
describing the property is on the Sandpoint District Videotape (Tape 2, index 00:00:42-00:05:13).
Documenting photographs are Roll K15, frames 4-8.

This property consists of a caved adit and waste dump along Pearl Creek (Figure 3.10-2). A
sloughed embankment marks the location of the adit (Figure 3.10-3). Water flowing from the
caved adit at about 1 gallon per minute trickles across the dump surface (Figure 3.10-4) and down into the Pearl Creek drainage, which was dry at the time of the visit. The waste dump, originally about 40 feet long, 20 feet wide, and 10-15 feet thick, has been dissected by the seasonal flow of Pearl Creek (Figure 3.10-5). The disturbed area covers less than 0.25 acre.

3.10.4.2 Sample Locations

3.10.4.2.1 Solid Samples

Sample K9079804 was collected from the dissected waste dump on the south side of the creek.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K9079804</td>
<td>Anderson Mine waste dump</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.10.4.2.2 Water Samples

Sample K9079803 was collected from the water flowing from the caved adit.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<tbody>
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<td>K9079803</td>
<td>Anderson Mine adit</td>
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<td>47</td>
<td>8.0</td>
<td>1</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.10.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)

Sample K9079804 exceeds background and environmental levels for arsenic, cadmium, copper, lead, manganese, and zinc in the element screen.

Water Samples (Tables 2.5-1 and 2.5-2)

Adit water sample K9079803 exceeds the Aquatic Life Chronic standards for cadmium in the total recoverable metals screen and for mercury in the ICP cold vapor test. The sample is within the range of values for the Aquatic Life Chronic standard for lead in the EPA 200.9 - Lead test.

3.10.5 Structures

A collapsed cabin (Figure 3.10-6) and an outhouse (Figure 3.10-7) are along the main jeep road to Butler Mountain a few hundred feet west of the spur road to the Anderson Mine. The cabin
remains are in a small clearing about 20 feet north of the road. Old bed springs and other scrap metal are in the collapsed debris. The outhouse is about 20 feet west of the cabin site beside the main jeep road.

3.10.6 Safety

There are no safety hazards at this site.
Figure 3.10-1. Location of the Anderson Mine, Bonner County, Idaho (U.S. Geological Survey Sagle 7.5-minute topographic map).
Figure 3.10-2. Sketch of the Anderson Mine.
Figure 3.10-3. Scarp on the slope above the caved adit of the Anderson Mine, looking north (Roll K15, frame #4).
Figure 3.10-4. Trickle of water flowing from the caved adit at the Anderson Mine (Roll K15, frame #5).

Figure 3.10-5. Looking southwest at the Anderson Mine waste dump dissected by Pearl Creek. The creek was dry at the time of the site visit (Roll K15, frame #6).
Figure 3.10-6. Looking east at the planks and beams of the collapsed cabin along the jeep trail above the Anderson Mine. Metal bedsprings are lying on the large beam at the far side of the structure (Roll K15, frame #7).
Figure 3.10-7. Old outhouse near the collapsed cabin. The jeep road to Butler Mountain is at the lower left corner of the picture (Roll K15, frame #8).
3.11 SNOWBIRD MINE (Site No. SA-272)

3.11.1 Site Location and Access (Figure 2.1-1)

The Snowbird Mine is on an unnamed tributary of Pearl Creek in the SE\(\frac{1}{4}\) of the SE\(\frac{3}{4}\), section 12, T. 55 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.11-1). Access is on a good jeep trail that winds up the ridge from the road to the townsit of Blacktail and terminates at the Snowbird Mine, about 2.5 miles from the Blacktail Road. An old, very brushy road does continues beyond the adit at the Snowbird, but no additional workings were found. This site is on Forest Service land.

3.11.2 Geologic Features (Figure 2.2-1)

The Snowbird Mine is at the southern end of the Blacktail mineralized zone, which includes the Talache and other previously described workings. Section 3.1.2 (Talache Mine) in section A of this volume describes the general geologic setting. The Snowbird workings are near two northeast-trending faults just south of the west-northwest-trending Blacktail fault (Green, 1976, Plate 1).

3.11.3 Site History

Nothing is known of the history of this site.

3.11.4 Environmental Conditions

3.11.4.1 Site Features

The Snowbird Mine was visited by John Kauffman on September 8, 1998. A video segment describing the site is on the Sandpoint District Videotape (Tape 2, index 00:05:18-00:09:23). Documenting photographs are Roll K15, frames 9-11.

The adit at this site (Figures 3.11-2 and 3.11-3) is just above the intermittent tributary to Pearl Creek on the south side of the drainage. Inside the adit, the walls are slanted to the east along a shear plane (Figure 3.11-4). A minor seep forms a shallow pool in front of the adit, then trickles across the dump and down the face to the creek bed. Although some water is flowing in the creek above the mine where the access road crosses the creek, the drainage below the dump is dry. The dump is 35 feet long, 25 feet wide, and 12-15 feet thick. It extends down into the drainage, and the face is actively being eroded into the drainage (Figure 3.11-5), probably during seasonal flow. The disturbed area covers less than 0.25 acres.

3.11.4.2 Sample Locations

3.11.4.2.1 Solid Samples

Sample K9089803 was taken from the eroded face of the dump.

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3.11.4.2.2 Water Samples

Sample K9089801 was collected from the pool in front of the adit. Upstream sample K9089802 was collected from the intermittent drainage 75 feet above the access road. There was no water flowing in the drainage below the waste dump, so there is no downstream sample. A reference sample (K9089805) was collected from Pearl Creek where the road to the townsites of Blacktail crosses the creek. This sample is downstream from the Snowbird, the Anderson, and the Better Times mines.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity ($\mu$S)</th>
<th>Temperature ($^\circ$ F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<td>7.56</td>
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<tr>
<td>K9089802</td>
<td>Snowbird Mine, upstream</td>
<td>29</td>
<td>51</td>
<td>7.9</td>
<td>1-3 ft. wide, &lt;0.5 ft. deep</td>
<td>Yes</td>
</tr>
<tr>
<td>K9089805</td>
<td>Pearl Creek reference</td>
<td>154</td>
<td>59</td>
<td>8.0</td>
<td>4 ft. wide, 0.5 ft. deep</td>
<td>Yes</td>
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3.11.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)

Sample K9089803 from the waste dump exceeds background and environmental levels for arsenic, cadmium, copper, iron, lead, and zinc in the element screen.

Water Samples (Tables 2.4-1, 2.4-2, 2.5-1, and 2.5-2)

Adit water sample K9089801 exceeds the Aquatic Life Chronic standard for cadmium and both Aquatic Life standards for copper and zinc in the dissolved metals screen. In the total recoverable metals screen, cadmium exceeds all standards, manganese exceeds the Secondary MCL, and zinc exceeds both Aquatic Life standards. In the EPA 200.9 - Lead test, lead exceeds the Aquatic Life Chronic standard.

Upstream sample K9089802 does not exceed any water quality standards. Sample K9089805 from Pearl Creek, several miles below the Snowbird Mine, exceeds the Aquatic Life Chronic standard for cadmium in the total recoverable metals screen.
3.11.5 Structures
    No structures were found at this site.

3.11.6 Safety

    The open adit is the only safety hazard at this site. A pile of rock on the adit floor shows that the fractured rock is unstable and prone to caving.
Figure 3.11-1. Location of the Snowbird Mine, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.11-2. Sketch of the Snowbird Mine.
Figure 3.11-3. Open adit of the Snowbird Mine, looking south. Water seeping from the adit forms a small pool in front of the opening (Roll K15, frame #9).

Figure 3.11-4. View inside the Snowbird Mine adit. A pile of rock rubble from a relatively recent collapse is on the adit floor (Roll K15, frame #10).
Figure 3.11-5. Face of the waste dump at the Snowbird Mine. The view is to the southeast from the access road. The dump has been eroded by seasonal flow in the intermittent drainage, a tributary to Pearl Creek (Roll K15, frame #11).
3.12 BETTER TIMES MINE (Site No. SA-273)

3.12.1 Site Location and Access (Figure 2.1-1)

The Better Times Mine is on the north side of an intermittent tributary of Pearl Creek about ¼ mile below the Snowbird Mine in the SE¼ of the SE¼, section 12, T. 55 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.12-1). Access is on a good jeep road that winds up the ridge from the road to the townsite of Blacktail and terminates at the Snowbird Mine. The Better Times is along a spur road off the south side of the jeep road. The spur road continues a short distance past the mine and terminates near the intermittent creek. The mine is on Forest Service land.

3.12.2 Geologic Features (Figure 2.2-1)

The Better Times property is at the southern end of the Blacktail mineralized zone, which includes the Talache and other previously described workings. Section 3.1.2 (Talache Mine) in section A of this volume describes the general geologic setting. The Better Times workings are along the west-northwest-trending Blacktail fault (Green, 1976, Plate 1).

3.12.3 Site History

Nothing is known of the history of this site.

3.12.4 Environmental Conditions

3.12.4.1 Site Features

The Better Times Mine was visited by John Kauffman on September 8, 1998. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 00:09:27-00:13:16). Documenting photographs are Roll K15, frames 12-14.

This property consists of an open adit and a waste dump well above the intermittent creek (Figure 3.12-2). A prospect shown by Green (1976) on the slope above the adit was not found. The adit is on the north side of the spur road where the road bends from west to southwest, several hundred yards from the main access road. The slope is sloughed above the adit, and the debris forms a pile of rubble in front of the adit (Figure 3.12-3). The rock inside is relatively competent, and the adit stands open without any supporting timbers (Figure 3.12-4). A seep from the adit forms a small pool on the spur road where it crosses the waste dump. The dump is 35 feet long, 30 feet wide, and 25 feet down the face (Figure 3.12-5). Neither the water or the dump impinge on the creek, which was dry at the time of the visit. The disturbed area covers less than 0.25 acre.

3.12.4.2 Sample Locations

3.12.4.2.1 Solid Samples

No waste dump samples were collected at this site.
3.12.4.2.2 Water Samples

Sample K9089804 was collected from the small pool of water on the access road in front of the adit.

<table>
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<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
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<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<tbody>
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<td>K9089804</td>
<td>Better Times Mine adit</td>
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<td>51</td>
<td>8.2</td>
<td>&lt;1</td>
<td>Yes</td>
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3.12.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

Adit water sample K9089804 exceeds the Aquatic Life Chronic standard for cadmium in the total recoverable metals screen, for lead in the EPA 200.9 - Lead test, and for mercury in the ICP cold vapor test.

3.12.5 Structures

No structures were found at this site.

3.12.6 Safety

The open adit is the only safety hazard at this site, although the rock appears to be competent and not prone to caving as far in as could be seen. Bad air is a more serious potential hazard than caving at this site.
Figure 3.12-1. Location of the Better Times Mine, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.12-2. Sketch of the Better Times Mine.
Figure 3.12-3. Looking north at the open adit of the Better Times Mine. Water seeping from the adit forms a small pool on the grass-covered access road (center of picture) (Roll K15, frame #12).
Figure 3.12-4. View inside the Better Times adit. Sloughed rock rubble at the lower left is from the slope above the adit (Roll K15, frame #13).

Figure 3.12-5. Looking east across the surface and south side of the waste dump at the Better Times Mine (Roll K15, frame #14).
3.13 BLUE BIRD MINE (Site No. SA-269)
Alternate names—Bluebird; Nameloc Lode.

3.13.1 Site Location and Access (Figure 2.1-1)

The Blue Bird Mine is on the east end of Bimetallic Ridge on the slope just south of Talache Creek in the N½ of the NE¼, section 7, T. 55 N., R. 1 W., on the Talache 7.5-minute quadrangle (Figure 3.13-1). The mine is reached via a spur road that splits from the north side of the Butler Mountain road. The spur road goes around the east end of Bimetallic Ridge about ¾ mile to one of the adits. The other workings are on the slope above this adit to the south and southwest. A metal fence-wire gate blocks the spur road about ¼ mile south of the adit and has a “Private Property” sign attached. However, the National Forest map shows all of this area as Forest Service land.

3.13.2 Geologic Features (Figure 2.2-1)

Section 3.1.2 (Talache Mine) in section A of this volume describes the general geologic setting of the Blue Bird property. The mine is in the upper St. Regis and lower Wallace formations (Eby, 1933).

3.13.3 Site History

The Blue Bird property was located around 1885 or 1886. Active development at the mine during the period from 1901 to 1905 was very promising, according to the Idaho Inspector of Mines. By 1905, the property had 2,000 feet of tunnels, raises, and shafts (IGS mineral property files). In 1933, the property had two tunnels, with the majority of the work having been done on the lower level. Much of the work was done by lessees, who mined only the high-grade ore (Eby, 1933). The Blue Bird Mining Company (incorporated July 19, 1940, under the laws of the State of Washington) purchased the mine in 1940. This company apparently did a little work on the Blue Bird after World War II.

3.13.4 Environmental Conditions

3.13.4.1 Site Features

The Blue Bird Mine was visited by John Kauffman on September 8, 1998. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 00:13:20-00:22:15). Documenting photographs are Roll K15, frames 15-26, and Roll K16, frames 1-2

The workings found at the Blue Bird Mine include three adits, a caved shaft (or prospect pit), and several shallow prospect pits and trenches. Adit 1 is located at the end of the access road on the northeast slope of Bimetallic Ridge (Figure 3.13-2). The adit is framed with square timbers and plank sides (Figure 3.13-3). The opening is closed off by locked wooden doors with substantial
metal hinges (Figure 3.13-4). A Forest Service warning sign is posted next to the door. A minor amount of water trickles from the adit and disappears into the surface of the access road where it crosses the waste dump. The access road splits prior to reaching the dump, with one branch crossing the dump surface and the other dropping down and crossing the slope along the toe of the dump. The dump is 45 feet long, 30 feet wide, and 30-40 feet down the face. Except for the open area in front of the adit, the dump is covered with thick brush (Figure 3.13-5). The disturbed area covers 0.5 acre or less.

Adit 2 is several hundred feet above Adit 1 at the end of one branch of a bulldozer trail originating at Adit 1 (Figure 3.13-2). The adit is difficult to see in the brush (Figure 3.13-6). It is open, although there is a pile of caved rock in front of the opening as well as just inside the adit (Figure 3.13-7). A board with the word “CAUTION” written on it is propped in front of the adit and is nearly covered by the caved material. Immediately inside, the adit splits into two branches. The right branch may be caved, but the left branch appears to be open. The waste dump is 40 feet long, 30-40 feet wide, and 20 feet down the face (Figure 3.13-8). Most of the dump is covered with thimble berries and other low bushes. The remains of an old cabin, along with associated metal stove pipe and other artifacts, are on the southeast side of the dump, and an outhouse is west of the dump on the edge of a trench. The trench is about 60 feet long and 5-6 feet deep (Figure 3.13-9). Two shallow prospect pits are north of the dump in the timber (Figure 3.13-10). The disturbed area covers about 0.5 acre.

Adit 3 is 400-500 feet south of Adit 2 at about the same elevation and is at the end of the other branch of the bulldozer trail that starts at Adit 1. This adit was driven westward into the slope and, as at Adit 1, is completely framed with square timbers and planks (Figure 3.13-11). Inside, the adit is completely timbered and cribbed, both on the sides and top, as far in as can be seen (Figure 3.13-12). The adit is open, although it apparently had been closed with a metal gate (the edge of the gate can be seen in Figure 3.13-12). A Forest Service warning sign is posted inside the portal next to the detached gate. The floor of the adit is damp but has no ponded or flowing water. The waste dump is long and narrow, and it splits into two fingers or lobes near the end (Figure 3.13-13). It measures 125 feet long, varies in width from 50 feet at the access road near the portal to 30 feet at the center to 6-10 feet on each of the fingers, and is about 20 feet down the face. The slope here is relatively flat, so the dump thickness is probably about 15 feet. Most of the dump is covered with a carpet of moss (Figure 3.13-14). Several pieces of rail are scattered on the dump surface. The disturbed area covers about 0.5 acre.

Several prospects were found east of Adit 3 and just above the access road to Adit 1 on the nose of Bimetallic Ridge. These are, from south to north, a shallow prospect pit, a cut into the slope next to a caved shaft or prospect pit, and an arcuate trench (Figure 3.13-15). The prospect pit is small and circular, only 8 feet across and 6 feet deep, and has an equally small waste dump piled on the downslope side of the pit. The cut into the slope is about 40 feet long. At the north end of the cut is a square pit about 6 feet deep that appears to be a caved shaft. The cut and the shaft dumps are combined, forming a waste dump 50-60 feet long, 12-15 feet wide, and about 20 feet down the face. As at the other workings on this property, this dump is fairly brushy (Figure 3.13-}
16). North of the shaft a short distance is a trench that curves from northeast to east. The trench is about 50 feet long and 4-5 feet deep. It has a pile of waste rock pushed out the east end and down the slope. The disturbed area covers less than 0.5 acre.

