Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Nez Perce National Forest: Volume III, Section C: Elk City, Orogrande, Buffalo Hump, and Surrounding Areas, Idaho County, Idaho

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Field Inspection conducted by Ted Erdman and John Kauffman
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NEZ PERCE NATIONAL FOREST
ELK CITY-OROGRANDE-BUFFALO HUMP AREAS
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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 Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest. 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. In the summer of 1999, field work shifted to lands administered by the Clearwater and Nez Perce National Forests, and field work in the Nez Perce National Forest was completed in the 2000 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; chalcopyrite, CuFeS₂; galena, PbS; tetrachalcite, (CuFe)₁₂Sb₂S₁₃; 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(OH)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 [Cu₁₂As₄S₁₃], 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 CO$_3^-$ 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 [CuFeS$_2$], bornite [Cu$_2$FeS$_4$], chalcocite [Cu$_2$S], and tetrahedrite [Cu$_{12}$Sb$_4$S$_{13}$].

**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, dums, 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—Total Recoverable Metals Screen (EPA Test 200.7).
Water Samples—Arsenic (EPA Test 200.8), Lead (EPA Test 200.8), and Mercury (EPA Test 200.8), or Dissolved Heavy Metals Screen (EPA Test 200.8, which includes arsenic and lead) and Mercury (EPA Test 200.8).
Water Samples—Dissolved Metals Screen (EPA Test 200.7).
Soil and Waste Material—Element Screen (EPA Test 3050), 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 for the granitic rocks can be made from the analyses presented by Bennett (1980). In this study, stream sediment samples were grouped according to the major rock type in the source area. The mean and standard deviation for granitic rocks of the Idaho batholith are presented in Table 1.5-3. These samples were analyzed by atomic absorption spectrophotometry.
Table 1.5-3. Mean and standard deviation of elements in stream sediment samples derived from rocks of the Idaho batholith (data from Bennett, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molybdenum (ppm)</td>
<td>2.43</td>
<td>0.43</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>11.85</td>
<td>5.31</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>5.82</td>
<td>2.40</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>17.79</td>
<td>6.32</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>60.14</td>
<td>104.21</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.83</td>
<td>4.23</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>384</td>
<td></td>
</tr>
</tbody>
</table>

For the Precambrian metasedimentary rocks, an estimate can be made from the analyses presented by Gott and Cathrall (1980) for rocks of similar age in the Coeur d'Alene basin. Gott and Cathrall (1980) 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 1.5-4 and 1.5-5, 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 is still useful, especially for estimating background values. For example, an average sample of soil above the Prichard Formation might contain 54 ppm (mg/Kg) lead, 140 ppm (mg/Kg) zinc, 21 ppm (mg/Kg) copper, 0.13 ppm (mg/Kg) mercury, and 10 ppm (mg/Kg) 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 compared to the limits postulated by the U.S. EPA for the Clark Fork Superfund site (Table 1.5-6). 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.

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...
Table 1.5-4. 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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prichard Formation</td>
</tr>
<tr>
<td>Iron (percent)</td>
<td>3</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.4</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>---</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.3</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>224</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>343</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.3</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>5</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>40</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>10</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>---</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>54</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>0.01</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>0.03</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>22</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>34</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>60</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.4</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>0.5</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>---</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>109</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>727</td>
</tr>
</tbody>
</table>
Table 1.5-5. 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>1.8</td>
<td>1.9</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>
Table 1.5-6. 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>

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 digit for the month; 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., “99” if the sample was taken in 1999); and 5) two 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 ELK CITY, OROGRANDE, BUFFALO HUMP, AND SURROUNDING AREAS, IDAHO COUNTY, IDAHO

2.1 INTRODUCTION

This volume, Volume III of the Nez Perce National Forest report, describes 114 properties in the Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest. Forty-seven properties discussed in this volume reported lode production between 1901 and 1976, and nineteen of these properties had over 1,000 tons of total lode output. Eight of the forty-seven properties also reported placer production in addition to the lode output, and fourteen properties reported production from reprocessing old tailings (the entire recorded production from one of these properties was from old tailings).

Forty-one properties are discussed in this section, Section C of Volume III of the Nez Perce National Forest report. Of these forty-one properties, nineteen reported lode production between 1901 and 1967. Ten properties produced over 1,000 tons of ore, and three properties also reported placer production. Seven of the nineteen properties also reported production from reprocessed old tailings.

The study area covers parts of the Elk City and Red River Ranger Districts, which are in Idaho County (Figure 2.1-1). The mineralized areas are mostly in the drainages of American River, Red River, Crooked River, and Tenmile Creek, all of which are tributaries of the South Fork of the Clearwater River. The mines in the Buffalo Hump area are in the headwaters of streams that are tributary to the Salmon River, and these mines are surrounded by the Gospel Hump Wilderness Area. Access to the area is via State Highway 14 along the South Fork of the Clearwater River to Elk City; by numerous Forest Service roads throughout the study area; and by trails that connect to the Forest Service roads. Most of the drainages with past mining activity have dirt roads.

The 114 mines and prospects described in this volume are located on eleven 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 3,380 feet on the South Fork of the Clearwater River near the Clearwater Mine to 8,938 feet at Buffalo Hump. The area is heavily forested with dense brush and conifers, and the topography is generally steep.

2.1.1 Summary of the Elk City, Orogrande, Buffalo Hump, and Surrounding Areas Study Area

There were 114 mining properties (Table 2.1-1) examined in the Elk City and surrounding areas. Of these properties, forty-three have the potential to have an environmental impact on or near USFS lands. Twenty-two have water discharges that exceed one or more water quality standards, one has waste rock impinging on an active waterway, seven have both water quality concerns and waste rock impinging on an active waterway, five have mill tailings near active waterways, six have both water quality concerns and mill tailings near an active waterway, and two properties
Table 2.1-1. Summary of properties visited in the Elk City, Orogrande, Buffalo Hump, and surrounding areas. The properties are arranged according to site number. Sites were visited in 1999 and 2000. Properties shown in gray are discussed in sections A and B of this volume.

Explanation:

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

**Surface Owner:** FS = Forest Service; FS(W) = Forest Service lands designated as wilderness; S = State land; BLM = Bureau of Land Management; P = Private or Patented claims.