3.13.4.2 Sample Locations

3.13.4.2.1 Solid Samples

No waste dump samples were collected at these workings.

3.13.4.2.2 Water Samples

Sample K9089806 was collected from the seep at the portal of Adit 1. The sampling kit was forgotten on the hike to this site, so no conductivity, temperature, or pH were taken for this sample.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (° F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K9089806</td>
<td>Blue Bird Mine, Adit 1</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>seep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.13.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

Sample K9089806 exceeds the Aquatic Life Chronic standard for cadmium in the total recoverable metals screen.

3.13.5 Structures

The collapsed remains of a small cabin are on the edge of the dump at Adit 2 (Figure 3.13-17). Only one wall of the cabin remains standing. Several pieces of stove pipe and other scrap metal and debris are associated with the collapsed structure. An anvil fabricated from a short piece of railroad track attached to a wooden frame was found beside the cabin.

3.13.6 Safety

Adit 1 is gated and secured with a lock, Adit 2 is open and could be entered, and Adit 3 is also open. A metal gate that apparently closed Adit 3 has been removed and propped inside the portal. Judging from the significant amount of timbering and cribbing inside Adit 3, the rock conditions are probably unstable, and caving conditions are likely in any untimbered sections of the adit.
Figure 3.13-1. Location of the Blue Bird Mine, Bonner County, Idaho (U.S. Geological Survey Talache 7.5-minute topographic map).
Figure 3.13-2. Sketch of Adits 1 and 2 at the Blue Bird Mine.
Figure 3.13-3. Looking southwest at the framed portal of Adit 1 of the Blue Bird Mine (Roll K15, frame #15).

Figure 3.13-4. Close-up of the doors at the portal of Adit 1 at the Blue Bird Mine. A Forest Service warning sign has been posted to the right of the doors (Roll K15, frame #16).
Figure 3.13-5. Looking northwest at the brushy face of the waste dump for Adit 1 at the Blue Bird Mine (Roll K15, frame #17).

Figure 3.13-6. Looking south toward Adit 2 at the Blue Bird Mine. The adit is at the center of the picture, just to the right of the tree in the foreground. Boards from the collapsed cabin are at the far left. An anvil, constructed from a section of railroad track mounted on 2-by-4s, is partially visible behind the tree near the bottom of the photograph (Roll K15, frame #18).
Figure 3.13-7. View inside the opening of Adit 2 at the Blue Bird Mine. The adit appears to be open, although a pile of rock rubble partly fills the entrance into the adit (Roll K15, frame #23).

Figure 3.13-8. Looking east at the face of the waste dump for Adit 2 at the Blue Bird Mine (Roll K15, frame #21).
Figure 3.13-9. Looking southwest up the trench west of Adit 2 at the Blue Bird Mine. An old outhouse is beside a large tree in the upper right of the picture (Roll K15, frame #20).

Figure 3.13-10. Looking northwest at two shallow prospect pits north of Adit 2 at the Blue Bird Mine (Roll K15, frame #22).
Figure 3.13-11. Looking northwest at the framed portal of Adit 3 at the Blue Bird Mine (Roll K15, frame #24).
Figure 3.13-12. View inside Adit 3 at the Blue Bird Mine. The adit is timbered and lagged as far in as can be seen. The metal bar propped against the right side, next to the Forest Service warning sign, is actually the edge of a metal gate that apparently was used to close the adit (Roll K15, frame #25).
Figure 3.13-13. Sketch of Adit 3 at the Blue Bird Mine.
Figure 3.13-14. Looking east across the moss-covered south finger of the waste dump for Adit 3 at the Blue Bird Mine (Roll K15, frame #26).
Figure 3.13-15. Sketch of the prospect pits and possible shaft at the Blue Bird Mine.
Figure 3.13-16. Looking north across the brushy surface of the waste dump for the prospect cut and possible shaft at the Blue Bird Mine (Roll K16, frame #2).

Figure 3.13-17. Remains of a small cabin or shed at Adit 2 of the Blue Bird Mine (Roll K15, frame #19).
3.14 WISCONSIN MINE (Site No. SA-274)
Alternate names—Old Mexico Mine; Mariposa.

3.14.1 Site Location and Access (Figure 2.1-1)

The Wisconsin Mine is less than ¼ mile south of Talache Landing on the shore of Lake Pend Oreille in the NE¼ of the SE¼, section 7, T. 55 N., R. 1 W., on the Talache 7.5-minute quadrangle (Figure 3.14-1). The mine is just below a short spur road that heads south from the switchback on the Talache Landing road and leads to the beach at the mouth of Pearl Creek. The mine is on a thin sliver of Forest Service land along the lake.

3.14.2 Geologic Features (Figure 2.2-1)

The general geologic setting is discussed in section 3.1.2 (Talache Mine) in Section A of this volume. The adit is driven into the Wallace Formation on the north side of the Pearl Creek fault (Green, 1976).

3.14.3 Site History

The Wisconsin Mining, Milling & Development Company was incorporated in 1903. The 1905 Idaho Mine Inspector’s annual report (IMIR) noted the property was being developed by a 1,000-foot crosscut from near the level of the lake, and that the property would probably ship ore within the next year. The company’s report to the mine inspector noted that most of the development so far was comparatively shallow, but that the lake-level tunnel was expected to provide ready access to all of the fourteen veins on the property. The company appears to have done little but assessment work on the property. Wisconsin forfeited its corporate charter in 1917.

In 1919, several of the Wisconsin claims were controlled the Armstead Mines, Inc., which later became Talache Mines, Inc. In the 1960s and 1970s, the property was part of the large block of land leased or otherwise held by Silver Butte Mining Company, Imperial Silver Corporation, and F C Goldsilver, Inc. (Green, 1974; 1977).

3.14.4 Environmental Conditions

3.14.4.1 Site Features

The Wisconsin Mine was visited by John Kauffman on September 8, 1998. A video segment describing the mine is on the Sandpoint District Videotape (Tape 2, index 00:22:20-00:24:25). Documenting photographs are Roll K16, frames 3-4.

This is an open adit that has been gated by the Forest Service. A headboard above the portal reads “OLD MEXICO MINE” (Figure 3.14-2). The Forest Service closure consists of an inner, locked, wire-mesh gate and an outer metal frame with 2 x 6 planks. One of the planks has been

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removed and is propped in front of the adit. The timbers inside the adit appear rotten and in poor condition. A beautifully constructed, free-standing, rock retaining wall supports the hillside on both sides of the portal. The waste dump (Figure 3.14-3) extends into the lake and has been partially removed by wave action. Most of the material is relatively coarse. The dump measures about 30 feet long, but only 6 feet wide and 6 feet thick.

3.14.4.2 Sample Locations

3.14.4.2.1 Solid Samples

Sample K9089807 was collected from some of the finer material on the eroded face of the waste dump.

<table>
<thead>
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<th>Sample No.</th>
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<th>Analyzed (Yes/No)</th>
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<td>Wisconsin Mine waste dump</td>
<td>Yes</td>
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3.14.4.2.2 Water Samples
No water samples were collected at this site.

3.14.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)

Sample K9089807 exceeds background and environmental levels for arsenic, cadmium, copper, iron, lead, nickel, and zinc in the element screen. In the TCLP for metals screen, significant amounts of cadmium and lead were leaching from the sample.

3.14.5 Structures

There are no buildings at this site. The free-standing rock retaining wall is well constructed and may be of some historical importance, depending on when it was built.

3.14.6 Safety

Unless the adit is broken into, there are no safety hazards at this site. The site is easily accessible from either the road or by boat from the lake, and the removed plank indicates an attempt was made to enter the adit.
Figure 3.14-1. Location of the Wisconsin Mine, Bonner County, Idaho (U.S. Geological Survey Talache 7.5-minute topographic map).
Figure 3.14-2. Portal of the Wisconsin Mine adit, looking west. The headboard above the adit reads "OLD MEXICO MINE." The adit has been closed by the Forest Service using an inner wire-mesh gate with planks bolted to a steel frame on the outside. One of the planks has been removed and is propped against the wall at the right. Note the free-standing rock retaining wall on the left (Roll K16, frame #3).
Figure 3.14-3. Looking north along the shore of Lake Pend Oreille. The toe of the Wisconsin Mine waste dump, partly eroded by the lake, is in the foreground. Talache landing is in the background (Roll K16, frame #4).
3.15 SULFIDE MINE (Site No. SA-234)
Alternate names—Silver Fox Group; Thomason Group.

3.15.1 Site Location and Access (Figure 2.1-1)

The Sulfide Mine is on the east-facing slope of the ridge south of Camp Bay just inside the west edge of section 20, T. 56 N., R. 1 E., on the Hope 7.5-minute quadrangle (Figure 3.15-1). The old access road to the site from Camp Bay is overgrown and cannot be driven. The site can be reached on foot through the timber from FS Road 532 on the flat ¼ mile to the west of the property or by boat from the lake. The Sulfide Mine is on a group of patented claims, although one of the workings was found several feet inside a recently surveyed boundary line of the National Forest.

3.15.2 Geologic Features (Figure 2.2-1)

Puffett and Anderson (1954, p. 3-4) described the geology of the mine as follows:
The country rock is thin-bedded, gray argillite, probably part of the Prichard formation of the Belt Series of pre-Cambrian age. This is a very fine-grained rock with the beds ranging from 1 to 2 inches in thickness. Thin films of calcareous material occur along some of the fracture surfaces in the underground workings. The bedding strikes in a general northeast direction and dips from 25 to 35 degrees to the southeast.

The adit has crosscut the bedding and exposes a few thin faults which strike from north to northeast and dip steeply to the west. Near the portal there is a 2-foot wide zone of shearing parallel to the bedding. A 4- to 6-inch thick quartz vein occurs about 22 feet east of the face of the adit. Sparse amounts of galena and pyrite occur in this vein. The vein is terminated at both the top and bottom by thin, bedding plane faults. The offset segments of this vein are not exposed elsewhere in the adit.

A 3-inch thick quartz vein is exposed in a bulldozer cut just to the northeast of the portal of the main inclined shaft. This vein strikes N. 35° E. and dips 45° N. No sulfides were seen in it. It could not be traced northeast across the bulldozer cut and is cut off on the southwest by a thin fault zone which strikes N. 52° E. and dips 32° S. The offset segment of the vein was not exposed to the southwest of this fault.

The main inclined shaft sunk at an inclination of -15 degrees has followed what appears to be the top of a vein. The general features of this vein are shown on Map No. 2 [omitted]. It is a little difficult to understand exactly what the actual situation is regarding this vein. The sketch of the face of the incline shows a narrow quartz vein trending nearly parallel to the bedding. In the central part of
the face this vein widens to nearly 18 inches and dips steeply to the northwest. There is no apparent structural control for the sharp change in orientation of the vein, and the bedding surrounding it has no apparent distortion.

In the shallow inclined shaft northwest of the main inclined shaft a quartz vein, 12 inches thick, is exposed in what appears to be a reverse fault which strikes N. 35° E. and dips 58° N. This vein is exposed from the top of the shaft to the face, a distance of about 12 feet. Sparse to moderate amounts of galena occur throughout the vein.

3.15.3 Site History

In February 1946, Mr. H. L. Thomason (Thomason, 1946), the owner of the property, reported the following historical information on the property in a letter to Mr. S. H. Lorain (U.S. Bureau of Mines, Albany, Oregon):

The Sulphide Lode was discovered in 1904 and patented in 1907. The parties owning [owning] this claim died and the title to this claim reverted to the County for dilinquent [sic] taxes. I purchased this claim in 1939 from the County and then located the additional claims. At that time I made a deal with a farmer here to pay the cost of [of] development of the claims for an interest in the property. He built and equipped a 25 ton mill (which should not have been done at that time) and neglected to do any amount of development work on the claims. He bought the machinery and equipment on a monthly payment plan, unbeknown to me, and lost this equipment for defaulting in his payments. That terminated this agreement and stopped all work and the property has remained idle since 1939.

In 1905-6 an incline tunnel was driven in one [on] the ore at the point of discovery for a distance of about 40 feet and 20 ton or more of ore taken out, which now lies on the dump. . . .

In 1939 a tunnel was started at a lower level to intersect the vein, but only a very short tunnel was driven which determined nothing, and then all work stopped as stated.

Between 1947 and 1951, about 15 tons of hand-sorted ore were shipped from the property (Johnson, 1954), probably by lessees. V.Z. Johnson of the U.S. Bureau of Mines examined the property in August 1954 at the request of lessees E. Vernon Anderson and George H. Johnson, doing business as A. and J. Mining Company (a partnership). Puffett and Anderson (1954) reported a five-year lease between the owner and A. and J. Mining on September 28, 1954; however, in light of Johnson’s (1954) earlier report, this was probably a renewal of an earlier agreement. The property was examined for a Defense Minerals Exploration Administration (DMEA) loan in 1954, but the proposal was rejected because of the narrowness, low metal content, and apparent lack of continuity of the veins (Puffett and Anderson, 1954).
3.15.4 Environmental Conditions

3.15.4.1 Site Features

The Sulfide Mine was visited by John Kauffman on two separate occasions. The first was on September 9 and the second on September 16, 1998. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 00:24:29-00:33:25). Documenting photographs are Roll K16, frames 5-7, and Roll K19, frames 1-5.

After the initial site visit when one caved shaft was found, a map of the property was located (under the name of the Silver Fox Group) that showed several other workings (Figure 3.15-2). These workings were found during the second visit, once it was determined that the Sulfide Mine and the Silver Fox Group were, in fact, the same property.

The Sulfide Mine has two caved inclined shafts and one open adit. The adit was driven west into the steep slope above Lake Pend Oreille at the base of an outcrop (Figures 3.15-3 and 3.15-4) about 50-60 feet above lake level, and the opening can easily be seen from the lake. The adit is self-supporting with no timbers visible and only a minor amount of rock debris on the floor (Figure 3.15-5). Waste rock forms a thin veneer on the slope below the adit and extends down to the lake (Figure 3.15-6). The amount of material is considerably less than expected for an adit that, according to the map of the property, was 150 feet in length, so much of the waste rock has probably been removed by erosion into the lake. The disturbed area at the adit covers less than 0.25 acre.

Several hundred feet southwest of the adit and about 120 feet higher in elevation is a caved inclined shaft (Figure 3.15-7). In 1954, this shaft was about 200 feet long and had a decline angle of 15° (Puffett and Anderson, 1954). Shaft 1 is completely caved with only a rock face showing above the caved opening on the slope (Figure 3.15-8). The waste dump is 30 feet long, 20 feet wide, and 30 feet down the face. The remains of a wooden trestle protrude through the moss-covered dump (Figure 3.15-9). The slope around this shaft is covered with brush and timber. The old access roads are also densely covered with brush. Old motor oil cans, food cans, and other junk are scattered around the area near the decline. A recently surveyed and brush-covered National Forest boundary line is within 200 feet to the north of this shaft. The disturbed area covers less than 0.25 acre.

A second inclined shaft, shown in 1954 as 12 feet long at a decline of 21° (Puffett and Anderson, 1954), is about 250 feet northwest of Shaft 1. Shaft 2 is also caved, except for a small opening 5-6 feet in length (Figure 3.15-10). The small waste dump is moss covered and surrounded by dense brush (Figure 3.15-11). The National Forest boundary line passes about 25 feet to the south, placing the shaft on Forest Service land. The disturbed area is less than 0.1 acre.
3.15.4.2 Sample Locations

3.15.4.2.1 Solid Samples
No waste dump samples were collected at this site.

3.15.4.2.2 Water Samples
No water samples were collected at this site.

3.15.5 Structures
No structures were found at this site, although the camp area shown on the DMEA map contains scattered scrap debris and a probable collapsed outhouse.

3.15.6 Safety
The open adit is the only potential safety hazard at this site. Although there are no roads nearby, the adit is clearly visible from the lake. There is a worn path from the shoreline up the slope to the adit, indicating at least occasional visits.
Figure 3.15-1. Location of the Sulfide Mine, Bonner County, Idaho (U.S. Geological Survey Hope 7.5-minute topographic map).
Figure 3.15-2. Sketch of the Sulfide Mine workings (modified from Puffett and Anderson, 1954).
Figure 3.15-3. Sketch of the Sulfide Mine adit.
Figure 3.15-4. Looking south at the Sulfide Mine adit at the base of a cliff face. The open adit is on a steep east-facing slope 50-60 feet above the shore of Lake Pend Oreille (Roll K19, frame #1).
Figure 3.15-5. Looking west into the open adit at the Sulfide Mine. The rock appears to be relatively competent, as evidenced by only a minor amount of rock rubble on the adit floor (Roll K19, frame #2).
Figure 3.15-6. Looking east down the steep slope with a thin veneer of waste rock below the adit at the Sulfide Mine. A foot trail leading up the slope from the lake to the adit is apparent through the brush (Roll K19, frame #3).
Figure 3.15-7. Sketch of caved, inclined Shaft 1 at the Sulfide Mine.
Figure 3.15-8. Close-up of caved, inclined Shaft 1 at the Sulfide Mine. The rock face in the upper part of the picture slopes away from the viewer (Roll K16, frame #6).

Figure 3.15-9. Looking northeast across the moss-covered surface of the waste dump for Shaft 1 at the Sulfide Mine. Part of the wooden trestle is visible at the end of the dump (just left of center of the photograph) (Roll K16, frame #7).
Figure 3.15-10. Looking west into the short overhang of caved, inclined Shaft 2 at the Sulfide Mine. This small, tapered opening is only 5-6 feet in length (Roll K19, frame #5).

Figure 3.15-11. Looking north at the small mound of moss-covered waste rock excavated from Shaft 2 at the Sulfide Mine. Note the thick brush cover in the background (Roll K19, frame #4).
3.16 PAYROCK SUNRISE MINE (Site No. SA-245)
Alternate name—Payrock Mine.

The Payrock Sunrise Mine includes numerous workings on a large block of claims. Several of these workings have separate site numbers, either from the IGS database or from field designations assigned at the time of the visit. Site No. SA-246 (unnamed prospect) is included in these, as are field Site Nos. K9109802 and K9109803. All of these sites are discussed below.

3.16.1 Site Location and Access (Figure 2.1-1)

The Payrock Sunrise workings are on the slope west of Garfield Bay and southeast of Grouse Mountain in the W½, section 28, and in section 33, T. 56 N., R. 1 W., on the Talache 7.5-minute quadrangle (Figure 3.16-1). Although all the workings are on National Forest land, there is no public access other than by boat. The main access road into the area from Garfield Bay crosses gated private land owned by Ms. Cheyanna Whittier. Ms. Whittier was gracious in not only granting permission to cross her land, but also in helping locate several of the workings.

3.16.2 Geologic Features (Figure 2.2-1)

The Payrock Sunrise Mine is in the Prichard Formation (Aadland and Bennett, 1979). The workings on the Payrock Group explore several quartz veins in black argillite and argillaceous quartzite. According to McConnel (1952), one of the veins was exposed over a length of 1,000 feet and a vertical distance of 200 feet in 1952. Assays collected from the vein, both in cuts and in underground workings, were not encouraging. One hand-picked sample of high-grade material assayed 1.8 percent lead, 10.8 ounces silver, 4.2 percent zinc, and 0.005 ounce gold. However, this high-grade material made up only about 5 percent of the vein, making the overall grade too low to mine (McConnel, 1952).

3.16.3 Site History

By 1952, when McConnel (1952) examined the property, essentially all of the workings had already been developed. Judging from the site visit for this project, little (if any) work has been done on the property since that time.

3.16.4 Environmental Conditions

3.16.4.1 Site Features

The workings of the Payrock Sunrise Mine were visited by John Kauffman on September 10 and 14, and October 7, 1998. Video segments of these visits have been edited together and are on the Sandpoint District Videotape (Tape 2, index 00:33:30-01:06:57). Documenting photographs are Roll K16, frames 8-23; Roll K17, frames 1-10; and Roll K20, frames 8-13.
A claim map from 1951 (Figure 3.16-2) shows the location of the Payrock (Payrock Sunrise) workings. Not all of these were found, and some that were found cannot be matched to those on the map. In particular, Adits 2 and 3 of this report are in the vicinity of the "Old Tunnel" and a second adit and shaft further to the west on the map, but it is uncertain which of those on the map correspond to the ones found. Two shafts shown on the claim map on claims 12 and 13 also were not found.

Because several of the Payrock Sunrise workings had, or were given, different site numbers, and are described as such on the video segment, the discussion below follows the video description. These include: the main Payrock Sunrise workings (Site No. SA-245); Site No. K9109802 and Site No. K9109803; and Site No. SA-246.

Main Payrock Sunrise workings

Adit 1 and Shaft 1 are within National Forest land a few feet south of Ms. Whittier's property along a grassy access road (Figure 3.16-3) at an elevation of about 2,275 feet. The workings are west of the access road against the hillside and behind a circular pond surrounded by an aspen grove (Figure 3.16-4). The shaft is at the west edge of the pond and is filled with water. Chicken wire and old planks cover the north portion of the opening (Figure 3.16-5), but the south end has no wire and only a few widely spaced planks (Figure 3.16-6). On the claim map, this shaft is described as 32 feet deep. About 20 feet south of the shaft is an open adit (Figure 3.16-7). This adit is also shown on the claim map. Most of the waste rock for these workings has been leveled and forms the base for the access road on the east side of the pond. This modified dump is 75 feet long, 60 feet wide (including the width of the road), and about 10 feet thick. A small, flat mound of probable waste rock piled a few feet south of the pond may be rock from the adit. At the base of the south side of this mound is an old wooden skid or sled with a small amount of quartz vein material (Figure 3.16-8). Behind the skid in the trees is an outhouse tipped on its side (identified as a small shed in the video). About 25 feet north of the National Forest boundary is a small, collapsed log structure, possibly a root cellar, along the west edge of the access road in thick brush (Figure 3.16-9). The disturbed area covers about 0.5 acre.

Adits 2 and 3 are about 3,000 feet northwest of Adit 1 at an elevation of about 3,300-3,400 feet. Adit 2 is near the location of the shaft on claim 13 on the map, but appears to be an adit rather than a shaft. An old, grass-covered access road, brushy in places, leads up the slope from Adit 1 and passes below the dump of Adit 2 and across the dump of Adit 3 (Figure 3.16-10). Adit 2 is open but nearly hidden by brush (Figure 3.16-11). Inside, some of the support timbers are still intact while others are leaning or collapsed (Figure 3.16-12). Large blocks of rock can be seen on the adit floor, indicating unstable conditions. The waste dump is 10 feet long, 8 feet wide, and about 20 feet down the face. The dump is covered with brush and a few trees (Figure 3.16-13), and it extends down to the access road.

Adit 3 is about 200-300 feet north of Adit 2 on the north side of a deep gulch. It may be the adit shown on the claim map on claim 12. The access road passes in front of the adit over what little
remains of the waste dump. A minor seep forms a wet, muddy area on the access road in front of the adit (Figure 3.16-14). The floor of the adit is covered by several inches of water dammed by a small pile of rock debris at the portal. Unlike Adit 2, this adit has no support timbers (Figure 3.16-15). The waste dump is about 30 feet long, 10 feet wide, and 20 feet down the face, but a considerable portion of the dump appears to have been eroded by seasonal flow in the gully (Figure 3.16-16). The disturbed area at Adits 2 and 3 covers about 0.25 acre.

The old access road branches a few hundred feet north of Adit 3, with the main branch continuing northward up the open slope and the other branch turning back to the west. This brushy, west branch leads to a prospect cut and to Adit 4 (Figure 3.16-17). The prospect cut is a shallow bulldozer cut into the embankment along the north edge of the access road (Figure 3.16-18). Above and slightly southwest of the cut is Adit 4. This tunnel is actually two short openings (Figure 3.16-19), one about 10 feet long and the other only 3-4 feet long. These both explore a thick quartz vein cutting the sedimentary host rock. The small amount of material removed from the adit and cut has been reworked into a wide pad that is part of the access road, which terminates just past the workings. The disturbed area is less than 0.25 acre.

The main branch of the access road continues north up the open east slope of Grouse Mountain at least ¼ mile, then turns back to the south through the timber across a bench on the slope and passes in front of Adit 5 (Figure 3.16-20). The adit is in thick timber and brush at the base of a steep slope. A shallow trough extends about 30 feet in front of the adit (Figure 3.16-21). The open adit has about 2 feet of water covering the floor, dammed by a low mound of sloughed rock at the portal (Figure 3.16-22). The waste rock appears to have been bulldozed out to form a large, thin pad on the brush-covered bench, and the volume cannot be accurately estimated. The disturbed area covers less than 0.25 acre.

Site Nos. K9109802 and K9109803

Site No. K9109802 is along the west shore of the lake less than ¼ mile north of Grouse Mountain Point. Site No. K9109803 is about ¼ mile west of K9109802 at the end of a brush-covered access road.

Site No. K9109802 has of three caved shafts and two adits. One of the adits is open, and the other has been closed by the Forest Service. All of these are near the lake edge east of an old cabin (Figure 3.16-23). The open adit is several feet above the lake and difficult to see (Figure 3.16-24). The original portal area is caved, with rock debris sloughed into this portion of the adit. One cross timber can be seen in front of the small opening into the adit (Figure 3.16-25). A short distance to the south, around the point of a low ridge, is the second adit (Figure 3.16-26). This adit has been closed by the Forest Service using a 3 foot-diameter culvert with internal crossbars to provide access for bats and to keep people out. From the bearing of the two adits, it appears that they may be, or may have been, connected. If they are connected, entry into the closed adit could still be possible. There is no waste dump at either of these adits. Of the three shafts, Shaft 1 probably was the deepest, although none were very deep and all are now caved. Shaft 1, about
30 feet above the lake, is about 8 feet in diameter and 6-8 feet deep (Figure 3.16-27). A small waste dump forms a crescent-shaped mound on the east side of the pit (Figure 3.16-28). Shaft 2 is similar in size and depth, but it has no dump associated with it. Shaft 3, about 12 feet in diameter and 6 feet deep, is just east of the an old log cabin. Shafts 2 and 3 may have been nothing more than prospect pits.

Site No. K9109803 consists of an open adit along a brushy access road (Figure 3.16-29) that branches from the access road to the main Payrock Sunrise workings. The adit is nearly hidden in the brush on the west side of the access road (Figure 3.16-30). A few large rock fragments are on the adit floor, but overall the rock appears relatively competent (Figure 3.16-31). The waste dump has been bulldozed into a large, flat pad about 65-75 feet long, 25 feet wide, and only 5 feet thick (Figure 3.16-32).

Site No. SA-246

This prospect consists of two adits near the edge of the lake shown as short adits on the Payrock claim map and marked by adit symbols on the topographic map. The slopes above the adits are extremely steep, especially above the western of the two adits. A Forest Service boat piloted by Bill Baxter provided access to the adits, both of which have been closed with bat-friendly gates by the Forest Service. Adit 1, the eastern of the two, is about 15 feet above the lake (Figure 3.16-33). The steel bat gate has been installed about 6 feet inside of the opening (Figure 3.16-34). An insignificant amount of waste rock is on the slope below the adit. Adit 2 is about ¼ mile west of Adit 1 and about 8 feet above lake level (Figure 3.16-35). This adit has also been closed with a bat gate about 6-8 feet inside the portal, and a warning sign is posted beside the gate (Figure 3.16-36). Water covers the adit floor but is not draining from the adit.

3.16.4.2 Sample Locations

3.16.4.2.1 Solid Samples

No waste dump samples were collected at any of the workings.

3.16.4.2.2 Water Samples

Adit water samples were collected at Adits 3 (sample K9149801) and 5 (sample K9149802) of the main Payrock Sunrise group of workings, and a water sample was taken from the pond (sample K9109801) in front of the water-filled Shaft 1 of the main Payrock Sunrise workings.

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### 3.16.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

Pond sample K9109801 exceeds the Secondary MCL standard for manganese in the dissolved metals screen. In the total recoverable metals screen, cadmium exceeds the Aquatic Life Chronic standard and manganese exceeds the Secondary MCL standard. In the EPA 200.9 - Lead test, lead exceeds the Aquatic Life Chronic standard. In the ICP cold vapor test, mercury exceeds the Aquatic Life Chronic standard. Sample K9149801 from Adit 3 does not exceed any water quality standards. Sample K9149802 from Adit 5 exceeds the Secondary MCL standard for iron and manganese, and equals or exceeds both Aquatic Life standards for zinc in the dissolved metals screen. In the total recoverable metals screen, manganese exceeds the Secondary MCL standard and zinc equals or exceeds both Aquatic Life standards.

### 3.16.5 Structures

A small collapsed log structure that may have been a root cellar is on Ms. Whittier’s land just north of Shaft 1 and Adit 1 of the main Payrock Sunrise workings. Also near Adit 1 is an outhouse that has been tipped on its side. An old, well-constructed log cabin is near the workings at Site No. K9109802 in a thicket of small aspens (Figures 3.16-37 and 3.16-38). A few feet south of the cabin is a circular concrete ring buried in the ground that may be a hand-dug well (Figure 3.16-39).

### 3.16.6 Safety

Although access is restricted by the private land, the area can easily be reached by boat. The open adits are all potential safety hazards.

Main Payrock Sunrise workings

Adits 1, 2, 3, and 5 are open. Adit 2 is especially dangerous because of the rotten timbers and unstable rock conditions. Shaft 1, although filled with water, is reported to be 32 feet deep and does not appear to be caved. The wire and planks at the shaft are not very sturdy and cover only part of the opening. The opening at Adit 4 is very short and is not a significant problem.
Site No. K9109802

The small adit opening at the lake edge could be entered. This adit may connect with the gated adit around the low ridge to the south.

Site No. K9109803

The open adit is the only potential hazard at this location, although the rock near the portal appears stable and not prone to caving.
Figure 3.16-1. Location of the Payrock Sunrise Mine, Bonner County, Idaho (U.S. Geological Survey Talache 7.5-minute topographic map).
Figure 3.16-2. Claim map showing the workings on the Payrock Sunrise Group (Idaho Geological Survey mineral property files).
Figure 3.16-3. Sketch of Adit 1 and Shaft 1 at the main workings of the Payrock Sunrise Mine.
Figure 3.16-4. Looking west across the shallow pond (foreground) surrounded by an aspen grove at Adit 1 and Shaft 1 at the main workings of the Payrock Sunrise Mine. The shaft is behind the aspens, just right of the center of the picture. The adit, not visible from this angle, is toward the upper left of the photograph (Roll K16, frame #8).

Figure 3.16-5. Planks and chicken wire covering the north part of the opening for Shaft 1 at the main workings of the Payrock Sunrise Mine (Roll K16, frame #9).
Figure 3.16-6. Planks with large gaps at the south end of the opening of Shaft 1 at the main workings of the Payrock Sunrise Mine. The chicken wire seen in the previous figure is at the right side of this picture. The dark areas are the shaft opening filled with water (Roll K16, frame #10).

Figure 3.16-7. Looking west into open Adit 1 at the main workings of the Payrock Sunrise Mine (Roll K16, frame #11).
Figure 3.16-8. Old wooden skid (lower right portion of photograph) with chunks of mineralized quartz vein. The wide band of sunlight is shining on the moss-covered surface of the skid (Roll K16, frame #12).

Figure 3.16-9. Small collapsed log structure in thick brush just north of the National Forest boundary near Shaft 1 at the main workings of the Payrock Sunrise Mine (Roll K16, frame #24).
Figure 3.16-10. Sketch of Adits 2 and 3 at the main workings of the Payrock Sunrise Mine.
Figure 3.16-11. Looking west at Adit 2 of the main workings at the Payrock Sunrise Mine, nearly hidden in brush growing on the surface of the waste dump (Roll K17, frame #2).
Figure 3.16-12. View inside Adit 2 of the main workings at the Payrock Sunrise Mine. Some support timbers have collapsed or are leaning while others are intact. Note the large blocks of rock on the adit floor (Roll K17, frame #3).

Figure 3.16-13. Looking southwest at the face of the waste dump for Adit 2. The access road is just off the bottom of the picture at the toe of the waste dump (Roll K17, frame #1).
Figure 3.16-14. Looking northwest at open Adit 3 of the main workings at the Payrock Sunrise Mine. A minor seep from the adit forms a wet, muddy area in front of the adit (lower left part of picture) (Roll K17, frame #5).
Figure 3.16-15. View inside Adit 3 of the main workings at the Payrock Sunrise Mine. The floor is covered with several inches of water dammed by the rock rubble in the foreground (Roll K17, frame #6).
Figure 3.16-16. Looking southwest at the waste dump for Adit 3 of the main workings at the Payrock Sunrise Mine. Part of the dump has been eroded by seasonal flow in the gully that crosses the dump (Roll K17, frame #4).
Figure 3.16-17. Sketch of Adit 4 at the main workings of the Payrock Sunrise Mine.
Figure 3.16-18. Looking northwest at a minor prospect cut near Adit 4 of the main workings at the Payrock Sunrise Mine. Adit 4 is at the base of the outcrop in the upper left corner of the picture (Roll K17, frame #7).