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

**Environmental Concerns:** W = water; D = waste dump, T = 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 the Dissolved Heavy Metals Screen), 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 or barricaded adit; AG(O) = open adit with an unsecured gate; SO = open shaft; SC = caved shaft; SG = secured or covered shaft; SS = open stop; OP = open pit; Q = quarry; T = trench; C = cut; P = prospect pit; OP = open pit. Numbers indicate how many of each are at the site; queried when type or condition of workings 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>EC-3</td>
<td>Madre d'Oro Mine</td>
<td>P</td>
<td>3</td>
<td>1</td>
<td>W, D</td>
<td>1AO</td>
</tr>
<tr>
<td>EC-7</td>
<td>Alamance Mine</td>
<td>BLM</td>
<td></td>
<td></td>
<td></td>
<td>1SC</td>
</tr>
<tr>
<td>EC-8</td>
<td>Sultan Shaft</td>
<td>BLM(?) or P(?)</td>
<td></td>
<td></td>
<td></td>
<td>1SC</td>
</tr>
<tr>
<td>EC-12</td>
<td>Congress Mine</td>
<td>P</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AO</td>
</tr>
<tr>
<td>EC-13</td>
<td>Hoffstetter Mine</td>
<td>P(?) or BLM(?)</td>
<td>1</td>
<td></td>
<td>W</td>
<td>2AC</td>
</tr>
<tr>
<td>EC-15</td>
<td>Old Lemroe Deposit</td>
<td>BLM</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AO</td>
</tr>
<tr>
<td>EC-16</td>
<td>Buster Mine</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>not visited</td>
</tr>
<tr>
<td>EC-25</td>
<td>Brown Bear Mine</td>
<td>BLM</td>
<td>1</td>
<td>D</td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>EC-36</td>
<td>Mascot Mine</td>
<td>BLM</td>
<td></td>
<td></td>
<td></td>
<td>1AC, 2P</td>
</tr>
<tr>
<td>EC-37</td>
<td>Rand Mine</td>
<td>BLM</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>EC-47</td>
<td>Mother Lode Mine</td>
<td>S</td>
<td>1</td>
<td></td>
<td>W</td>
<td>1AO</td>
</tr>
<tr>
<td>EC-51</td>
<td>Blue Ribbon Mine</td>
<td>FS</td>
<td>4</td>
<td>2</td>
<td>W, D</td>
<td>2AC</td>
</tr>
<tr>
<td>EC-52</td>
<td>Unnamed mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>EC-53</td>
<td>American Eagle Mine</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
</tbody>
</table>
Table 2.1-1 (continued). Summary of properties visited in the Elk City, Orogrande, Buffalo Hump, and surrounding areas.

<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>EC-57</td>
<td>Laurel Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>EC-58</td>
<td>Gold Point Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>dredge spoils</td>
</tr>
<tr>
<td>EC-60</td>
<td>Hornet Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>EC-62</td>
<td>Lucky Strike Mine</td>
<td>FS</td>
<td>3</td>
<td>W</td>
<td>2AC, 1P</td>
<td></td>
</tr>
<tr>
<td>EC-63</td>
<td>Zenith Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO, 1P, 1C</td>
</tr>
<tr>
<td>EC-66</td>
<td>Baner Mine</td>
<td>FS</td>
<td>3</td>
<td>W</td>
<td>2AO, 3AC, 1SC</td>
<td></td>
</tr>
<tr>
<td>EC-68</td>
<td>Grangeville Mine</td>
<td>FS</td>
<td>1</td>
<td>W</td>
<td>2AC</td>
<td></td>
</tr>
<tr>
<td>EC-71</td>
<td>Idaho Champion Mine</td>
<td>P</td>
<td>3</td>
<td>2</td>
<td>W, D, T</td>
<td>4AC, numerous P</td>
</tr>
<tr>
<td>EC-75</td>
<td>Six Mile Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>ISC, numerous P</td>
</tr>
<tr>
<td>EC-76</td>
<td>North Hill Mine</td>
<td>FS</td>
<td>1</td>
<td></td>
<td></td>
<td>1AG(O)</td>
</tr>
<tr>
<td>EC-77</td>
<td>Una Mine</td>
<td>FS</td>
<td>1</td>
<td></td>
<td></td>
<td>1AO</td>
</tr>
<tr>
<td>EC-77</td>
<td>Una Extension Placer Mine (?)</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>ISC or P, 1T</td>
</tr>
<tr>
<td>EC-79</td>
<td>Sungold Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AG, 1AC, 2SiO or P</td>
</tr>
<tr>
<td>EC-82</td>
<td>Unnamed prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>IAC</td>
</tr>
<tr>
<td>EC-83</td>
<td>Gnome Mine</td>
<td>P</td>
<td>1</td>
<td>T</td>
<td></td>
<td>1AC</td>
</tr>
<tr>
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Table 2.1-1 (continued). Summary of properties visited in the Elk City, Orogrande, Buffalo Hump, and surrounding areas.

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Table 2.1-1 (continued). Summary of properties visited in the Elk City, Orogrande, Buffalo Hump, and surrounding areas.

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have water quality concerns, waste rock impinging on an active waterway, and mill tailings at the site.

Of the forty-one properties discussed in this section (Section C of Volume III), eleven have the potential to have an environmental impact on or near USFS lands. Three properties have water discharges that exceed one or more water quality standards, five have both water quality concerns and mill tailings at the site, one has probable mill tailings at the site, one has waste rock impinging one on an active waterway, and one has water quality concerns, waste rock in an active waterway, and mill tailings present at the site.

Of the 114 sites discussed in this volume, forty-five have open adits or shafts and four sites have gated adits. Of the properties with open workings, nine have multiple open workings and five have unsecured, gated openings. In addition, several properties have unfenced pits or caved shafts. Some of these openings pose significant safety hazards.

Of the forty-one sites discussed in Section C, nineteen have open adits, including two properties with unsecured, gated adits. Of these, five properties have multiple open workings. An additional three properties have secured openings.

2.2 GEOLOGY

The most recent references showing the geology of the Elk City area are Mitchell (1996), Stanford (1996), Lewis and others (1990, 1993), and Mitchell and Bennett (1979). The geology and ore deposits of the area are discussed in Bennett and others (1999), Shenon and Reed (1934), Lorain (1938), Thomson and Ballard (1924), Jellum (1909), McHugh (1991), and unpublished reports on individual deposits. Bennett (1980) discussed the geochemistry of sediments derived from Idaho batholith rocks similar to those that underlie much of the study area. A brief description of the geologic framework of the area follows.

Most of the ore deposits in the Elk City and surrounding areas formed within 1,500 feet of the subhorizontal contact between the Idaho batholith and the overlying Proterozoic metamorphic rocks (Figure 2.2-1). These metamorphic rocks have been separated into the Syringa and Elk City metamorphic sequences. The Syringa metamorphic sequence consists of coarse-grained quartz-mica schist, quartzite, and calc-silicate rocks that are interbedded on a scale of decimeters. The Elk City metamorphic sequence consists of fine- to medium-grained quartz-feldspar-biotite gneiss, thinly layered biotite quartzite, and quartz-muscovite-biotite schist (Mitchell, 1996; Bennett and others, 1999). The granitic rocks in the Elk City area are mostly biotite granodiorite (Stanford, 1996; Mitchell, 1996), which forms the bulk of the Atlanta lobe of the batholith (Lewis and others, 1987). Both the Idaho batholith and the Precambrian metamorphic rocks are intruded by northeast-trending Tertiary dikes (Rains, 1991; Mitchell, 1996; Stanford, 1996). The most prevalent ore deposits in the area are gold-silver veins, with or without base metals. These veins are probably related to the intrusion of the Idaho batholith (Snee and Lund, 1984; Lund and Esparza, 1990).
Figure 2.2-1  Geology of the properties in the Elk City, Onagrande, Buffalo Horn, and surrounding areas. Maine (Stanford, 1996).

pCl, pCmp, pCPr = Middle or Early Proterozoic(?), Syringa sequence. pCh, pChg, pChf, h = Middle or Early Proterozoic(?)

locustite and fluvial sediments. Qd, Qm = Quaternary alluvium.
A series of major northeast-trending faults and shear zones cross the area, including the Blanco Creek shear zone (Lewis and others, 1990, 1993; Bennett and others, 1999). These faults intersect a set of northerly trending faults, including the Orogrande shear zone, that control much of the gold mineralization (Bennett and others, 1999; Rains, 1991; Stanford, 1996).

2.3 ECONOMIC GEOLOGY

2.3.1 General Characteristics of the Ore

Most of the lode deposits in the Elk City and surrounding areas consist of gold-bearing quartz fissure veins that fill northerly trending faults or shear zones or that strike approximately east-west (Bennett and others, 1999; Shenon and Reed, 1934; Jellum, 1909). These deposits occur in the granitic rocks of the Idaho batholith or in the overlying metasedimentary rocks (Figure 2.2-1). Most of these deposits formed within 1,500 feet of the subhorizontal contact between the Idaho batholith and the Proterozoic metamorphic rocks (Bennett and others, 1999; Reed Lewis, 2001, personal communication). The Petsite Mine is a disseminated deposit in a small rhyolite or dacite stock (Rains, 1991; Shenon and Reed, 1934). Pyrite carries most of the gold values, and accessory sphalerite, galena, and chalcopyrite are sometimes present in the quartz veins (Thomson and Ballard, 1924; Shenon and Reed, 1934).

Production was recorded from forty-seven lode mines in the study area, with nineteen mines producing over 1,000 tons of ore between 1901 and 1976. All of these mines produced gold and silver, sometimes accompanied by base metals. Eight of these mines also reported placer production, and fourteen mines produced metals from old tailings. Active exploration projects in the 1980s did not bring any mines into production.

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 discussed in Section C of the report on the Elk City, Orogrande, Buffalo Hump, and surrounding areas:

St. Louis Mine—tailings
Jumbo Mine—tailings
Center Star Mine—tailings
Wonder Mine—tailings
Buffalo-Idaho Mine—tailings
Del Rio Mine—tailings
Iron Crown Mine—tailings
Buster Mine

24
New York Mine
Buckhorn Mine
Gilt Edge (Wild Hope) Mine
South Fork Mine
Clearwater Mine
North Star Mine/Wiseboy Mine
Sentinel Mine

In 1939, a 25 tons-per-day (tpd) flotation plant was built at the St. Louis Mine. The mill operated in 1940 and 1941.

The Jumbo Mine installed a two-stamp mill soon after the property was located in 1898. After a month, two more stamps were added. Table concentrates were saved. In 1902, a twenty-four-stamp mill was installed that ran about two years. By 1905, the mill had twenty-four stamps, five amalgamation plates, and three concentrating tables. During the dry season, there was insufficient water to power all the stamps. Most of the ore was treated by amalgamation, but some gold-bearing pyrite disseminated in the quartz was treated in a 1-tpd chlorination mill. The tailings carried considerable values and were cribbed for future treatment. Ore was produced intermittently until about 1915. From 1934 to 1938, the old tailings were treated by cyanidation. In 1941, ore (probably tailings or dump material) was processed in a 20-tpd mill equipped with a ball mill and concentrating tables.

At the Center Star Mine in 1933, some of the ore was amalgamated and a small amount of ore was shipped directly to a smelter. Small lots of gold ore were shipped in 1934 and 1935. In 1939, a 50-tpd mill was completed. A small amount of ore was processed in 1939, and larger amounts were shipped in 1940, 1941, and 1942. Jig concentrates were treated by amalgamation, and flotation concentrates were shipped to a smelter. In 1982, the mill was refurbished and a tailings disposal site was built. The equipment for a new 50-tpd mill was delivered.

In 1915, the Wonder Mine had a rod mill that was scheduled to be replaced by ten stamps, amalgamation plates, and at least two brands of concentrating tables. The stamp mill was purchased and brought to the property, but never installed. In 1928, a 1-ton Eureka rod mill was installed at the mine, and gold bullion was shipped to San Francisco and Denver. The mine produced ore in 1941, 1950, and during the mid-1960s.

A four-stamp mill was built at the Buffalo-Idaho Mine in 1929 and gold bullion was recovered by amalgamation during the year. Throughout most of the 1930s, the mine produced small amounts of ore.

In the early 1930s, the Del Rio Mine had a two-stamp, water-powered mill on the property. Bullion was recovered by amalgamation, and table concentrates were produced in 1933 and 1934.
The Iron Crown Mine was discovered in 1888, and a Kincaid mill was installed on the property. This mill operated continuously for ten or twelve years. Around 1909, new owners announced plans to equip the property with a very complete mill.

By 1909, the Buster Mine had a ten-stamp mill and cyanide plant that could process about 40 tpd. In 1983, a cyanide heap-leach project was constructed to process dump material from the Buster Mine. The operation was closed the following year.

The New York Mine had a five-stamp, 9-tpd mill on the Anaconda claims, which treated the ore from 1915 until the equipment wore out, and a five-stamp amalgamation mill on the New York Group. The Anaconda mill is reported to have saved 85 percent of the assay value by amalgamation and vanner concentration. In 1931, Fahrenwald flotation cells were added to the mill on the New York claims. Updated mill equipment was installed in 1941. The mine produced ore in 1941, 1942, and 1943. In 1947, the mill was refurbished, but may not have operated. The milling equipment was sold and removed from the property around 1980.

The Buckhorn Mine had a small amalgamation mill that produced ore in 1911, 1913, and 1914. A five-stamp Chilean mill was installed on the property in 1915.

The Gilt Edge (Wild Hope) Mine had a small mill in the 1910s, but its operation was not successful. In 1934, the mill had amalgamation equipment, a concentrating table, and flotation cells.

The South Fork Mine produced steadily from 1909 to 1913. The ore was processed in a 15-tpd five-stamp mill.

The Clearwater Mine had a 15-tpd mill under construction in 1937. The mill was completed and put into service the following year. The mill processed ore from the Blackbird Mine in 1936. Little work was done on the property after the end of that year.

A mill was built at the Wiseboy Mine, but never operated due to litigation. This millsites is described in this report as the North Star mill.

An 8-tpd stamp mill with amalgamation plates was brought to the Sentinel Mine in 1942, but the mine was closed by government order before the mill could be installed.

2.4 HYDROLOGY AND HYDROGEOLOGY

The study area covers the Forest Service lands in parts of the drainage of the South Fork of the Clearwater River and in the drainages tributary to the Salmon River (Figure 2.1-1). Both the Salmon River and the Clearwater River eventually flow into the Snake River.

As noted, a number of the mines in the study area are hosted by granitic rocks of the Idaho batholith. Most of the batholith rocks do not contain significant values of base metals. Table 1.5-
3 (based on 384 samples taken from the southern part of the Atlanta lobe of the batholith) shows these rocks contain an average of 60 ppm zinc, 18 ppm lead, and 6 ppm copper. The Precambrian metasedimentary rocks contain higher values of base metals, as is shown by analyses of rocks in the Coeur d’Alene district (Tables 1.5-4 and 1.5-5). Water discharges from the mines in the area reflect the metal content of the underlying rocks. Rains (1991) and McHugh (1991) analyzed samples from a number of properties in the study area, and Neumann and Close (1991) analysed samples from properties in the nearby Dixie mining district.