Figure 3.16-19. Twin openings of Adit 4 at the main workings of the Payrock Sunrise Mine. The left opening is a short prospect about 4 feet in length. The right opening is about 10 feet long (Roll K17, frame #8).
Figure 3.16-20. Sketch of Adit 5 at the main workings of the Payrock Sunrise Mine.
Figure 3.16-21. Looking west along the shallow trough in front of Adit 5 at the main workings of the Payrock Sunrise Mine. The adit opening is the dark circular area just above center of the photograph (Roll K17, frame #9).
Figure 3.16-22. View inside Adit 5 at the main workings of the Payrock Sunrise Mine. The adit floor is covered with two feet of water, dammed by the rock rubble at the lower edge of the picture (Roll K17, frame #10).
Figure 3.16-23. Sketch of Site No. K9109802 at the Payrock Sunrise Mine.
Figure 3.16-24. Looking west toward the small opening of the adit at Site No. K9109802 at the Payrock Sunrise Mine. The opening is just above the center of the photograph behind the tips of the dead tree branches (Roll K16, frame #13).
Figure 3.16-25. Close-up of the adit opening at Site No. K9109802 at the Payrock Sunrise Mine. A cross timber from the portal is at the bottom of the picture (Roll K16, frame #14).

Figure 3.16-26. Second adit at Site No. K9109802 at the Payrock Sunrise Mine. The adit was closed by the Forest Service with a 3-foot diameter steel culvert with internal cross bars. The shore of Lake Pend Oreille is at the bottom of the picture (Roll K20, frame #8).
Figure 3.16-27. Looking north into caved Shaft 1 at Site No. K9109802 of the Payrock Sunrise Mine (Roll K16, frame #16).

Figure 3.16-28. Looking east from above caved Shaft 1 at Site No. K9109802 toward the small mound of waste rock piled on the east side of the pit (Roll K16, frame #17).
Figure 3.16-29. Sketch of Site No. K9109803 at the Payrock Sunrise Mine.
Figure 3.16-30. Looking west at the adit opening at Site No. K9109803 of the Payrock Sunrise Mine (Roll K16, frame #21).
Figure 3.16-31. View inside the adit at Site No. K9109803 of the Payrock Sunrise Mine. The rock is relatively competent, although a few large rocks have fallen onto the adit floor (Roll K16, frame #22).
Figure 3.16-32. Looking south across the surface of the waste dump at Site No. K9109803 of the Payrock Sunrise Mine. The dump has been bulldozed into a large, but thin, flat pad (Roll K16, frame #23).
Figure 3.16-33. Looking north at Adit 1 of Site No. SA-246 of the Payrock Sunrise Mine. Very little waste rock remains on the slope below the adit. Lake Pend Oreille is in the foreground (Roll K20, frame #11).
Figure 3.16-34. Close-up of the Forest Service closure used at Adit 1 of Site No. SA-246 (Payrock Sunrise Mine). A Forest Service warning sign is visible behind the steel bars (Roll K20, frame #9).

Figure 3.16-35. Looking north at Adit 2 of Site No. SA-246 at the Payrock Sunrise Mine. As at Adit 1, little or no waste rock remains at this site (Roll K20, frame #13).
Figure 3.16-36. Close-up of Adit 2 at Site No. SA-246 (Payrock Sunrise Mine). Water covers the adit floor but is not flowing out of the adit. A Forest Service warning sign is posted to the right of the grate (Roll K20, frame #12).
Figure 3.16-37. Looking southwest at the east side of the old log cabin near Site No. K9109802 (Payrock Sunrise Mine). The cabin is surrounded by a thicket of mountain maple (Roll K16, frame #18).

Figure 3.16-38. Looking north at the front of the old log cabin near Site No. K9109802 of the Payrock Sunrise Mine (Roll K16, frame #20).
Figure 3.16-39. Circular concrete ring buried in the ground near the front of the old log cabin. This may have been a hand-dug well (Roll K16, frame #19).
3.17 UNNAMED PROSPECT (Site No. SA-244)

3.17.1 Site Location and Access (Figure 2.1-1)

This unnamed prospect is just south of the mouth of Garfield Bay on the west shoreline of Lake Pend Oreille, in the SE1/4 of the NE1/4, section 28, T. 56 N., R. 1 W., on the Talache 7.5-minute quadrangle (Figure 3.17-1). The prospect can be reached by boat from the lake, or by vehicle on an access road to the summer homes on land leased from the Kaniksu National Forest (Figure 3.17-2). The prospect is on Forest Service land beside one of the summer homes.

3.17.2 Geologic Features (Figure 2.2-1)

This prospect is in rocks of the Prichard Formation. It is in an area where there are numerous north-south faults (Aadland and Bennett, 1979).

3.17.3 Site History

Nothing is known about the history of this site.

3.17.4 Environmental Conditions

3.17.4.1 Site Features

The prospect was visited by John Kauffman on September 10, 1998. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 01:07:00-01:08:52). Documenting photographs are Roll K16, frames 25-26.

The open adit at this prospect has been secured with a bat-friendly gate by the Forest Service and posted with a warning sign (Figure 3.17-3). The adit is about 12-15 feet above the lake level. The waste dump is about 40 feet long, 10 feet wide, and 12 feet thick; and it is mostly oxidized. The north end of the dump borders the edge of the yard of one of the summer homes, and the east side extends down to the lake (Figure 3.17-4). An old wooden table, some wooden beams, and bed springs are on the surface of the dump near the portal. The disturbed area is less than 0.25 acre.

3.17.4.2 Sample Locations

3.17.4.2.1 Solid Samples

Sample K9109804 was collected from the oxidized material on the face of the dump.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
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<tr>
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<td>Unnamed Prospect, SA-244  dump</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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3.17.4.2.2 Water Samples

No water samples were collected at this site.

3.17.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)

Sample K9109804 exceeds background and environmental levels for arsenic, cadmium, copper, manganese, lead, and zinc in the element screen.

3.17.5 Structures

There are no structures associated with this prospect, although a summer home is situated about 30 feet north of the end of the dump.

3.17.6 Safety

The adit opening has been secured with metal crossbars by the Forest Service. No other potential hazards were found at this site.
Figure 3.17-1. Location of Unnamed Prospect SA-244, Bonner County, Idaho (U.S. Geological Survey Talache 7.5-minute topographic map).
Figure 3.17-2. Sketch of Unnamed Prospect SA-244.
Figure 3.17-3. Looking west at the grate installed by the Forest Service in the adit of Unnamed Prospect SA-244. A Forest Service warning sign is posted in front of the grate (Roll K16, frame #25).

Figure 3.17-4. Looking north along the west shore of Garfield Bay at the surface and face of the waste dump for Unnamed Prospect SA-244. The summer home at the upper left is on land leased from the Kaniksu National Forest (Roll K16, frame #26).
3.18 UNNAMED PROSPECT (Site No. K10079801)

3.18.1 Site Location and Access (Figure 2.1-1)

This prospect is along the west side of Lake Pend Oreille at the mouth of Garfield Bay in the NE¼ of the NE¼, section 28, T. 56 N., R. 1 W., on the Talache 7.5-minute quadrangle (Figure 3.18-1). Easiest access to this site is by boat, although it can also be reached on foot from the summer homes along the lake. The site is on Forest Service land just south of private land.

3.18.2 Geologic Features (Figure 2.2-1)

This prospect is in rocks of the Prichard Formation. It is in an area where there are numerous north-south faults (Aadland and Bennett, 1979).

3.18.3 Site History

Nothing is known of the history of this site.

3.18.4 Environmental Conditions

3.18.4.1 Site Features

This prospect was visited by John Kauffman on October 7, 1998. A video segment describing the prospect is on the Sandpoint District Videotape (Tape 2, index 01:08:56-01:11:19). Documenting photographs are Roll K20, frames 5-7.

The adit at this site (Figure 3.18-2), which is about 8 feet above lake level, has been closed with a bat-friendly gate by the Forest Service, and a warning sign is posted on a tree in front of the portal. The gate is about 5 feet inside the portal (Figure 3.18-3). A trickle of water is flowing from the adit and seeps into the dump a few feet in front of the portal. The water, dammed at the portal by a low mound of rock debris, covers the adit floor to a depth of about 6 inches. The waste dump is 65 feet long, 25 feet wide, and 8 feet thick. It extends slightly into the lake (Figure 3.18-4), where the edge has been eroded by wave action. The disturbed area covers less than 0.5 acre.

3.18.4.2 Sample Locations

3.18.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.18.4.2.2 Water Samples

Sample K10079802 was collected from the pool of water behind the dam at the portal.
### Analytical Results

**Water Samples (Tables 2.5-1 and 2.5-2)**

Sample K10079802 exceeds the Secondary MCL standard for manganese in the dissolved metals screen and the Secondary MCL standards for iron and manganese in the total recoverable metals screen.

#### Structures

There are no structures at this site.

#### Safety

The open adit has been secured with steel crossbars by the Forest Service. No other potential hazards were found at this site.
Figure 3.18-1. Location of Unnamed Prospect Site No. K10079801, Bonner County, Idaho (U.S. Geological Survey Talache 7.5-minute topographic map).
Figure 3.18-2. Looking west at the adit of Site No. K10079801. A Forest Service warning sign is posted on a tree in front of the adit (Roll K20, frame #5).
Figure 3.18-3. View inside the portal at Site No. K10079801, showing the Forest Service grate installed in the adit. Water covers the adit floor to a depth of about 6 inches (Roll K20, frame #6).
Figure 3.18-4. Looking west at the waste dump of Site No. K10079801, which is along the west shore of Lake Pend Oreille (Roll K20, frame #7).
3.19 UNNAMED PROSPECT (Site No. SA-276)

3.19.1 Site Location and Access (Figure 2.1-1)

This prospect is along the west shore of Lake Pend Oreille about 1 mile south of Blacktail, in the SE¼ of the SW¼, section 18, T. 55 N., R. 1 W., on the Minerva Peak 7.5-minute quadrangle (Figure 3.19-1). The prospect is along the shoreline at the base of the steep eastern slope of Blacktail Mountain, and the only practical access is by boat. The site is on Forest Service land.

3.19.2 Geologic Features (Figure 2.2-1)

The two prospects at this location are in eastward dipping units of the Wallace Formation (Green, 1976, Plate 1). The prospects are at the south end of the Blacktail area, which is described in section 3.1.2 (Talache Mine) in Section A of this volume.

3.19.3 Site History

Nothing is known of the history of this site.

3.19.4 Environmental Conditions

3.19.4.1 Site Features

This prospect was visited by John Kauffman on October 7, 1998. A video segment describing the site is on the Sandpoint District Videotape (Tape 2, index 01:11:23-01:15:17). Documenting photographs are Roll K20, frames 14-17.

There are two short openings at this site. The northern of the two is about 5-7 feet above the shoreline and clearly visible from the lake (Figure 3.19-2). On close inspection, the adit is open but has only been driven about 8 feet into the slope (Figure 3.19-3). The opening is about 3 feet wide and 2 feet high. The small amount of material taken from the opening has been removed by erosion.

About 200 feet south of this first adit is a second prospect. The adit at this prospect is 15 feet above the water level and cannot be seen from the lake (Figure 3.19-4). The 3-foot-wide by 1.5-foot-high opening, located behind a mound of sloughed rock debris, is probably short, although the end could not be seen (Figure 3.19-5). The very minor amount of waste rock below the opening has been obscured by rock debris from the slope above.

The disturbed area at these two adits is minimal, less than 0.1 acre.

3.19.4.2 Sample Locations

3.19.4.2.1 Solid Samples

No waste dump samples were collected at this site.
3.19.4.2.2 Water Samples
   No water samples were collected at this site.

3.19.5 Structures
   There are no structures at this site.

3.19.6 Safety

   Although both prospects are open, they present only a minor safety hazard. The northern adit is very short and only 2 feet high. The other has a small opening and cannot be seen from the lake; it also is probably short. Both could easily be closed with rock with a minimum of effort.
Figure 3.19-1. Location of Unnamed Prospect SA-276, Bonner County, Idaho (U.S. Geological Survey Minerva Peak 7.5-minute topographic map).
Figure 3.19-2. Looking west at the northern of two small adits at Unnamed Prospect SA-276 along the west shore of Lake Pend Oreille. The opening is only a few feet above the lake level (Roll K20, frame #14).

Figure 3.19-3. View inside the short northern adit. The opening is only about 2 feet high and 8 feet long (Roll K20, frame #15).
Figure 3.19-4. Looking west toward the southern of the two adits at Unnamed Prospect SA-276. The opening, which cannot be seen from the lake, is near the center of the picture above the break in the trunk of the dead tree lying across the slope (Roll K20, frame #17).

Figure 3.19-5. View inside the small opening at the southern adit at Unnamed Prospect SA-276 (Roll K20, frame #16).
3.20 MAIDEN ROCK PROSPECT (Site No. SA-277)

3.20.1 Site Location and Access (Figure 2.1-1)

The Maiden Rock Prospect is along the west side of Lake Pend Oreille, just north of Maiden Rock, in the SE¼ of the NE¼, section 24, T. 55 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.20-1). The adits, which are on Forest Service land, are on the steep southeast slope of Blacktail Mountain and can only be reached by boat.

3.20.2 Geologic Features (Figure 2.2-1)

The Maiden Rock Prospect is at the south end of the Blacktail mineralized zone in rocks of the Revett and St. Regis formations near the junction of three faults (Green, 1976, Plate 1). These faults are the Maiden Creek, the Evans, and the Middle Hill faults. The regional geologic setting is described in section 3.1.2 (Talache Mine) in Section A of this volume.

3.20.3 Site History

A small amount of ore was shipped from this prospect in 1934.

3.20.4 Environmental Conditions

3.20.4.1 Site Features

The Maiden Rock Prospect was videotaped and photographed by John Kauffman on October 7, 1998, from a Forest Service boat. A video segment describing the site is on the Sandpoint District Videotape (Tape 2, index 01:15:22-01:18:38). Documenting photographs are Roll K20, frames 18-19.

Green (1976) mapped three adits in this area. Only two of these adits were found. Adit 1, a few hundred feet north of Maiden Rock, was driven northwestward into the hill. The adit is about 15 feet above the lake (Figure 3.20-2) and has no waste dump. The opening has been closed a few feet inside with a bat-friendly gate. There is essentially no disturbed area at this site.

Adit 2 is about ½ mile north of Adit 1 and was driven westward into the slope. This open adit has also been closed with a steel grate, although the grate is a few feet inside the adit and cannot be seen from the lake (Figure 3.20-3). Sections of metal pipe extend out of the adit and down the slope toward the lake. A thin veneer of waste rock on the slope below the adit is all that remains of the dump. The disturbed area is minimal.

The third adit, shown on Green's (1976) map near the boundary between R. 1 W. and R. 2 W., was not found.
3.20.4.2 Sample Locations

3.20.4.2.1 Solid Samples
No waste dump samples were collected at this site.

3.20.4.2.2 Water Samples
No water samples were collected at this site.

3.20.5 Structures
There are no structures at this site.

3.20.6 Safety
Both adits have been barricaded with steel grates by the Forest Service. No other hazards exist at this property.
Figure 3.20-1. Location of the Maiden Rock Prospect, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.20-2. Looking northwest at Adit 1 of the Maiden Rock Prospect. The adit is the small dark spot on the rock slope about 15 feet above the lake, near the center of the photograph. The Forest Service has closed the adit with a steel grate (Roll K20, frame #18).
Figure 3.20-3. Looking west at Adit 2 of the Maiden Rock Prospect. Only a very thin veneer of waste rock remains on the slope below the adit. A section of pipe extends diagonally down the slope from the right side of the adit. A steel grate has also been installed in this adit by the Forest Service (Roll K20, frame #19).
3.21 UNNAMED PROSPECT (Site No. K10079805)

This site was tentatively identified as the O'Shaughnessy Prospect (SA-275) in the field. However, further research shows that the O'Shaughnessy Prospect is located in section 13, so this prospect was assigned Site No. K10079805 in the office.