To test how the metal content of the country rock was impacting stream waters, four reference water samples were collected. The chemical analyses for these samples 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:

- E6179902—Tributary of Trail Creek
- E6199902—Tributary of Quartz Creek
- E6209904—Tributary of Crooked River
- E7039902—Tributary of Crooked River

Sample E617002 equals or exceeds the Secondary MCL and the Aquatic Life Chronic standard for aluminum and both Aquatic Life standards for cadmium in the dissolved metals screen. Sample E6199902 equals or exceeds the Secondary MCL and the Aquatic Life Chronic standard for aluminum and all standards for cadmium in the total recoverable metals screen. Sample E6209904 equals or exceeds the Secondary MCL and the Aquatic Life Chronic standard for aluminum, both Aquatic Life standards for cadmium, and the Aquatic Life Chronic standard for copper in the dissolved metals screen. Sample E7039902 equals or exceeds the Secondary MCL and the Aquatic Life Chronic standard for aluminum and the Aquatic Life Chronic standard for cadmium in the dissolved metals screen; the sample also exceeds the Aquatic Life Chronic standard for copper in the total recoverable metals screen.

### 2.5 SUMMARY OF THE ELK CITY, OROGRANDE, BUFFALO HUMP, AND VICINITY STUDY AREA

#### 2.5.1 Summary of Environmental Observations

Most of the samples from properties with water discharge exceed EPA water standards for one or more elements (Tables 2.5-1 and 2.5-2). Water quality variances include significant amounts of aluminum, cadmium, copper, lead, and iron at the Hercules Mine and at unnamed prospect E5139907; aluminum, cadmium, iron, lead, and manganese at the Homestake Mine; aluminum, cadmium, copper, lead, zinc, iron, and manganese at the Old Lemro and Congress mines; aluminum, arsenic, iron, and manganese at the Baner Mine; aluminum, cadmium, copper, and lead at the Penman and St. Louis mines; and arsenic and lead at unnamed prospect E8109901. Aluminum, cadmium, iron, and copper in excess of one or more water quality standards are the most prevalent water quality variances in the Elk City study area. The elements detected in the water samples are also found in the rock units underlying the drainages.
Table 2.4-1. Dissolved metals in reference water samples from the Elk City study area, Nez Perce National Forest, Idaho County, Idaho. Numbers on bold-face type exceed one or more water quality standards.

<table>
<thead>
<tr>
<th>Field No.</th>
<th>Location</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>E6179902</td>
<td>Tributary of Trail Creek, reference</td>
<td>0.170</td>
<td>0.00078</td>
<td>0.0190</td>
<td>0.0048</td>
<td></td>
<td>0.0110</td>
<td>0.1400</td>
<td></td>
<td>0.0190</td>
<td></td>
<td>0.014</td>
<td>0.0027</td>
</tr>
<tr>
<td>E6199902</td>
<td>Tributary of Quartz Creek, reference</td>
<td>0.160</td>
<td>0.00110</td>
<td>0.0027</td>
<td>0.0070</td>
<td></td>
<td>0.0110</td>
<td>0.0500</td>
<td></td>
<td>0.0029</td>
<td></td>
<td></td>
<td>0.0027</td>
</tr>
<tr>
<td>E6209904</td>
<td>Tributary of Crooked River, reference</td>
<td>0.290</td>
<td>0.00500</td>
<td>0.0120</td>
<td>0.0048</td>
<td></td>
<td>0.0150</td>
<td>0.1600</td>
<td>0.0029</td>
<td>0.0071</td>
<td></td>
<td></td>
<td>0.0040</td>
</tr>
<tr>
<td>E7039902</td>
<td>Tributary of Crooked River, reference</td>
<td>0.160</td>
<td>0.00110</td>
<td>0.0270</td>
<td>0.0023</td>
<td></td>
<td>0.0081</td>
<td>0.1600</td>
<td></td>
<td>0.0079</td>
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</tbody>
</table>

**EXPLANATION**
Blank space equals no analysis
Below Detection Limit is —

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th></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></td>
<td>0.050</td>
<td>2.000</td>
<td>0.005</td>
<td>0.100</td>
<td></td>
<td>0.050</td>
<td></td>
<td>0.002</td>
<td>0.100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td>0.0004-0.009</td>
<td>0.0004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.004-0.009</td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.360</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
<td>0.0004-0.0009</td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.190</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
<td>0.0001-0.0002</td>
</tr>
<tr>
<td>Estimated Detection Level (33% confidence)</td>
<td>0.074</td>
<td>0.0007</td>
<td>0.0014</td>
<td>0.0019</td>
<td>0.0080</td>
<td>0.0067</td>
<td>0.0053</td>
<td>0.0025</td>
<td>0.0013</td>
<td>0.0005</td>
<td>0.001</td>
<td>0.0019</td>
</tr>
</tbody>
</table>
Table 2.4-2. Total recoverable metals in reference water samples in the Elk City area, Nez Perce National Forest, Idaho County, Idaho. Numbers on bold-face type exceed one or more water quality standards.

<table>
<thead>
<tr>
<th>Field No.</th>
<th>Location</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>E6179902</td>
<td>Tributary of Trail Creek, reference</td>
<td>0.018</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.170</td>
<td>0.0064</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>E6199902</td>
<td>Tributary of Quartz Creek, reference</td>
<td>0.002</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.120</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>E6209904</td>
<td>Tributary of Crooked River, reference</td>
<td>0.014</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.550</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.0220</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>E7039902</td>
<td>Tributary of Crooked River, reference</td>
<td>0.031</td>
<td>--</td>
<td>0.0120</td>
<td>0.014</td>
<td>0.350</td>
<td>0.0066</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<td>--</td>
<td></td>
</tr>
</tbody>
</table>

**EXPLANATION**
Blank space equals no analysis
Below Detection Limit is --

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th></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>2.000</td>
<td>0.005</td>
<td>0.100</td>
<td>1.000</td>
<td>0.050</td>
<td>0.002</td>
<td>0.10</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td>0.3600</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>
</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>
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<td>0.000012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.1900</td>
<td>0.003</td>
<td>0.0082</td>
<td>0.01</td>
<td>0.015</td>
<td>0.0017</td>
<td>0.0005</td>
<td>0.013</td>
<td>0.0063</td>
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</tr>
<tr>
<td>Estimated Detection Level (33% confidence)</td>
<td>0.0007</td>
<td>0.002</td>
<td>0.003</td>
<td>0.0082</td>
<td>0.01</td>
<td>0.015</td>
<td>0.0017</td>
<td>0.0005</td>
<td>0.013</td>
<td>0.0063</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*mg/L = ppm*
Table 2.5-1. Dissolved metals in water samples from the Elk City study area, Nez Perce National Forest, Idaho County, Idaho.
Numbers in bold-face type exceed one or more water quality standards. Samples shown in gray are discussed in sections A and B of this report.