3.21.1 Site Location and Access (Figure 2.1-1)

This property is at the Maiden Rock Campground on the west side of Lake Pend Oreille in the SW¼ of the NE¼, section 24, T. 55 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.21-1). Easiest access is by boat, although a road from Cocolalla up Butler Creek ends at the head of Maiden Creek and a foot trail follows the creek to the campground. The prospect is about 150 feet up the trail from the campground at the base of a talus slope off the steep ridge extending south from Blacktail Mountain. This prospect is on Forest Service land.

3.21.2 Geologic Features (Figure 2.2-1)

The geologic setting is similar to that described for the Talache Mine in section 3.1.2 in Section A of this volume. The shallow prospect is probably on a small quartz vein associated with the Maiden Creek fault or the Middle Hill fault, which intersect near this prospect (Green, 1976, Plate 1).

3.21.3 Site History

Nothing is known about the history of this site.

3.21.4 Environmental Conditions

3.21.4.1 Site Features

This minor prospect was visited by John Kauffman on October 7, 1998. A video segment describing the site, which is identified as the O'Shaughnessy Prospect, is on the Sandpoint District Videotape (Tape 2, index 01:18:42-01:21:03). Documenting photograph is Roll K20, frame 20.

The prospect consists of a shallow pit about 10 feet long, 7 feet wide, and 5 feet deep at the base of the talus slope (Figure 3.20-2). A few pieces of vein quartz are on the small mound of rock excavated from the pit. No other workings were found in the vicinity. The disturbed area is minimal.

3.21.4.2 Sample Locations

3.21.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.21.4.2.2 Water Samples

No water samples were collected at this site.
3.21.5 Structures
There are no structures at this site.

3.21.6 Safety
There are no safety hazards at this site.
Figure 3.21-1. Location of Unnamed Prospect Site No. K10079805, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.21-2. Looking south at the shallow prospect pit of Unnamed Prospect K10079805, near Maiden Rock Campground. The pit is at the base of a large talus slope off the ridge north of Maiden Creek (Roll K20, frame #20).
3.22 AMERICAN EAGLE MINE (Site No. SA-278)
   Alternate name—Blacktail Mtn.

3.22.1 Site Location and Access (Figure 2.1-1)

The American Eagle Mine is on the west shore of Lake Pend Oreille about 1 mile south of Maiden Rock in the NW¼, section 25, T. 55 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.22-1). The only practical access is by boat. The site is on Forest Service land.

3.22.2 Geologic Features (Figure 2.2-1)

The geologic setting at this location is similar to that to the north in the Blacktail area. Green (1976) described the geology of the area in detail. A thick Belt Supergroup sequence, consisting of argillite, siltite, and quartzite units, underlies the region. The bedding has a persistent north-south strike and a moderate eastward dip. The rocks are displaced by several generations of faulting (Green, 1976, Plate 1). The American Eagle Mine was driven northwest into units of the Wallace Formation, most likely to intercept the northeast-trending Evans fault.

3.22.3 Site History

The American Eagle Mining Company was incorporated in 1919. The property consisted of seven unpatented claims being developed by one tunnel. In 1920, the total development was 1,090 feet of workings. After 1923, the company did little more than annual assessment work on the property. Even so, by 1938, development totaled 1,960 feet. American Eagle forfeited its corporate charter in 1939.

3.22.4 Environmental Conditions

3.22.4.1 Site Features


A single, caved adit and a partially eroded waste dump are on the shore of the lake (Figure 3.22-2). The adit has been obliterated by a slump on the hillside. The remaining portion of the waste dump is 40 feet long, 6-10 feet wide, and about 10 feet thick. Little or no oxidized material was noted on the dump. The disturbed area covers less than 0.1 acre.
3.22.4.2 Sample Locations

3.22.4.2.1 Solid Samples

Although the dump impinges on the lake, there is an insignificant amount of material remaining. No waste dump samples were collected at this site.

3.22.4.2.2 Water Samples

No water is flowing from the caved adit; therefore, no water samples were collected at this site.

3.22.5 Structures

There are no structures at this site.

3.22.6 Safety

There are no safety hazards at this site.
Figure 3.22-1. Location of the American Eagle Mine, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.22-2. Looking west at the partially eroded waste dump of the American Eagle Mine. The adit, behind the large ponderosa pine tree, is completely caved (Roll K20, frame #21).
3.23 MB MINE (Site No. SA-279)
  Alternate name—M.B.

3.23.1 Site Location and Access (Figure 2.1-1)

The MB Mine is on the west shore of Lake Pend Oreille just north of Evans Landing, in the NE¼ of the NW¼ of the NE¼, section 35, T. 55 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.23-1). The only practical access to this property is by boat. The site is on Forest Service land.

3.23.2 Geologic Features (Figure 2.2-1)

The MB Mine is along the west-northwest-trending Little Blacktail Mountain fault in rocks of the Wallace Formation. Bedding strikes north-south with moderate easterly dips (Green, 1976, Plate 1). For a more detailed geologic overview, see section 3.1.2 (Talache Mine) in Section A of this volume and Green’s (1976) dissertation.

3.23.3 Site History
  Nothing is known of the history of this site.

3.23.4 Environmental Conditions

3.23.4.1 Site Features

The MB Mine was visited by John Kauffman on October 7, 1998. A video segment describing the prospect is on the Sandpoint District Videotape (Tape 2, index 01:23:22-01:26:56). Documenting photograph is Roll K20, frame 22.

The caved adit and waste dump of this prospect are about ¼ mile north of Evans Landing. The adit, about 30-40 feet above the lake, has been obliterated by a slump block. The waste dump also has the appearance of a landslide or debris chute, but has a more three-dimensional character than a surficial slide. A sample of the material confirmed it to be a waste dump (see section 3.23.4.2, below). The dump is estimated to be 25-30 feet long, but only 2-8 feet wide on top. It extends 30-40 feet down to the lake (Figure 3.23-2). It has probably been eroded and modified by the slumping from above. The disturbed area covers less than 0.5 acre.

3.23.4.2 Sample Locations

3.23.4.2.1 Solid Samples

A sample (K10079803) of the material suspected to be a waste dump was collected. The sample was taken from fine material near the toe of the dump at the lake’s edge.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K10079803</td>
<td>MB Mine waste dump</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.23.4.2.2 Water Samples
No water samples were collected at this site.

3.23.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)
Sample K10079803 exceeds background and environmental levels for arsenic, cadmium, copper, nickel, lead, and zinc in the element screen. In the TCLP for metals screen, significant amounts of cadmium and lead are leaching from the sample.

3.23.5 Structures
A rock and timber shelter at Evans Landing may be related to the mining activity in the area.

3.23.6 Safety
There are no safety hazards at this site.
Figure 3.23-1. Location of the MB Mine, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.23-2. Looking north along the west shore of Lake Pend Oreille. The toe of the MB waste dump is at the left. The caved adit is 30-40 feet above the lake. Maiden Rock is the rocky point in the distance (Roll K20, frame #22).
3.24 UNNAMED PROSPECT (Site No. K10079804)

3.24.1 Site Location and Access (Figure 2.1-1)

This prospect is on the west shore of Lake Pend Oreille about 2 miles south of Evans Landing in the NW\(\frac{1}{4}\) of the NE\(\frac{1}{4}\), section 11, T. 54 N., R. 2 W., on the Cocolalla 7.5-minute quadrangle (Figure 3.24-1). The only practical access is by boat. The site is probably on Forest Service land, with Burlington Northern (Plum Creek Timber Co., Inc.) land nearby to the south.

3.24.2 Geologic Features (Figure 2.2-1)

This prospect is in rocks of the Wallace Formation (Aadland and Bennett, 1979). The general geologic setting is similar to that reported by Green (1976) for the Blacktail area to the north of this site.

3.24.3 Site History

Nothing is known of the history of this site.

3.24.4 Environmental Conditions

3.24.4.1 Site Features

This prospect was visited by John Kauffman on October 7, 1998. A video segment describing the site is on the Sandpoint District Videotape (Tape 2, index 01:27:00-01:29:54). Documenting photographs are Roll K20, frames 23-25.

This prospect has a caved adit and a partially eroded waste dump. Moss-covered timbers, either part of the collapsed portal or an old structure, are on the dump (Figure 3.24-2). The adit is about 12-15 feet above the lake. The waste dump extends down to, and has been considerably eroded by, the lake (Figures 3.24-3 and 3.24-4). The remaining dump is 25 feet long, 6 feet wide, and about 12 feet thick. There are a few fragments of vein quartz and a small amount of oxidized material on the dump. The disturbed area is less than 0.25 acre.

3.24.4.2 Sample Locations

3.24.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.24.4.2.2 Water Samples

No water samples were collected at this site.
3.24.5 Structures

Except for the moss-covered logs on the dump, which may have been either a small cabin, a platform, or part of the portal, there is no evidence of any structures at this site.

3.24.6 Safety

There are no safety hazards at this site.
Figure 3.24-1. Location of Unnamed Prospect Site No. K10079804, Bonner County, Idaho (U.S. Geological Survey Cocolalla 7.5-minute topographic map).
Figure 3.24-2. Moss-covered, rotten, and collapsed timbers on the waste dump of Site No. K10079804. It could not be determined if these are portal timbers from the caved adit or a collapsed structure near the adit (Roll K20, frame #24).

Figure 3.24-3. Looking west at the waste dump of Site No. K10079804. The upright, but leaning, post on top of the dump (near center of the picture) is the same one seen in Figure 3.24-2. Lake Pend Oreille is in the foreground (Roll K20, frame #25).
Figure 3.24-4. Looking south along the west shore of Lake Pend Oreille. The eroded face of the waste dump of Site No. K10079804 is to the right of the dead fir tree (Roll K20, frame #23).
3.25 GREEN MONARCH MINE (Site No. SA-286)

3.25.1 Site Location and Access (Figure 2.1-1)

The Green Monarch Mine is west of Deadman Point on the shore of Lake Pend Oreille in the SE1/4, section 9, T. 55 N., R. 1 E., on the Hope 7.5-minute quadrangle (Figure 3.25-1). The only practical access is by boat. The mine is on Forest Service land.

3.25.2 Geologic Features (Figure 2.2-1)

The rocks in the vicinity of the Green Monarch are argillite, siltite, and quartzite units of the Burke Formation (Savage, 1967, Figure 2B). The workings may penetrate into the Revett Formation mapped to the south and east over Green Monarch Mountain.

3.25.3 Site History

The Green Monarch Mining and Milling Company was incorporated in 1905. The property consisted of 11 claims, and total development in 1913 was about 1,800 feet. In its 1913 report, Green Monarch noted:

On lease let to H.L. McHenry whereby the company was to receive one fifth of the net smelter returns on ore shipped. When one car had been shipped it was found that net smelter returns would not meet the labor and other expenses owing to adverse conditions in getting ore from tunnel on mountain side. So Mr. H.L. McHenry cancelled lease.

Similar statements, listing Pitts, Towey and Leheney (or Lehaney) as the lessee, were made in 1914, 1917, and 1919. However, the company’s 1917 and 1919 reports appear to be identical copies of the 1914 report (including the cash receipts for the year), except for the secretary’s name. The total development in 1914 was about 1,900 feet. After doing no more than assessment work for a number of years, Green Monarch forfeited its corporate charter in 1927.

Eltura Mining Corporation (incorporated in 1946) took over the Green Monarch claims in June 1950. The company forfeited its corporate charter the following year.

3.25.4 Environmental Conditions

3.25.4.1 Site Features

Three adit symbols are shown on the topographic maps, two on the Hope quadrangle and one on the Packsaddle Mountain quadrangle. Only the one at the edge of the lake on the Hope quadrangle was found. An unsuccessful attempt was made to find the other two adits.

The adit is about 4-5 feet above the lake level and has an opening about 6 feet high by 5 feet wide. The opening has been closed with a bat-friendly gate by the Forest Service (Figures 3.25-2 and 3.25-3). The gate was installed about 10-15 feet inside from the portal. Water flows from the adit at about 10 gallons per minute, trickles over a low ledge in front of the adit (Figure 3.25-4), and enters the lake. The waste dump has been completely removed by erosion from wave action. The disturbed area is minimal.

3.25.4.2 Sample Locations

3.25.4.2.1 Solid Samples

There is no dump remaining at this site.

3.25.4.2.2 Water Samples

Sample R10069801 was collected from the water flowing from the adit.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µs)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R10069801</td>
<td>Green Monarch adit</td>
<td>85</td>
<td>48</td>
<td>8.32</td>
<td>10</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.25.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

Sample R10069801 does not exceed any water quality standards.

3.25.5 Structures

No structures were found at this site.

3.25.6 Safety

The adit has been closed with a steel grate. The only remaining potential hazard, considered to be minor, is that of rocks falling from the adit roof in the short distance between the portal and the grate.
Figure 3.25-1. Location of the Green Monarch Mine, Bonner County, Idaho (U.S. Geological Survey Hope 7.5-minute topographic map).
Figure 3.25-2. Looking south at the entrance to the Green Monarch adit. The adit has been closed with a steel grate by the Forest Service (Roll R4, frame #16).

Figure 3.25-3. Close-up of the grate inside the Green Monarch adit. A forest Service warning sign is posted just beyond the grate (Roll R4, frame #17).
Figure 3.25-4. Close-up of the minor trickle of water flowing from the Green Monarch adit. The adit opening and steel grate are at the top of the photograph (Roll R4, frame #18).
3.26 UNNAMED PROSPECT (Site No. SA-307)

On the video segment, the site is identified as an “SP” rather than “SA” site.

3.26.1 Site Location and Access (Figure 2.1-1)

This prospect is on the Idaho-Montana border on Elk Ridge in the southwest corner of section 11 and the southeast corner of section 10, T. 54 N., R. 3 E., on the Cabinet 7.5-minute quadrangle (Figure 3.26-1). Access is on FS Road 203 up Dry Creek to Delyle Forks, then south and east on FS Road 332.1 around the head of the Dry Creek drainage, and then east about 3 miles on FS Road 332A to the east end of Elk Ridge, a former lookout. Portions of FS Road 332A are brushy and blocked by numerous fallen trees. The workings are on the south and west sides of the ridge on Forest Service land.

3.26.2 Geologic Features (Figure 2.2-1)

The rocks in this area are part of the Libby Formation (Savage, 1967, Figure 2b). The workings are on a 10-foot wide quartz vein that trends N. 35° W.

3.26.3 Site History

Nothing is known of the history of this site.

3.26.4 Environmental Conditions

3.26.4.1 Site Features

The prospect was visited by William Rember on September 3, 1997. A video segment describing the prospect is on the Sandpoint District Videotape (Tape 2, index 01:31:26-01:34:13). Documenting photographs are 1997 Roll R5, frames 6-8.

This prospect consists of three workings, one to the south and two to the west of the concrete footings for the old lookout tower (Figure 3.26-2). To the west are two caved adits with very small waste dumps. To the south is a shaft about 10 feet deep with two 2-foot by 2-foot openings at the bottom. The waste dump is about 20 feet long, 10 feet wide, and 5 feet thick. This amount of material indicates that the shaft was originally deeper than 10 feet. The disturbed area covers less than 0.5 acre.

3.26.4.2 Sample Locations

3.26.4.2.1 Solid Samples

No waste dump samples were collected at this site.
3.26.4.2.2 Water Samples
No water samples were collected at this site.

3.26.5 Structures

There are no structures at this site associated with the mining activity. Concrete footings for the lookout tower are on top of the ridge near the workings.

3.26.6 Safety

The shaft could be fallen into, but the sides have sloughed in sufficiently to keep it from being a trap.
Figure 3.26-1. Location of Unnamed Prospect SA-307, Bonner County, Idaho (U.S. Geological Survey Cabinet 7.5-minute topographic map).
Figure 3.26-2. Sketch of Unnamed Prospect SA-307.
3.27 AUXER MINE (Site No. SA-194)
Alternate names—Auxor Mine; Boston Group.

3.27.1 Site Location and Access (Figure 2.1-1)

The Auxer Mine is at the head of Wellington Creek in the SE¼ of the SW¼, section 20 (unsurveyed), T. 57 N., R. 2 E., on the Trestle Peak 7.5-minute quadrangle (Figure 3.27-1). Access is on FS Road 419 from Clark Fork to FS Road 489 (Wellington Creek Road), then on FS Road 489 about 9 miles to Round Top Mountain. From the saddle just south of Round Top Mountain, a driveable road drops down to the southeast to the mine. The Auxer Mine is on Forest Service land.