<table>
<thead>
<tr>
<th>Field No.</th>
<th>Location</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>E5179902</td>
<td>Unnamed prospect (E5179901), adit water</td>
<td>0.100</td>
<td>0.00110</td>
<td>1.600</td>
<td>0.0099</td>
<td>---</td>
<td>0.0100</td>
<td>0.4300</td>
<td>---</td>
<td>0.0370</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>E5179903</td>
<td>Pasadena Mine (EC-562), adit water</td>
<td>0.100</td>
<td>0.00095</td>
<td>0.390</td>
<td>0.0066</td>
<td>---</td>
<td>0.0074</td>
<td>0.1600</td>
<td>---</td>
<td>0.0110</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>E5299901</td>
<td>Hercules Mine (EC-561), Adit 1, water</td>
<td>0.140</td>
<td>0.00098</td>
<td>0.770</td>
<td>0.0058</td>
<td>---</td>
<td>0.0086</td>
<td>0.5500</td>
<td>---</td>
<td>0.0360</td>
<td>---</td>
<td>0.0140</td>
<td>---</td>
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<tr>
<td>E5299902</td>
<td>Hercules Mine (EC-561), upstream</td>
<td>0.220</td>
<td>0.00091</td>
<td>0.0180</td>
<td>0.0059</td>
<td>---</td>
<td>0.0078</td>
<td>0.2900</td>
<td>0.0190</td>
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<td>---</td>
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<tr>
<td>E5299903</td>
<td>Hercules Mine (EC-561), dump seep</td>
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<td>0.0071</td>
<td>---</td>
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<td>0.1900</td>
<td>0.0330</td>
<td>0.0041</td>
<td>---</td>
<td>0.0037</td>
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<tr>
<td>E5299904</td>
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<td>0.0076</td>
<td>---</td>
<td>0.0099</td>
<td>0.3000</td>
<td>---</td>
<td>0.0160</td>
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<td>---</td>
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<td>E5299906</td>
<td>Hercules Mine (EC-561), Adit 2, water</td>
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<td>0.0960</td>
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<td>E5309902</td>
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<td>0.0290</td>
<td>0.0038</td>
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<td>0.0089</td>
<td>0.6900</td>
<td>---</td>
<td>0.0720</td>
<td>---</td>
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</tr>
<tr>
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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>
<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>Aquatic Life, Acute</td>
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<td>1.4-2.5</td>
<td>0.12-0.21</td>
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<td>Aquatic Life, Chronic</td>
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Table 2.5-1 (continued). Dissolved metals in samples from the Elk City area

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<th>Field No.</th>
<th>Location</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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<tbody>
<tr>
<td>E6059903</td>
<td>Madre d'Oro Mine (EC-3), downstream</td>
<td>0.240</td>
<td>0.00085</td>
<td>0.0110</td>
<td>0.0088</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**mg/L = ppm**

**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>
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<td>0.360</td>
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Table 2.5-1 (continued). Dissolved metals in samples from the Elk City area

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<th>Field No.</th>
<th>Location</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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<td>Black Lady Mine (EC-550), adit water</td>
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<td>0.00088</td>
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<td>0.0950</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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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>
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<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<tr>
<td>Aquatic Life, Acute</td>
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<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.190</td>
<td>0.001-0.002</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 Elk City study area, Nez Perce National Forest, Idaho County, Idaho. Numbers in bold-face type exceed one or more water quality standards. Samples shown in gray are discussed in sections A and B of this report.

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<th>Location Details</th>
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<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
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<th>Hg (ppm)</th>
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<tr>
<td>E6059901</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<tr>
<th>Standard Type</th>
<th>Al (mg/L)</th>
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<tbody>
<tr>
<td>Primary MCL</td>
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<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
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<table>
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<tr>
<th>Standard Type</th>
<th>As (mg/L)</th>
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<td>Primary MCL</td>
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<tr>
<td>Secondary MCL</td>
<td>0.004-0.009, 1.7-3.1, 0.018-0.034, 1.000, 0.082-0.2, 0.0024, 1.4-2.5, 0.12-0.21</td>
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<table>
<thead>
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<th>Standard Type</th>
<th>Ba (mg/L)</th>
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<td>Primary MCL</td>
<td>0.005</td>
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<tr>
<td>Secondary MCL</td>
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<table>
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<th>Standard Type</th>
<th>Fe (mg/L)</th>
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<td>Primary MCL</td>
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<th>Pb (mg/L)</th>
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<th>Hg (mg/L)</th>
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<th>Ni (mg/L)</th>
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<td>1.4-2.5</td>
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<table>
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<tr>
<th>Standard Type</th>
<th>Zn (mg/L)</th>
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<td>Primary MCL</td>
<td>0.11-0.19</td>
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<td>Secondary MCL</td>
<td>0.000012, 0.16-0.28, 0.11-0.19</td>
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<th>Standard Type</th>
<th>Estimated Detection Level (33% confidence)</th>
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Table 2.5-2 (continued). Total recoverable metals in water samples from the Elk City area.

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<th>Location</th>
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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>
</tr>
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<tbody>
<tr>
<td>E6059903</td>
<td>Madre d'Oro Mine (EC-3), downstream</td>
<td>0.013</td>
<td>0.006</td>
<td>0.020</td>
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<td>Old Lemro Mine (EC-15), adit water</td>
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<td>E6069906</td>
<td>Hoffstetter Mine (EC-13), adit water</td>
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<td>Unnamed prospect (E6069901), seep from Adit 1 dump</td>
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<tr>
<td>E6069903</td>
<td>Unnamed prospect (E6069901), Adit 3, water</td>
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**EXPLANATION**

Blank space equals no analysis
Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<tr>
<th></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>
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<td>Aquatic Life, Acute</td>
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Table 2.5-2 (continued). Total recoverable metals in water samples from the Elk City area.

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<th>Field No.</th>
<th>Location</th>
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<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
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<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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**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>
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<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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Table 2.5-2 (continued). Total recoverable metals in water samples from the Elk City area.

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<th>Field No.</th>
<th>Location</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
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<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

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<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
</tr>
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<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.3600</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.02</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
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<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.1900</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>
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<tr>
<td>Estimated Detection Level (33% confidence)</td>
<td>0.0007</td>
<td>0.002</td>
<td>0.003</td>
<td>0.0082</td>
<td>0.01</td>
<td>0.013</td>
<td>0.025</td>
<td>0.0017</td>
<td>0.0005</td>
<td>0.013</td>
<td>0.0063</td>
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</tr>
</tbody>
</table>
2.5.2 Tailings and Mine Waste Samples

Samples were collected from most of the properties where tailings were present or 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.
Table 2.5-3. Element screen for dump and tailings samples from mines in the Elk City study area, Nez Perce National Forest, Idaho County, Idaho. Samples shown in gray are discussed in sections A and B of this report.

<table>
<thead>
<tr>
<th>Field No.</th>
<th>Location</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>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
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<td><strong>Dumps</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E5299905</td>
<td>Hercules Mine (EC-561), dump</td>
<td>NA</td>
<td>94</td>
<td>330.00</td>
<td>3.70</td>
<td>38.0</td>
<td>20.0</td>
<td>50,000</td>
<td>53.0</td>
<td>640.0</td>
<td>NA</td>
<td>28.0</td>
</tr>
<tr>
<td>E5319902</td>
<td>Blue Ribbon Mine (EC-51), Adit 1, dump</td>
<td>NA</td>
<td>120</td>
<td>290.00</td>
<td>7.40</td>
<td>18.0</td>
<td>23.0</td>
<td>30,000</td>
<td>46.0</td>
<td>1,100.0</td>
<td>NA</td>
<td>16.0</td>
</tr>
<tr>
<td>E5319905</td>
<td>Blue Ribbon Mine (EC-51), Adit 2, dump</td>
<td>NA</td>
<td>97</td>
<td>150.00</td>
<td>8.70</td>
<td>28.0</td>
<td>180.0</td>
<td>39,000</td>
<td>150.0</td>
<td>480.0</td>
<td>NA</td>
<td>23.0</td>
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<td>E5319909</td>
<td>Unnamed Prospect (E5319907), dump</td>
<td>NA</td>
<td>170.0</td>
<td>2.20</td>
<td>18.0</td>
<td>25.0</td>
<td>24,000</td>
<td>36.0</td>
<td>500.0</td>
<td>NA</td>
<td>14.0</td>
<td>43.0</td>
</tr>
<tr>
<td>E6059980</td>
<td>Madre d'Oro Mine (EC-35), dump</td>
<td>NA</td>
<td>99</td>
<td>120.00</td>
<td>2.50</td>
<td>20.0</td>
<td>16.0</td>
<td>22,000</td>
<td>56.0</td>
<td>420.0</td>
<td>NA</td>
<td>18.0</td>
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<td>E6069902</td>
<td>Unnamed Prospect (E6069901), Adit 1, dump</td>
<td>NA</td>
<td>120</td>
<td>62.00</td>
<td>1.90</td>
<td>5.4</td>
<td>34.0</td>
<td>20,000</td>
<td>190.0</td>
<td>23.0</td>
<td>NA</td>
<td>4.7</td>
</tr>
<tr>
<td>E7029902</td>
<td>Idaho Champion (EC-71), Adit 2, dump</td>
<td>NA</td>
<td>120.0</td>
<td>0.86</td>
<td>7.6</td>
<td>3.9</td>
<td>9,400</td>
<td>27.0</td>
<td>130.0</td>
<td>NA</td>
<td>6.7</td>
<td>8.1</td>
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<td>E7069905</td>
<td>Unatilla Mine (EC-98), dump</td>
<td>NA</td>
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<td>15.0</td>
<td>59.0</td>
<td>40,000</td>
<td>64.0</td>
<td>990.0</td>
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<td>Coeur d'Alene Mine (EC-515), dump</td>
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<td>6200</td>
<td>520.00</td>
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<td>15.0</td>
<td>44.0</td>
<td>34,000</td>
<td>320.0</td>
<td>860.0</td>
<td>NA</td>
<td>17.0</td>
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<tr>
<td>E9199901</td>
<td>Brown Bear Mine (EC-25), dump</td>
<td>NA</td>
<td>160</td>
<td>73.00</td>
<td>1.10</td>
<td>9.5</td>
<td>32.0</td>
<td>27,000</td>
<td>250.0</td>
<td>100.0</td>
<td>NA</td>
<td>9.0</td>
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<tr>
<td>K7249902</td>
<td>Buffalo-Idaho Mine (EC-491), Adit 1 dump</td>
<td>NA</td>
<td>1500</td>
<td>67.00</td>
<td>1.60</td>
<td>8.6</td>
<td>8.0</td>
<td>29,000</td>
<td>89.0</td>
<td>710.0</td>
<td>NA</td>
<td>14.0</td>
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<td><strong>Mill Tailings</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6209902</td>
<td>Twin Butte Mine (EC-111), mill tailings</td>
<td>NA</td>
<td>250</td>
<td>110.00</td>
<td>2.10</td>
<td>18.0</td>
<td>110.0</td>
<td>22,000</td>
<td>50.0</td>
<td>360.0</td>
<td>NA</td>
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<tr>
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<td>Idaho Champion Mine (EC-71), mill tailings</td>
<td>NA</td>
<td>140</td>
<td>200.00</td>
<td>2.90</td>
<td>87.0</td>
<td>42.0</td>
<td>43,000</td>
<td>210.0</td>
<td>560.0</td>
<td>NA</td>
<td>51.0</td>
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<td>Gnome Mine (EC-83), mill tailings</td>
<td>NA</td>
<td>69</td>
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<td>1.70</td>
<td>17.0</td>
<td>190.0</td>
<td>33,000</td>
<td>2,400.0</td>
<td>49.0</td>
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<td>Black Lady Mine (EC-550), mill tailings</td>
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<td>2.30</td>
<td>90.0</td>
<td>53.0</td>
<td>38,000</td>
<td>73.0</td>
<td>400.0</td>
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<td>Haystack Mine (EC-521), mill tailings</td>
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<td>83</td>
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<td>2.8</td>
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<td>79.0</td>
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<td>82.00</td>
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<td>55.0</td>
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<td>Center Star (EC-544), mill tailings</td>
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<td>180.00</td>
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<td>30,000</td>
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Clark Fork Superfund Background Levels

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<th>Level</th>
<th>As (ppm)</th>
<th>Cd (ppm)</th>
<th>Pb (ppm)</th>
</tr>
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<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>NA</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>NA</td>
</tr>
<tr>
<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 2.5-3 (continued). Element screen for dump and mill tailings samples from properties in the Elk City area.

<table>
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<tr>
<th>Field No.</th>
<th>Location</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>E8179901</td>
<td>Jumbo Mine (EC-148), mill tailings</td>
<td>NA</td>
<td>81</td>
<td>180.00</td>
<td>2.80</td>
<td>19.0</td>
<td>72.0</td>
<td>17,000</td>
<td>300.0</td>
<td>680.0</td>
<td>NA</td>
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<td>E8179903</td>
<td>Jumbo Mine (EC-148), probable concentrates</td>
<td>NA</td>
<td>100</td>
<td>29.00</td>
<td>4.30</td>
<td>3.2</td>
<td>740.0</td>
<td>25,000</td>
<td>1,300.0</td>
<td>19.0</td>
<td>NA</td>
<td>4.9</td>
<td>150.0</td>
</tr>
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<td>E8179906</td>
<td>Jumbo Mine (EC-148), mill tailings</td>
<td>NA</td>
<td>130</td>
<td>91.00</td>
<td>3.80</td>
<td>3.2</td>
<td>180.0</td>
<td>18,000</td>
<td>1,500.0</td>
<td>7.1</td>
<td>NA</td>
<td>3.3</td>
<td>140.0</td>
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<td>19.00</td>
<td>2.10</td>
<td>4.6</td>
<td>180.0</td>
<td>23,000</td>
<td>620.0</td>
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<td>NA</td>
<td>7.3</td>
<td>60.0</td>
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<td>E8189903</td>
<td>St. Louis Mine (EC-147), mill tailings</td>
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<td>--</td>
<td>45.00</td>
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<td>66.0</td>
<td>4,100</td>
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<td>NA</td>
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<td>Iron Crown Mine (EC-474), mill tailings</td>
<td>NA</td>
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<td>56.0</td>
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<td>28,000</td>
<td>39.0</td>
<td>330.0</td>
<td>NA</td>
<td>37.0</td>
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<td>K7240003</td>
<td>Buffalo-Idaho Mine (EC-491), mill tailings(*)</td>
<td>NA</td>
<td>190</td>
<td>260.00</td>
<td>3.30</td>
<td>21.0</td>
<td>16.0</td>
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<td>650.0</td>
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Clark Fork Superfund Background Levels (mg/Kg) = ppm

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<th></th>
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<th>Cd</th>
<th>Pb</th>
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<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</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Lake Bed Sediments</td>
<td>NA</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>NA</td>
</tr>
<tr>
<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1000.0</td>
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</table>

Explanation:

Below Detection Limit is ---
Not analyzed equals NA
Table 2.5-4. Toxicity Characteristic Leaching Procedure (TCLP) for dump and tailings samples from properties in the Elk City study area, Nez Perce National Forest, Idaho County, Idaho. Samples shown in gray are discussed in sections A and B of this report.