3.27.2 Geologic Features (Figure 2.2-1)

Anderson (1930, p. 123-124) described the geology as follows:
Several veins have been found on the property, but only one has given sufficient promise to warrant present exploration. This vein is in a thick quartz diorite sill of pre-Cambrian (?) age and is a replacement along a fissure that strikes about N. 28° E. and dips 55° S.E., trending in the same direction as the sill. The other veins are also within the diorite sill, and all of them are in fissures of only minor displacement but of sufficient movement, however, to cause some gouge. The walls show variable amounts of hydrothermal alteration and the feldspars and hornblende have been converted to sericite, epidote, and chlorite, sprinkled with pyrite.

The mineralization of the vein has been mainly by pyrite in a quartz gangue, but locally the pyrite is accompanied in very subordinate amounts of galena, sphalerite (?), chalcopyrite, and tetrahedrite (?), and in addition calcite and siderite. The gold is reported to be mainly with the pyrite but shows some increase with the galena. Selected sample[s] of the ore are reported to assay from two to 17 dollars in gold, the average near five.

The country rock near the Auxer is Prichard Formation that has been intruded by diabasic or dioritic sills (Aadland and Bennett, 1979).

3.27.3 Site History

Prospecting was done on the Auxer veins before the turn of the century and the original claims were staked in 1905 (Parsons and Albee, 1958). The Auxer Gold Mines was incorporated in 1920. By May 1922, the mine had a 525-foot tunnel and a 90-foot inclined shaft. Fire destroyed the power house in March 1922, but it was repaired later in the year for about $1,000. By 1924, the mine had three tunnels (580, 400, and 250 feet long) and the 90-foot inclined shaft. Although the major activity on the property for the next fifteen years was assessment work, by 1939, the
mine had about 3,000 feet of workings. These included four tunnels (900 feet, 600 feet, 400 feet, and 150 feet) and an 80-foot inclined shaft.

During the 1940s, work consisted almost entirely of road building. A limited amount of underground work resumed in 1949, although much of the activity continued to be surface exploration and road work. In 1955, dump material was hauled out by a lessee and processed at the Whitedelph mill; the net smelter returns on this material were $857 (IGS mineral property files). In 1957, bulldozer cuts were made on a copper vein that had been discovered a number of years earlier (Parsons and Albee, 1958). The company applied for a DMEA loan to explore this vein, but the application was denied because “the copper vein appears to be a small comparatively isolated quartz lens carrying a little chalcopyrite” (Parsons and Albee, 1958, p. 1).

When Savage (1967) visited the mine in the mid-1960s, he noted several open cuts, an inclined shaft that was almost completely filled with water, a 975-foot crosscut tunnel, a short crosscut that intersected the copper vein, and the 350-foot Minneapolis tunnel. The property was sold to Idora Silver Mines around 1976.

3.27.4 Environmental Conditions

3.27.4.1 Site Features


The workings at the Auxer Mine consist of a boarded-up adit with a large waste dump, a long trench with a caved entry at its end, and a small prospect pit (Figure 3.27-2). From maps in IGS’s mineral property files, the long trench appears to be the Minneapolis tunnel. The inclined shaft may have been at the site of the small prospect pit; it is also possible that the shaft site was not found.

The adit, the main opening at the Auxer Mine, is boarded over at the framed portal, although there is a low crawl space under the covering (Figure 3.27-3). Water is flowing from the adit at about 20 gallons per minute. The water flows across the north end of the dump down into a marshy area on Wellington Creek. Several sets of rails extend across the dump, one set terminating at a loading platform that no longer has supports under its end (Figure 3.27-4). The waste dump is 110-120 feet long, 55-60 feet wide, and about 17 feet thick. A minor seep trickles out from under the southeast toe of the dump. A rusted slusher bucket is just below the south side of the dump.

About 1,000 feet to the northwest and 200 feet in elevation above the adit is a long trench cut into the slope (Figure 3.27-5). The trench, marked “Open Pit Mine” on the topographic map, is 150 feet long, 40 feet wide at the north end, and 30 feet deep near the south end. A loading ramp
constructed of logs has been built at the northwest end of the trench (Figure 3.27-6). At the south headwall of the trench is a caved entry (Figure 3.27-7), probably the Minneapolis tunnel mentioned by Savage. On the slope above the headwall is a tension crack that is open to an undetermined depth. There is no waste dump at this site. The material was removed for some unknown reason.

About 1,000 feet northeast of the trench is a small, relatively recent prospect pit dug in an older, longer, shallow trench (Figure 3.27-8). The older trench trends north-south and is over 100 feet long. The more recent excavation is 10-15 feet long and a few feet deep. The excavated material has been piled into a low mound beside the pit. As noted above, the inclined shaft may have been located in this trench.

The total disturbed area covers about 3 acres.

3.27.4.2 Sample Locations

3.27.4.2.1 Solid Samples

Sample R09099705 was collected from the face of the waste dump.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R09099705</td>
<td>Auxer Mine, adit waste dump</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.27.4.2.2 Water Samples

Samples were collected from the water at the main adit (R09099701), from the seep at the toe of the dump (R09099702), upstream on Wellington Creek, and downstream on Wellington Creek. The upstream sample (R09099703) was taken where the road crosses the head of Wellington Creek about ½ mile east of the main adit. Two downstream samples were collected. Sample R09099704 was taken at the north end of the marshy area below the dump, and sample R09099706 was collected 1 mile downstream from the mine where the access road crosses Wellington Creek.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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</thead>
<tbody>
<tr>
<td>R09099701</td>
<td>Auxer Mine, adit</td>
<td>75</td>
<td>42</td>
<td>8.0</td>
<td>20</td>
<td>Yes</td>
</tr>
<tr>
<td>R09099702</td>
<td>Auxer Mine, dump seep</td>
<td>34</td>
<td>46</td>
<td>7.7</td>
<td>seep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

174
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R09099703</td>
<td>Auxer Mine, upstream</td>
<td>21</td>
<td>44</td>
<td>7.7</td>
<td>2 ft. wide, 2 in. deep</td>
<td>No</td>
</tr>
<tr>
<td>R09099704</td>
<td>Auxer Mine, downstream</td>
<td>40</td>
<td>44</td>
<td>6.8</td>
<td>---</td>
<td>No</td>
</tr>
<tr>
<td>R09099706</td>
<td>Auxer Mine, downstream</td>
<td>28</td>
<td>52</td>
<td>5.4</td>
<td>---</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 3.27.4.2.3 Analytical Results

**Solid Samples (Tables 2.5-3 and 2.5-4)**

Sample R09099705 from the main adit dump exceeds background and environmental levels for arsenic, cadmium, copper, iron, lead, manganese, nickel, and zinc in the element screen.

**Water Samples (Tables 2.5-1 and 2.5-2)**

Sample R09099701 equals or exceeds all standards for cadmium in the dissolved metals screen but does not exceed any standards in the total recoverable metals screen. Samples R09099702 and R09099706 equal or exceed both Aquatic Life standards for cadmium in the dissolved metals screen but do not exceed any standards in the total recoverable metals screen.

### 3.27.5 Structures

No buildings were found. A loading ramp near the trench and the suspended loading platform and rails at the main adit are the only structures at this site.

### 3.27.6 Safety

The adit could probably be entered by crawling beneath the boards covering the portal. The tension cracks above the headwall of the trench appeared to extend to a significant depth and could be a safety hazard, particularly if they are connected to extensive underground workings.
Figure 3.27-1. Location of the Auxer Mine, Bonner County, Idaho (U.S. Geological Survey Trestle Peak 7.5-minute topographic map).
Figure 3.27-2. Sketch of the Auxer Mine.
Figure 3.27-3. Looking west at the boarded-up portal of the main adit at the Auxer Mine. Water flows from the adit at about 20 gallons per minute (1997 Roll R5, frame #11).

Figure 3.27-4. Looking northeast at the Auxer waste dump. One set of rails from the adit terminate on the unsupported platform at the left that may have been used to load ore (1997 Roll R5, frame #10).
Figure 3.27-5. Looking south up the long trench cut into the slope (1997 Roll R5, frame #15).
Figure 3.27-6. Loading ramp at the northwest end of the trench, looking northwest (1997 Roll R5, frame #14).

Figure 3.27-7. Caved opening at the south headwall of the trench. This may be the Minneapolis tunnel reported by Savage (1967) (1997 Roll R5, frame #13).
Figure 3.27-8. Looking south at the small prospect pit dug into an older, shallow trench north of the adit and northeast of the large trench at the Auxer Mine. The access road is at the far left (1997 Roll R5, frame #12).
3.28 FALLS CREEK MINE (Site No. SA-299)

3.28.1 Site Location and Access (Figure 2.1-1)

The Falls Creek Mine is along the south side of Falls Creek near the center of the NE¼, section 1, T. 54 N., R. 1 W., on the Minerva Peak 7.5-minute quadrangle (Figure 3.28-1). Access is on FS Road 278 south of the Clark Fork River, up Johnson Creek to Johnson Saddle, then down Granite Creek to about 1 mile south of the town of Granite where FS Road 1088 turns eastward. The mine is about 2 miles up Falls Creek at the end of FS Road 1088 and is on Forest Service land.

3.28.2 Geologic Features (Figure 2.2-1)

Gammell (1943a, p. 3) described the geology as follows:

The deposits at the Falls Creek mine occur principally along shear zones in the Wallace formation. The best ore so far found in the Falls Creek mine lies a few feet in the hanging wall from a heavy fault, which forms the foot wall of a wide, shear zone. The width of the known commercial ore varies from 1 inch to 2 feet in short lenses and apparently soon pinching out upward and laterally. There are sections along the shear zone which have been lightly mineralized with sphalerite and galena.

Poole (1935, p. 1-2) described the deposit in greater detail:

The ore deposit is essentially a quartz fissure vein type. The veins occur in a sheeted zone of shear bordering a decomposed lamprophyre dike. The veins are spaced across a zone which averages upwards of 60 ft and has been opened up along a length of over 1000 ft. The veins are accompanied by a mineralized shear fill which at present market condition is too low grade to be profitably handled on a small scale. . . .

The ore minerals present are: argentiferous galena, sphalerite, high silver bearing tetrahedrite with a tennantite phase, and some gold. The galena has comparatively low silver content and the silver-rich tetrahedrite is often closely associated in intergrowths with the sphalerite. The gangue minerals are essentially quartzose with some siderite, pyrite, arsenopyrite, and chalcopyrite. The tetrahedrite very often replaces the siderites.

3.28.3 Site History

The Falls Creek claims were located in 1908 (Gammell, 1943a). The Falls Creek Mining Company was incorporated in 1911. By 1913, the company had shipped two lots of ore totaling about 14 tons to the ASARCO smelter in East Helena, Montana. Development continued for the next few years. By 1917, there was 1,100 feet of development on the property. In 1918, the company began constructing a flume and installing a 50 tons-per-day (tpd) flotation mill. Several
test runs were made, with sporadic production before World War II. Gammell (1943a, p. 2) stated:

There has been a small production of lead-silver ore from the Falls Creek and Minerva mines, the ore being milled in the Falls Creek mill. It is reported that the ore did not repay the cost of mining and milling.

By 1925, the property had two tunnels (1,000 feet and 1,600 feet), one 45-foot vertical shaft, and two raises. The company did virtually no work at the property during that year. In 1930, the mine was leased to Amazon Mines, Inc., which was incorporated the following year as the Amazon Mining Company. Amazon did a considerable amount of road work and rehabilitation during its first year at the mine, including a test run of the mill. The property had 2,900 or 3,000 feet of workings, including three tunnels (40 feet, 500 feet, and 1,900 feet), two shafts, and two raises. Amazon forfeited its corporate charter in 1933.

The following year, another potential purchaser was inspecting the mine. A prospective buyer worked the property in 1935, and in 1936 the mine was leased to Falls Creek Mines, Inc. This lessee also does not appear to have worked the property for long.

Little other than annual assessment work was done after 1940. Falls Creek's 1946 report to the Idaho mine inspector described the mine plant and equipment as "In state of decay—everything" and also noted "Have a prospect of selling everything, at a giveaway price." The following year, the company was trying to sell its equipment to pay off the company's creditors. By 1953, the company held only three claims, having failed to do its assessment work on the other eight claims in the Falls Creek Group. Falls Creek forfeited its corporate charter in 1954.

3.28.4 Environmental Conditions

3.28.4.1 Site Features

The Falls Creek Mine was visited by William Rember on September 10, 1997. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 01:41:20-01:48:38). Documenting photographs are 1977 Roll R5, frames 16-22.

The Falls Creek Mine has an open adit, a large waste dump, an old mill and a flotation tailings pond, a trestle and flume, and a cabin (Figure 3.28-2). Only one adit was found at this property, although Savage (1967) reported two drifts and one report to the mine inspector listed three tunnels.

The adit was driven southwest into the south slope about 80 feet above Falls Creek. The adit is open (Figure 3.28-3) and has a steady stream of water, probably 30 gallons per minute, flowing from the unframed portal. A trough in front of the adit indicates the present opening may not have been the original portal. A pile of rock rubble in front of the opening forms a dam that has flooded the adit floor to a depth of 1-2 feet (Figure 3.28-4). Most of the adit water flows around the west end of the dump, although some seeps into and flows under the dump, through the mill, and into the tailings pond where it joins with the other stream from the adit. The waste dump is
about 180 feet long, 60 feet wide, and 20 feet thick, although a sizeable portion on the north side has been removed. The partly collapsed mill building sits just below the northwest side of the dump (Figure 3.28-5). The mill tailings pond, about 60 feet long, 25 feet wide, and 2-4 feet thick, is mostly overgrown with brush except where water from the adit forms a small pool (Figure 3.28-6). Some old log timbers on the ground at the upper edge of the tailings may be the remains of the dam for a settling pond above the main tailings pond. The finely ground nature of the tailings indicates they are flotation tails. Some of the material is oxidized, although the amount could not be estimated because of the vegetative cover. The disturbed area covers at least 2 acres.

### 3.28.4.2 Sample Locations

#### 3.28.4.2.1 Solid Samples

Sample R09109702 was taken from the face of the waste dump. Sample R09109703 is a composite of oxidized and unoxidized material taken from the tailings.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R09109702</td>
<td>Falls Creek Mine, waste dump</td>
<td>Yes</td>
</tr>
<tr>
<td>R09109703</td>
<td>Falls Creek Mine, tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### 3.28.4.2.2 Water Samples

Sample R09109701 was collected from the adit water. Sample R09109704 was taken from the seep below the tailings pond. An upstream sample (R09109705) was collected several hundred feet above the mine on Falls Creek, and a downstream sample (R09109706) was collected several hundred feet below the tailings pond on Falls Creek.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R09109701</td>
<td>Falls Creek Mine, adit</td>
<td>158</td>
<td>44</td>
<td>8.0</td>
<td>30</td>
<td>Yes</td>
</tr>
<tr>
<td>R09109704</td>
<td>Falls Creek Mine, seep from tailings</td>
<td>160</td>
<td>50</td>
<td>8.28</td>
<td>---</td>
<td>Yes</td>
</tr>
<tr>
<td>R09109705</td>
<td>Falls Creek Mine, upstream</td>
<td>115</td>
<td>48</td>
<td>7.7</td>
<td>3 ft. wide, 0.5 ft. deep</td>
<td>Yes</td>
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<tr>
<td>R09109706</td>
<td>Falls Creek Mine, downstream</td>
<td>150</td>
<td>48</td>
<td>7.9</td>
<td>---</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3.28.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)

Sample R09109702 from the waste dump exceeds background and environmental levels for arsenic, cadmium, chromium, copper, iron, manganese, nickel, lead, and zinc in the element screen. In the TCLP for metals screen, significant amounts of cadmium, chromium, and lead are leaching from the sample. Sample R09109703 from the mill tailings exceeds background and environmental levels for arsenic, cadmium, copper, iron, manganese, lead, and zinc in the element screen. In the TCLP for metals screen, significant amounts of cadmium and lead are leaching from the sample.

Water Samples (Tables 2.5-1 and 2.5-2)

Adit water sample R09109701 exceeds the Aquatic Life Chronic standard for cadmium in the dissolved metals screen. Sample R09109704 from the seep below the mill tailings equals or exceeds both Aquatic Life standards for cadmium in the dissolved metals screen, and is within the range of the Aquatic Life Chronic standard for lead in the EPA 200.9 - Lead test. Upstream sample R09109705 does not exceed any water quality standards. Downstream sample R09109706 exceeds all standards for cadmium in the total recoverable metals screen.

3.28.5 Structures

The upper part of the mill building (Figure 3.28-5) has collapsed. A partial skeleton of the remainder of the building is still standing. Associated with the mill structure is an old trestle and flume system above the adit that apparently supplied water to the mill. The 10-inch diameter flume extends 400-500 feet above the adit and terminates at the collapsed remains of a trestle or support structure (Figures 3.28-7 and 3.28-8) that presumably also had a flume attached. The trestle leads to the creek. In addition to these structures, there is an old log cabin, well built but beginning to collapse, at the end of a foot trail east of the adit. The roof is mostly gone, but the end gables and walls, still with most of the chinking, remain standing (Figure 3.28-9).

3.28.6 Safety

The adit is open and accessible, although filled with a foot or more of water. Footprints visible through the water on the floor of the adit indicate a recent visit. The standing portion of the mill appears quite unstable and could easily collapse.
Figure 3.28-1. Location of the Falls Creek Mine, Bonner County, Idaho (U.S. Geological Survey Minerva Peak 7.5-minute topographic map).
Figure 3.28-2. Sketch of the Falls Creek Mine.
Figure 3.28-3. Looking south at the open adit of the Falls Creek Mine (1997 Roll R5, frame #17).

Figure 3.28-4. View inside the Falls Creek adit. Water dammed behind a pile of rock rubble covers the floor to a depth of 1-2 feet (1997 Roll R5, frame #16).
Figure 3.28-5. Looking westerly at the partly collapsed mill building on the northwest end of the waste dump at the Falls Creek Mine (1997 Roll R5, frame #18).

Figure 3.28-6. Small pool of water on the mill tailings impoundment at the Fall Creek Mine (1997 Roll R5, frame #19).
Figure 3.28-7. Old wooden beams of the trestle for the flume at the Falls Creek Mine. Part of the 10-inch-in-diameter metal flume can be seen at the left side of the photograph (1997 Roll R5, frame #21).

Figure 3.28-8. Another view of some of the beams from the support structure for the flume (1997 Roll R5, frame #20).
Figure 3.28-9. Old log cabin east of the Falls Creek adit (1997 Roll R5, frame #22).
3.29 VALID PROSPECT (Site No. SA-297)

3.29.1 Site Location and Access (Figure 2.1-1)

The Valid Prospect is on the north side of Falls Creek and north of FS Road 1088, in the NW¼ of the SW¼, section 36, T. 55 N., R. 1 W., on the Minerva Peak 7.5-minute quadrangle (Figure 3.29-1). Access to FS Road 1088 is on FS Road 278 from the south side of the Clark Fork River southwest to Johnson Saddle, then west down Granite Creek to about 1 mile south of the town of Granite. The prospect is about 1 mile up FS Road 1088 on Forest Service land.

3.29.2 Geologic Features (Figure 2.2-1)

This deposit occurs along a shear zone in quartzite and argillite of the Wallace Formation. The shear zone is either adjacent to or in a lamprophyre dike. Widespread pyrite mineralization occurs along some parts of the shear zone. The ore consists of sphalerite, galena, and pyrite in a quartz gangue (Gammell, 1943b).

3.29.3 Site History

Gammell (1943b, p. 2) reported the following brief history of the Valid property:
The Valid mine was first located in 1915, and acquired by John Weisenberger in 1916. Development has been carried out by the owner each year from 1916 to date. All the work has been done by hand labor. There has been no production from the property.

The main adit was 640 feet long in the early 1940s (Gammell, 1943b).

3.29.4 Environmental Conditions

3.29.4.1 Site Features

The Valid Prospect was visited by William Rember on September 10, 1997. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 01:48:42-01:50:34). Documenting photograph is 1997 Roll R5, frame 23.

Gammell (1943b) mapped four short tunnels and a main tunnel 640 feet long (Figure 3.29-2). The only workings found were a bulldozer trench and two short “adits” at the northeast end of the trench (Figure 3.29-3). The trench is about 30 feet long and 8-10 feet wide across the top. Hemlock saplings cover the floor. The material excavated forms a waste dump 20 feet long, 10 feet wide, and 5 feet thick. At the head of the northeast end of the trench are two short workings or “dog holes,” both under 5 feet in length (Figure 3.29-4), that prospect a north-south trending quartz vein. The disturbed area is less than 0.25 acre.
3.29.4.2 Sample Locations

3.29.4.2.1 Solid Samples
No waste dump samples were collected at this site.

3.29.4.2.2 Water Samples
No water samples were collected at this site.

3.29.5 Structures
There are no structures at this site.

3.29.6 Safety

The “adits” are small, short prospects into the rock and are not a significant hazard.
Figure 3.29-1. Location of the Valid Prospect, Bonner County, Idaho (U.S. Geological Survey Minerva Peak 7.5-minute topographic map).
Figure 3.29-2. Map of the Valid Mine (reduced from Gammell, 1943b).
Figure 3.29-3. Sketch of the Valid Prospect.
Figure 3.29-4. Short “dog hole” adits at the northeast end of the trench at the Valid Prospect (1997 Roll R5, frame #23).
3.30 UNNAMED PROSPECT (Site No. SA-298)

3.30.1 Site Location and Access (Figure 2.1-1)

This unnamed prospect is a marble quarry on FS Road 278 about 2 miles south of the town of Granite, in the SE¼ of the NE¼, section 3, T. 54 N., R. 1 W., on the Minerva Peak 7.5-minute quadrangle (Figure 3.30-1). The quarry is on Forest Service land north of the turnout to Whiskey Rock.

3.30.2 Geologic Features (Figure 2.2-1)

The quarry is in limestone and marble, which are in contact with granite near the south end of the pit.

3.30.3 Site History

Nothing is known of the history of this site.

3.30.4 Environmental Conditions

3.30.4.1 Site Features

This site was visited by William Rember on September 10, 1997. A video segment describing the quarry is on the Sandpoint District Videotape (Tape 2, index 01:50:38-01:53:29). Documenting photographs are 1997 Roll R5, frames 24-25; and 1997 Roll R6, frame 1.

The quarry floor is about 80 feet long and 30 feet wide, and the face is about 30 feet high (Figure 3.30-2). Several piles of marble on the quarry floor have cedar trees up to 2 feet in diameter growing on them (Figure 3.30-3), indicating the quarry is very old. Several shallow prospects in the adjacent granite were probably an attempt to find the continuation of the limestone unit. The disturbed area covers less than 0.5 acre.

3.30.4.2 Sample Locations

3.30.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.30.4.2.2 Water Samples

No water samples were collected at this site.

3.30.5 Structures

There are no structures at this site.

3.30.6 Safety

There are no safety hazards at this site.
Figure 3.30-1. Location of Unnamed Prospect SA-298, Bonner County, Idaho (U.S. Geological Survey Minerva Peak 7.5-minute topographic map).
Figure 3.30-2. Sketch of Unnamed Prospect SA-298.
Figure 3.30-3. Low mounds of marble rubble left on the quarry floor at Unnamed Prospect SA-298. Note the large cedar trees at the left side of the photograph (1997 Roll R6, frame #1).
3.31 PHIL SHERIDEN PROSPECT (Site No. SA-293)

3.31.1 Site Location and Access (Figure 2.1-1)

The Phil Sheriden Prospect is about 1 mile east of the town of Granite in the SE¼ of the NW¼, section 25, T. 55 N., R. 1 W. on the Minerva Peak 7.5-minute quadrangle (Figure 3.31-1). Access is on FS Road 278 south of the Clark Fork River to Johnson Saddle, then west down Granite Creek to the town of Granite, then north on FS Road 2711 toward Kilroy Bay. Just north of Granite, a transmission-line service road heads east from FS 2711. The prospect is about ½ mile up the service road. It is at the base of the slope below the power lines and is on Forest Service land.

3.31.2 Geologic Features (Figure 2.2-1)

The adit is driven along a shear zone containing abundant pyrite.

3.31.3 Site History

Nothing is known of the history of this site.

3.31.4 Environmental Conditions

3.31.4.1 Site Features

The Phil Sheriden Prospect was visited by William Rember on September 10, 1997. A video segment describing the property is on the Sandpoint District Videotape (Tape 2, index 01:53:33-01:57:02). Documenting photographs are 1997 Roll R6, frames 2-3.

This prospect consists of an open adit on the north side of the power-line service road (Figure 3.31-2). The opening is nearly circular, about 4½-5 feet in diameter, and has no supporting timbers either at the portal or inside (Figure 3.31-3). Water covers the floor of the adit and apparently fluctuates seasonally, as indicated by strand lines on the walls (Figure 3.31-4). Although there is standing water inside the adit, no water is flowing out of the adit and none could be found seeping from beneath the dump. The waste dump is about 45 feet long and 36 feet wide. The dump extends down the face for about 20-30 feet. Because of the steepness of the slope, the actual thickness perpendicular to the slope is probably no more than 7 feet. The disturbed area covers less than 0.25 acre.

3.31.4.2 Sample Locations

3.31.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.31.4.2.2 Water Samples

No water samples were collected at this site.
3.31.5 Structures
There are no structures at this site.

3.31.6 Safety
Although not along the main road, the adit is open and is easily accessible. The rock is competent and does not appear to be prone to caving, at least for the section that could be seen near the portal. However, conditions further inside are unknown.
Figure 3.31-1. Location of the Phil Sheriden Prospect, Bonner County, Idaho (U.S. Geological Survey Minerva Peak 7.5-minute topographic map).
Figure 3.31-2. Sketch of the Phil Sheriden Prospect.
Figure 3.31-3. Looking north at the open adit of the Phil Sheriden Prospect (1997 Roll R6, frame #2).
Figure 3.31-4. View inside the Phil Sheriden adit. Note the iron-stained high-water marks along the adit walls (1997 Roll R6, frame #3).
REFERENCES


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Appendix A
Field Questionnaire
PART A
(To be completed for all identified sites)

LOCATION AND IDENTIFICATION

ID# ______ Site Name(s) __________________________
FS Tract # __________ FS Watershed Code ___________
Forest __________ District __________
Location based on: GPS ____ Field Map ____ Existing Info ____ Other _____
Lat _______ Long _______ xutm ________ yutm _______ zutm _______
Quad Name _______________ Principal Meridian __________
Township ___________ Range ________ Section _____ 1/4 _____ 1/4 _____ 1/4
State _____ County ____________ Mining District ____________

Ownership of all disturbances:
_____ National Forest (NF)
_____ Mixed private and National Forest (or unknown)
_____ Private.
If private only, impacts from the site on National Forest Resources are
_____ Visually apparent _____ Likely to be significant _____ Unlikely or minimal

If all disturbances are private and Impacts to National Forest Resources are unlikely or
minimal - STOP

PART B
(To be completed for all sites on or likely effecting National Forest lands)

SCREENING CRITERIA

Yes No

_____ 1. Mill site or Tailings present
_____ 2. Adits with discharge or evidence of a discharge
_____ 3. Evidence of or strong likelihood for metal leaching, or AMD (water stains,
stressed or lack of vegetation, waste below water table, etc.)
_____ 4. Mine waste in floodplain or shows signs of water erosion
_____ 5. Residences, high public use area, or environmentally sensitive area (as listed in
HRS) within 200 feet of disturbance
_____ 6. Hazardous wastes/materials (chemical containers, explosives, etc)
_____ 7. Open adits/shafts, highwalls, or hazardous structures/debris
_____ 8. Site visit (If yes, take picture of site), Film number(s)
   If yes, provide name of person who visited site and date of visit
   Name: __________________________ Date: __________
   If no, list source(s) of information (If based on personal knowledge,
   provide name of person interviewed and date):

If the answers to questions 1 through 6 are all No - STOP

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PART C
(To be completed for all sites not screened out in Parts A or B)

Investigator __________________________ Date ____________
Weather __________________________________________

1. GENERAL SITE INFORMATION

Take panoramic picture(s) of site, Film Number(s) ________________
Size of disturbed area(s) _____ acres Average Elevation _____ feet
Access: _____ No trail _____ Trail _____ 4wd only _____ Improved road
________ Paved road
Name of nearest town (by road): ____________________________
Site/Local Terrain: _____ Rolling or flat _____ Foothills _____ Mesa _____ Mountains
________ Steep/narrow canyon
Local undisturbed vegetation (Check all that apply): _____ Barren or sparsely vegetated
________ weeds/grasses _____ Brush _____ Riparianmarsh
________ Deciduous trees _____ Pine/spruce/fir
Nearest wetland/bog: _____ On site, _____ 0-200 feet, _____ 200 feet-2 miles, _____ > 2 miles
Acid Producers or Indicator Minerals: _____ Arsenopyrite, _____ Chalcopyrite, _____ Galena,
________ Iron Oxide, _____ Limonite, _____ Marcasite, _____ Pyrite, _____
Pyrrhotite,
________ Sphalerite, _____ Other Sulfide
Neutralizing Host Rock: _____ Dolomite, _____ Limestone, _____ Marble, _____ Other Carbonate

2. OPERATIONAL HISTORY

Dates of significant mining activity __________________________________

<table>
<thead>
<tr>
<th>Commodity(s)</th>
<th>Production (ounces)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Years that Mill Operated __________________________
Mill Process: _____ Amalgamation, _____ Arrastre, _____ CIP (Carbon-in-Pulp), _____ Crusher only,
_____ Cyanidation, _____ Flotation, _____ Gravity, _____ Heap Leach, _____ Jig Plant, _____ Leach,
_____ Retort, _____ Stamp, _____ No Mill, _____ Unknown

<table>
<thead>
<tr>
<th>Commodity(s)</th>
<th>Production (ounces)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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3. HYDROLOGY

Name of nearest Stream __________________ which flows into __________________
Springs (in and around mine site): ____ Numerous ____ Several ____ None
Depth to Groundwater ____ ft, Measured at: ____ shaft/pit/hole ____ well ____ wetland
Any waste(s) in contact with active stream ____ Yes ____ No

4. TARGETS (Answer the following based on general observations only)

Surface Water
Nearest surface water intake ____ miles, Probable use ____________________
Describe number and uses of surface water intakes observed for 15 miles downstream of site:
_____________________________________________________________________
_____________________________________________________________________

Wells
Nearest well ____ miles, Probable use ____________________
Describe number and use of wells observed within 4 miles of site:
_____________________________________________________________________
_____________________________________________________________________

Population
Nearest dwelling ____ miles, Number of months/year occupied ______ months
Estimate number of houses within 2 miles of the site (Provide estimates for 0-200ft, 200ft-1mile, 1-2miles, if possible)
_____________________________________________________________________
_____________________________________________________________________

Recreational Usage
Recreational use on site: ____ High (Visitors observed or evidence such as tire tracks, trash, graffiti, fire rings, etc.; and good access to site), ____ Moderate (Some evidence of visitors and site is accessible from a poor road or trail), ____ Low (Little, if any, evidence of visitors and site is not easily accessible)
Nearest recreational area ____ miles, Name or type of area: __________________

5. SAFETY RISKS

____ Open adit/shaft, ____ Highwall or unstable slopes, ____ Unstable structures, ____ Chemicals, ____ Solid waste including sharp rusted items, ____ Explosives
6. MINE OPENINGS

Include in the following chart all mine openings located on or partially on National Forest lands. Also, include mine openings located entirely on private land if a point discharge from the opening crosses onto National Forest land. In this case, enter data for the point at which the discharge flows onto National Forest land; you do not need to enter information about the opening itself.

**TABLE 1 - ADITS, SHAFTS, PITS, AND OTHER OPENINGS**

<table>
<thead>
<tr>
<th>Opening Number</th>
<th>Type of Opening</th>
<th>Ownership</th>
<th>Opening Length (ft)</th>
<th>Opening Width (ft)</th>
<th>Latitude (GPS)</th>
<th>Longitude (GPS)</th>
<th>Condition</th>
<th>Ground water</th>
<th>Water Sample #</th>
<th>Photo Number</th>
</tr>
</thead>
</table>

Comments (*When commenting on a specific mine opening, reference opening number used in Table 1*):

________________________
________________________
________________________

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Type of opening**: ADIT=Adit, SHAFT=Shaft, Pit=Open Pit/Trench' HOLE=Prospect Hole, WELL=Well

**Ownership**: NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private

**Condition** (*Enter all that apply*): INTACT=Intact, PART=Partially collapsed or filled, COLP=Filled or collapsed, SEAL=Adit plug, GATE=Gated barrier,

**Ground water** (*Water or evidence of water discharging from opening*): NO= No water or indicators of water, FLOW=Water flowing, INTER=Indicators of intermittent flow, STAND= Standing water only (*in this case, enter an estimate of depth below grade*)

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# 7. MINE/MILL WASTE

Include in the following chart all mine/mill wastes located on or partially on National Forest lands. Also, include mine/mill wastes located entirely on private land if it is visually effecting or is very likely to be effecting National Forest resources. In this case enter data for the point at which a discharge from the waste flows onto National Forest land, or where wastes have migrated onto National forest land; only enter as much information about the waste as relevant and practicable.