<table>
<thead>
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<th>Field No.</th>
<th>Location</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>
</tr>
</thead>
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<td>Dumps</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>E5299905</td>
<td>Hercules Mine (EC-561), dump</td>
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<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>2.500</td>
</tr>
<tr>
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<td>Blue Ribbon Mine (EC-51), Adit 1, dump</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>2.500</td>
</tr>
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<td>Blue Ribbon Mine (EC-51), Adit 2, dump</td>
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<td>...</td>
<td>...</td>
<td>2.000</td>
</tr>
<tr>
<td>E5319909</td>
<td>Unnamed Prospect (E5319907), dump</td>
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<td>...</td>
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<td>...</td>
<td>...</td>
<td>...</td>
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<tr>
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<td>...</td>
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<td>...</td>
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<td>...</td>
<td>...</td>
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<td>...</td>
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<td>Coeur d'Alene Mine (EC-515), dump</td>
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<td>...</td>
<td>...</td>
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<td>1.300</td>
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EXPLANATION
Blank space equals no analysis
Not Detected is ND
Below Detection Limit is ---

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<th>WATER QUALITY STANDARDS</th>
<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>
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<td>0.005</td>
<td>0.100</td>
<td>0.050</td>
<td>0.002</td>
<td>0.050</td>
<td>2.000</td>
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<tr>
<td>Secondary MCL</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.360</td>
<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>
<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>
<td>0.49</td>
<td>0.02</td>
<td>0.03</td>
<td>0.500</td>
<td>0.01</td>
<td>0.650</td>
<td>0.270</td>
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Table 2.5-4 (continued). Toxicity Characteristic Leaching Procedure (TCLP) for dump and tailings samples from properties in the Elk City area, Idaho County, Idaho.

<table>
<thead>
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<th>Field No.</th>
<th>Location</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>
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<tr>
<td>E6209902</td>
<td>Twin Butte Mine (EC-111), mill tailings</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.600</td>
</tr>
<tr>
<td>E7029905</td>
<td>Idaho Champion Mine (EC-71), mill tailings</td>
<td>---</td>
<td>0.033</td>
<td>0.170</td>
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<td>1.700</td>
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<tr>
<td>E7029906</td>
<td>Gnome Mine (EC-83), mill tailings</td>
<td>---</td>
<td>---</td>
<td>0.040</td>
<td>---</td>
<td>---</td>
<td>---</td>
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<tr>
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<td>---</td>
<td>---</td>
<td>0.030</td>
<td>---</td>
<td>---</td>
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<td>---</td>
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<tr>
<td>E7269903</td>
<td>Haystack Mine (EC-521), mill tailings</td>
<td>---</td>
<td>0.048</td>
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<td>2.795</td>
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<td>Center Star (EC-544), mill tailings</td>
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<td>---</td>
<td>---</td>
<td>1.600</td>
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<tr>
<td>E8179901</td>
<td>Jumbo Mine (EC-148), mill tailings</td>
<td>---</td>
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<td>E8179903</td>
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<td>3.600</td>
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<td>Jumbo Mine (EC-148), mill tailings</td>
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<td>---</td>
<td>0.620</td>
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<td>E8189903</td>
<td>St. Louis Mine (EC-147), mill tailings</td>
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<td>9.600</td>
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<td>---</td>
<td>---</td>
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</table>

**EXPLANATION**
Blank space equals no analysis
Not Detected is ND
Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<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>
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<td>Primary MCL</td>
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<td>0.100</td>
<td>0.050</td>
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</tr>
<tr>
<td>Secondary MCL</td>
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<td>Aquatic Life, Acute</td>
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<td>0.004 - 0.009</td>
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<td>0.082 - 0.2</td>
<td>0.002</td>
<td>0.0041 - 0.0134</td>
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</tr>
<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>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Detection Level (33% confidence)</td>
<td>0.49</td>
<td>0.02</td>
<td>0.03</td>
<td>0.500</td>
<td>0.01</td>
<td>0.650</td>
<td>0.270</td>
<td>0.050</td>
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</tbody>
</table>
3.0 NEZ PERCE NATIONAL FOREST—ELK CITY, OROGRANDE, BUFFALO HUMP AND SURROUNDING AREAS – MINE DESCRIPTIONS (continued from Volume III, Section B)

3.74 WONDER MINE AND MILL (Site No. EC-514)

Note: In the field, the Wonder millsite was given a site number of E8109905.

3.74.1 Site Location and Access (Figure 2.1-1)

The Wonder Mine is near the center of the section line between sections 1 and 12 (unsurveyed), T. 28 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.74-1). Access from State Highway 14 is via FS Road 212 south approximately 2 miles to Road 212B, then southwest on Road 212B for approximately ½ mile to the adits. The mill is across Buckhorn Creek west of Road 212 in the SW¼ of the NW¼ of the SE¼ of section 1 (unsurveyed), T. 28 N., R. 6 E. The mine and mill are on Forest Service land.

3.74.2 Geologic Features (Figure 2.2-1)

The Wonder Mine is near the contact between Late Cretaceous biotite granodiorite and the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence (Lewis and others, 1990, 1993). The gold was found in a quartz vein that varied in width from a knife-blade thickness to 6-7 feet. The vein had an east-west strike and a 90° dip (Thomson and Ballard, 1924).

3.74.3 Site History

The Wonder Gold Mining Company was incorporated in 1915, and some ore was shipped from the mine in that year. The milling equipment consisted of a rod mill that was scheduled to be replaced by ten stamps, amalgamation plates, and at least two brands of concentrating tables. The mine had three tunnels and about 2,000 feet of workings. One of the previous owners of the property had been the Gold Ridge Mining Company (corporate information not available). The stamp mill was purchased and brought to the property, but never installed. Wonder Gold forfeited its corporate charter in 1924.

In 1928, a 1-ton Eureka rod mill was installed at the mine, and gold bullion was shipped to San Francisco and Denver. Shonon and Reed (1934) noted that the mine was owned by A. S. Johnson. The mine produced ore in 1941, 1950, and during the mid-1960s.
3.74.4 Environmental Conditions

3.74.4.1 Site Features

The mine and mill were visited by Ted Erdman on August 10, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 0:00:51-0:14:53). Documenting photographs are Roll 99E17, frames 17-24 (mine), and Roll 99E18, frames 1-4 (mill).

This site has two open, gated adits and several buildings (Figure 3.74-2). Adit 1 is approximately 150 feet west of and 100 feet in elevation above the adit shown on the topographic map. The portal of this dry adit appears moderately stable and has a gate about 10 feet inside (Figures 3.74-3 and 3.74-4). A few mine rails are stacked on the side of the dump, which measures 40 feet long, 40 feet wide, and 10 feet thick (Figure 3.74-5).