## TABLE 2 - DUMPS, TAILINGS, AND SPOIL PILES

<table>
<thead>
<tr>
<th>Waste Number</th>
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<th></th>
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<tbody>
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<td>Waste Type</td>
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<tr>
<td>Ownership</td>
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<td>Area (acres)</td>
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<td></td>
</tr>
<tr>
<td>Volume (cu yds)</td>
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</tr>
<tr>
<td>Size of Material</td>
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<tr>
<td>Wind Erosion</td>
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<td>Vegetation</td>
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<tr>
<td>Surface Drainage</td>
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<tr>
<td>Indicators of Metals</td>
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</tr>
<tr>
<td>Stability</td>
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</tr>
<tr>
<td>Location with respect to Floodplain</td>
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<td></td>
</tr>
<tr>
<td>Distance to Stream</td>
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</tr>
<tr>
<td>Water Sample #</td>
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</tr>
<tr>
<td>Waste Sample #</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Soil Sample #</td>
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</tr>
<tr>
<td>Photo Number</td>
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</tbody>
</table>

**Codes Applicable for all entries:** NA=Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Waste Type:** WASTE=Waste rock dump, MILL=Mill tailings SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, ORE=Ore Stockpile, HEAP=Heap Leach

**Ownership:** NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private

**Size of material (If composed of different size fractions, enter the sizes that are present in significant amounts):** FINE=Finer than sand, SAND=sand, GRAVEL>=sand and <2", COBBLE=2"-6", BOULD>=6"

**Wind Erosion**, Potential for: HIGH=Fine, dry material that could easily become airborne, airborne dust, or windblown deposits, MOD=Moderate, Some fine material, or fine material that is usually wet or partially cemented; LOW=Little it any fines, or fines that are wet year-round or well cemented.

**Vegetation (density on waste):** DENSE=Ground cover > 75%, MOD=Ground cover 25% - 75%, SPARSE=Ground cover < 25%, BARREN=Barren

**Surface Drainage (Include all that apply):** RILL=Surface flow channels mostly < 1' deep, GULLY=Flow channels >1' deep, SEEP=Intermittent or continuous discharge from waste deposit, POND=Seasonal or permanent ponds on feature, BREACH=Breached, NO=No indicators of surface flow observe

**Indicators of Metals (Enter as many as exist):** NO=No, VEG=Absence of or stressed vegetation, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present

**Stability:** EME=Emminent mass failure, LIK=Potential for mass failure, LOW=mass failure unlikely

**Location w/respect to Stream:** IN=In contact with normal stream, NEAR=In riparian zone or floodplain, OUT=Out of floodplain

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8. SAMPLES

Take samples only on National Forest lands.

<table>
<thead>
<tr>
<th>TABLE 3 - WATER SAMPLES FROM MINE SITE DISCHARGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number</td>
</tr>
<tr>
<td>Date sample taken</td>
</tr>
<tr>
<td>Sampler (Initials)</td>
</tr>
<tr>
<td>Discharging From</td>
</tr>
<tr>
<td>Feature Number</td>
</tr>
<tr>
<td>Indicators of Metal Release</td>
</tr>
<tr>
<td>Indicators of Sedimentation</td>
</tr>
<tr>
<td>Distance to stream (ft)</td>
</tr>
<tr>
<td>Sample Latitude</td>
</tr>
<tr>
<td>Sample Longitude</td>
</tr>
<tr>
<td>Field pH</td>
</tr>
<tr>
<td>Field SC</td>
</tr>
<tr>
<td>Flow (gpm)</td>
</tr>
<tr>
<td>Method of measurement</td>
</tr>
<tr>
<td>Photo Number</td>
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</tbody>
</table>

Comments: (When commenting on a specific water sample, reference sample number used in Table 3):

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Discharging From: ADIT=Adit, SHAFT=Shaft, PIT=Pit/Trench, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Mill
tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon,
WELL=Well
Feature Number: Corresponding number from Table 1 or Table 2 (Opening Number or Waste Number)
Indicators of Metal Release (Enter as many as exist): NO= None, YEG= Absence of, or stressed vegetation/organisms in and along
drainage path, STAIN= yellow, orange, or red precipitate, SALT= Salt deposits, SUU= Sulfides present, TURB= Discolored or turbid
discharge
Indicators of Sedimentation (enter as many as exist): NO= None, SLIGHT= Some sedimentation in channel, banks and channel
largely intact, MOD= Sediment deposits in channel, affecting flow patterns, banks largely intact, SIGN= Sediment deposits in channel
and/or along stream banks extending to nearest stream
Method of Measurement: EST= Estimate, BUCK= Bucket and time, METER= Flow meter
<table>
<thead>
<tr>
<th>Location relative to mine site/features</th>
<th>Upstream (Background)</th>
<th>Downstream</th>
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<tbody>
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<tr>
<td>Date sample taken</td>
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<tr>
<td>Sampler (Initials)</td>
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<td>Stream Name</td>
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<tr>
<td>Indicators of Metal Release</td>
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<tr>
<td>Indicators of Sedimentation</td>
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<tr>
<td>Sample Latitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Longitude</td>
<td></td>
<td></td>
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<tr>
<td>Field pH</td>
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<td></td>
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<tr>
<td>Field SC</td>
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<td>Flow (gpm)/Method of measurement</td>
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<td>Method of measurement</td>
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<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific water sample, reference sample number used in Table 4):*

---

**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Indicators of Metal Release** *(Enter as many as exist)*: NO=None, VEG=Absence of, or stressed streamside vegetation/organisms in and along drainage path, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present, TURB=Discolored or turbid discharge

**Indicators of Sedimentation** *(Enter as many as exist)*: NO=None, SLIGHT=Some sedimentation in channel, natural banks and channel largely intact, MOD=Sediment deposits in channel, affecting stream flow patterns, natural banks largely intact, SIGN=Sediment deposits in channel and/or along stream banks extending 1/2 a mile or more downstream

**Method of Measurement:** EST=Estimate, BUCK=Bucket and time, METER=Flow meter
### TABLE 5 - WASTE SAMPLES

<table>
<thead>
<tr>
<th>Sample Number</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of sample</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sampler (Initials)</td>
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<td>Sample Type</td>
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<td>Waste Type</td>
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<td>Feature Number</td>
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<tr>
<td>Sample Latitude</td>
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</tr>
<tr>
<td>Sample Longitude</td>
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</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific waste or soil sample, reference sample number used in Table 5):*

Codes Applicable for all entries: NA=Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Sample Type:** SING=Single sample, COMP=composite sample (enter length)

**Waste Type:** WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon sludge, ORE=Ore Stockpile, HEAP=Heap Leach

**Feature Number:** Corresponding number from Table 2 (Waste Number)
### TABLE 6 - SOIL SAMPLES

<table>
<thead>
<tr>
<th>Sample Number</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of sample</td>
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<td>Sampler (Initials)</td>
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<tr>
<td>Sample Latitude</td>
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<td>Sample Longitude</td>
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<tr>
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<td>Indicators of Contamination</td>
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</tr>
<tr>
<td>Photo Number</td>
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<td></td>
</tr>
</tbody>
</table>

Comments: *When commenting on a specific waste or soil sample, reference sample number used in Table 6:*

**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Sample Type:** SING=Single sample, COMP=composite sample (enter length)

**Likely Source of Contamination:** ADIT=Adit, SHAFT=Shaf, PIT=Open Pit, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, ORE=Ore Stockpile, HEAP=Heap Leach

**Feature Number:** Corresponding number from Table 1 or 2 (Opening or Waste Number)

**Indicators of Contamination (Enter as many as exist):** NO=None, VEG=Absence of vegetation, PATH=Visible sediment path, COLOR=Different color of soil than surrounding soil, SALT=Salt crystals
9. HAZARDOUS WASTES/MATERIALS

<table>
<thead>
<tr>
<th>TABLE 7 - HAZARDOUS WASTES/MATERIALS</th>
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</thead>
<tbody>
<tr>
<td>Waste Number</td>
</tr>
<tr>
<td>Type of Containment</td>
</tr>
<tr>
<td>Condition of Containment</td>
</tr>
<tr>
<td>Contents</td>
</tr>
<tr>
<td>Estimated Quantity of Waste</td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific hazardous waste or site condition, reference waste number used in Table 7):*

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Type of Containment: NO=None, LID=drum/barrel/vat with lid, AIR=drum/barrel/vat without lid, CAN=cans/jars, LINE=lined impoundment, EARTH=unlined impoundment
Condition of Containment: GOOD=Container in good condition, leaks unlikely, FAIR=Container has some signs of rust, cracks, damage but looks sound, leaks possible, POOR=Container has visible holes, cracks or damage, leaks likely, BAD=Pieces of containers on site, could not contain waste
Contents: from label if available, or guess the type of waste, e.g., petroleum product, solvent, processing chemical.
Estimated Quantity of Waste: Quantity still contained and quantity released
10. STRUCTURES

For structures on or partially on National forest lands.

<table>
<thead>
<tr>
<th>TABLE 8 - STRUCTURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
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<tr>
<td>Number</td>
</tr>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>Photo Number</td>
</tr>
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</table>

Comments:

Codes Applicable for all entries: NA = Not applicable, UNK = Unknown, OTHER = Explain in comments, NO = NO or none
Type: CABIN = Cabin or community service (store, church, etc.), MILL = mill building, MINE = building related to mine operation, STOR = storage shed, FLUME = Ore Chute/flume or tracks for ore transport
Number: Number of particular type of structure all in similar condition or length in feet
Condition: GOOD = all components of structure intact and appears stable, FAIR = most components present but signs of deterioration, POOR = major component (roof, wall, etc) of structure has collapsed or is on the verge of collapsing, BAD = more than half of the structure has collapsed

11. MISCELLANEOUS

Are any of the following present? (Check all that apply): _____ Acrid Odor, _____ Drums, _____ Pipe, _____ Poles, _____ Scrap Metal, _____ Overhead wires, _____ Overhead cables, _____ Headframes, _____ Wooden Structures, _____ Towers, _____ Power Substations, _____ Antennae, _____ Trestles, _____ Powerlines, _____ Transformers, _____ Tramways, _____ Flumes, _____ Tram Buckets, _____ Fences, _____ Machinery, _____ Garbage

Describe any obvious removal actions that are needed at this site:

__________________________

General Comments/Observations (not otherwise covered):

__________________________

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12. SITE MAP

Prepare a sketch of the site. Indicate all pertinent features of the site and nearby environment. Include all significant mine and surface water features, access roads, structures, etc. Number each important feature at the mine site and use these number throughout this form when referring to a particular feature (Tables 1 and 2). Sketch the drainage routes off the site into the nearest stream.
13. RECORDED INFORMATION

Owner(s) of patented land
Name: ____________________________________________________________
Address: _________________________________________________________
Telephone Number: ________________________________________________

Claimant(s)
Name: ____________________________________________________________
Address: _________________________________________________________
Telephone Number: ________________________________________________

Surface Water (From water rights)
Number of Surface Water Intakes within 15 miles downstream of site used for:
   ___ Domestic, ___ Municipal, ___ Irrigation, ___ Stock,
   ___ Commercial/Industrial, ___ Fish Pond, ___ Mining,
   ___ Recreation, ___ Other

Wells (From well logs)
Nearest well _____ miles
Number of wells within _____ 0-1/4 miles _____ 1/4-1/2 miles, _____ 1/2-1 mile
   ____ 1-2 miles ____ 2-3 miles ____ 3-4 miles of site

Sensitive Environments
List any sensitive environments (as listed in the HRS) within 2 miles of the site or along receiving stream
for 15 miles downstream of site (wetlands, wilderness, national/state park, wildlife refuge, wild and
scenic river, T&E or T&E habitat, etc):

______________________________________________________________

Population (From census data)
Population within _____ 0-1/4 miles ____ 1/4-1/2 miles ____ 1/2-1 mile
   ____ 1-2 miles ____ 2-3 miles ____ 3-4 miles of site

Public Interest
Level of Public Interest: ___ Low, ___ Medium, ___ High
Is the site under regulatory or legal action? ___ Yes, ___ No

Other sources of information (MILs #, MRDS #, other sampling data, etc):

______________________________________________________________
Appendix B
Database Fields
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Appendix C
Geochemical Data
GEOCHEMICAL DATA

ACCURACY OF GEOCHEMICAL DATA

The following information was received on the subject of the accuracy and the detection limits for the geochemical data presented in this report:

    Date: Fri, 24 Oct 1997 10:48:23 PST8PDT
    From: Kim Anderson <kanderson@asl.fs.uidaho.edu>
    To: Ruth E Vance <rvance@uidaho.edu>
    Subject: Re: detection limit accuracy

    That is something I put together some years ago for another client. Also Greg Moller [Technical Director, Analytical Sciences Laboratory] had input. Other than that, the refs are included in the discussions I sent [discussion titled “Practical Quantitation Limits”; see next page].

    Good Luck
    Kim,

    Kim A. Anderson, Ph.D.
    Asst. Prof. / Food Science and Toxicology Dept.
    Chief Chemist / Analytical Sciences Laboratory
    University of Idaho
    Moscow, Idaho 83844-2201
    208-885-7900/FAX 209-885-8937
Practical Quantitation Limits

Sensitivity of an analytical method is often based on its ability to reproducibly detect target analytes above the method noise level. Several similar definitions of this Minimum Detection Level or Limit (MDL) or Limit of Detection (LOD) are currently used. According to the American Chemical Society (ACS) (Principles of Environmental Analysis, p 9):

Limit of detection (LOD) "is defined as the lowest concentration level that can be determined as statistically different from the blank".

Instrument detection limit (IDL) "is the smallest signal above background noise that an instrument can detect reliably and is often equivalent to the LOD".

Method detection limit (MDL) "is the lowest concentration of analyte that can that a method can detect reliably in either a sample or a blank".

ACS recommends the value of LOD to be $3 \sigma$ for a 99% confidence level, where $\sigma$ is the standard deviation of the measurement.

Limit of Quantitation (LOQ) "is defined as the level above which quantitative results may be obtained with a specified degree of confidence".

ACS recommends an LOQ of $10 \sigma$ and this imparts a quantitative measurement uncertainty of $\pm 30\%$ in the measured value at this 99% confidence level. ACS contends "quantitative interpretation, decision-making and regulatory actions should be limited to data at or above the limit of quantitation". In particular, ACS states: "Analytical chemists must always emphasize to the public that the single most important characteristic of any result obtained from one or more analytical measurements is an adequate statement of its uncertainty level. Lawyers usually attempt to dispense with uncertainty and try to obtain unequivocal statements; therefore, an uncertainty interval must be clearly defined in cases involving litigation and/or enforcement proceedings. Otherwise, a value of 1.001 without a specified uncertainty, for example, may be viewed as legally exceeding a permissible level of 1."

EPA Methods used for regulatory enforcement use the same definition of MDL. "The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero". Since performance of analytical methodology and therefore detection limits vary significantly with non-controllable laboratory to laboratory variables such as the exact type of analytical instrumentation, EPA promulgates the concept of Practical Quantitation Limits (PQL). A PQL is equal to the MDL multiplied by a factor of ten or greater and are published as a general guide to laboratory method performance. The factors can range from ten to ten thousand depending on sample matrix and are intended to allow the laboratory the flexibility to determine the relative performance of an analytical method in a more complex sample matrix. In confirmation of laboratory variability, EPA methods as well as other
published analytical methods often estimate detection limits and quantitation limits using a bench-level expert, performance estimate.

Recognition of the 'average performance' nature of the PQL guidelines, EPA states that PQL's "are the lowest concentrations of analytes in (samples) that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQL's listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for the individual compounds; PQL's are not a part of the regulation (40 CFR Part 264 Appendix IX, Footnote 6)."
SEE

FOLDER:

Geochem_data

For data
Appendix D
Field Forms for Properties in the Study Area
SEE

FOLDER:

Field_forms

For data
Appendix E
Reports Completed for U.S. Forest Service, Region 1, Field Inspection Program
1997 Reports


1998 Reports


1999 Reports


Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle National Forest: Volume V (Section A): Coeur d'Alene River drainage surrounding the Coeur d'Alene...
mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 250 p., 1 videotape.

Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle National Forest: Volume V (Section B): Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 211 p., 1 videotape.

Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle National Forest: Volume V (Section C): Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 225 p., 1 videotape.

Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle National Forest: Volume V (Section D): Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 276 p., 1 videotape.


2000 Reports