Adit 2 is shown on the topographic map. This adit has a locked wooden gate with a wooden framework extending out from the gate (Figure 3.74-6). An air pipe goes from a compressor shed to the portal. The adit is discharging water at 1-2 gallons per minute (Figure 3.74-7). The water flows out onto the dump, drains through the dump, and discharges as a small seep on the face. Nearly concealed mine rails exit the adit and extend across the dump (Figure 3.74-8). Behind the compressor shed is a collapsed camper trailer, along with abundant scrap metal (Figure 3.74-9). Another collapsed building is 100 feet east of the portal.

The mill is mostly intact (Figures 3.74-10 and 3.74-11), and there is abundant scrap metal around the building. Nearby is a large cabin (Figure 3.74-12). An area 40 feet long, 20 feet wide, and 5 feet thick below and to the east of the mill building is covered with tailings (Figure 3.74-13). A dam across Buckhorn Creek may also contain tailings.

The disturbed area covers about 2 acres at the mine and about 1 acre at the mill.

3.74.4.2 Sample Locations

3.74.4.2.1 Solid Samples

Sample E8109906 was collected from the tailings below the mill building.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E8109906</td>
<td>Wonder Mine, mill tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3.74.4.2.2 Water Samples

Sample E8109903 was taken from Adit 2 and sample E8109904 was taken from the seep on the face of Adit 2 waste dump.

<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>E8109903</td>
<td>Wonder Mine, Adit 2</td>
<td>24</td>
<td>42</td>
<td>7.5</td>
<td>1-2</td>
<td>Yes</td>
</tr>
<tr>
<td>E8109904</td>
<td>Wonder Mine, Adit 2, dump seep</td>
<td>24</td>
<td>46</td>
<td>7.3</td>
<td>0.5</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.74.4.2.3 Analytical Results

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

Compared to expected background (Tables 1.5-3, 1.5-4, and 1.5-5) and environmental (Table 1.5-6) levels, sample E8109906 from the Wonder mill tailings has elevated levels of arsenic, cadmium, chromium, copper, lead, and zinc. In the TCLP for metals screen, no metals of significance are leaching from the sample.

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

Water sample E8109903 from Adit 2 does not exceed any water quality standards in any of the tests.

Sample E8109904 from the dump seep does not exceed any water quality standards in the dissolved metals screen. In the EPA 200.8 test, lead is within the range of the Aquatic Life Chronic standard. In the total recoverable metals screen, iron exceeds the Secondary MCL and the Aquatic Life Acute standard, and manganese exceeds the Secondary MCL.

3.74.5 Structures

There is a compressor shed 20 feet south of Adit 2 (Figure 3.74-14) and a totally collapsed building 100 feet east of the adit. As noted above, the mill is nearly intact and a large cabin in good condition is just north of the mill.

3.74.6 Safety

The two adits at the Wonder Mine are gated to prevent access.
Figure 3.74-1. Location of the Wonder Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.74-2. Sketch of the Wonder Mine and mill.
Figure 3.74-3. Open portal of Adit 1 at the Wonder Mine, looking southwest (Roll 99E17, frame #17).

Figure 3.74-4. Adit 1 at the Wonder Mine, showing the gate blocking the tunnel about 10 feet inside the portal (Roll 99E17, frame #18).
Figure 3.74-5. Looking east across the waste dump for Adit 1 at the Wonder Mine (Roll 99E17, frame #19).
Figure 3.74-6. Portal of Adit 2 at the Wonder Mine, looking west. An air line enters the adit from the left. This adit is also gated a short distance inside (Roll 99E17, frame #21).
Figure 3.74-7. Looking west toward the portal of Adit 2 at the Wonder Mine. Water from the adit flows toward the bottom right of the picture. The corner of the compressor shed is at the upper left (Roll 99E17, frame #20).
Figure 3.74-8. Overgrown waste dump for Adit 2 at the Wonder Mine, looking northeast. Mine rails are barely visible near the center bottom of the picture (Roll 99E17, frame #24).
Figure 3.74-9. Old, collapsed travel trailer and compressor shed near Adit 2 at the Wonder Mine (Roll 99E17, frame #23).

Figure 3.74-10. Covered feed hopper at the top of the Wonder mill, looking southeast (Roll 99E18, frame #1).
Figure 3.74-11. Mill building for the Wonder Mine, looking west. Although in disrepair, the building is relatively intact (Roll 99E18, frame #3).

Figure 3.74-12. Cabin north of the mill building at the Wonder Mine, looking south (Roll 99E18, frame #2).
Figure 3.74-13. Tailings area adjacent to the mill building at the Wonder Mine. The cabin from the previous figure is in the distance (Roll 99E 18, frame #4).
Figure 3.74-14. Compressor shed at Adit 2 of the Wonder Mine (Roll 99E17, frame #22).
3.75 BUCKHORN MINE (Site No. EC-513)
Alternate names—Bobtail; Equator Mine.

3.75.1 Site Location and Access (Figure 2.1-1)

The Buckhorn Mine is in the NE¼ of the SE¼ of the SE¼ of section 1 (unsurveyed), T. 28 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.75-1). Access from State Highway 14 is on FS Road 212 south to the junction with FS Road 1894 at the townsite of Old Golden, then south on Road 1894 less than ¼ mile the mine. The mine is on Forest Service land.

3.75.2 Geologic Features (Figure 2.2-1)

The Buckhorn Mine is near the contact between Late Cretaceous biotite granodiorite and the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence. The mine is near the intersection of northwest-trending and north-trending faults (Lewis and others, 1990, 1993). The gold-bearing quartz vein strikes nearly east-west and is vertical. Pyrite and arsenopyrite are present in unoxidized parts of the vein (Thomson and Ballard, 1924).

3.75.3 Site History

In the early 1900s, the property was owned by W. B. Hauston of Newsome and T. Murray and Jack Keenan of Elk City. The mine had a 75-foot tunnel, a 40-foot shaft, and numerous open cuts (Jellum, 1909). The mine had a small amalgamation mill, and ore was produced in 1911, 1913, and 1914. A five-stamp Chilean mill was installed on the property in 1915.

The Equator Gold Mining and Milling Company was incorporated in 1915. This company apparently did little work on the property before selling it to the Golden Mining Company (probably a company that was incorporated in 1917 and that forfeited its charter two years later). The mine shipped ore in 1916, 1918, and 1919. Equator Gold forfeited its corporate charter in 1923.

3.75.4 Environmental Conditions

3.75.4.1 Site Features

The Buckhorn Mine was visited by Ted Erdman on August 10, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 0:14:58-0:20:42). Documenting photographs are Roll 99E18, frames 5-11. Several photographs were also taken by E. H. Bennett during a visit to the property in 1995.

This site contains one open, gated adit, several buildings, and abundant scrap metal (Figure 3.75-2). The adit has a wooden frame and a locked, metal gate approximately 10 feet inside (Figures 3.75-3). A pile of timbers is north of the portal (Figure 3.75-4). A small stream of water is
discharging from the adit. Mine rails exit the adit and branch into three spurs. Two spurs cross the dump, one going to a shop building (Figure 3.75-5) and the other to an ore bin west of the portal (Figures 3.75-6 and 3.75-7). The third spur turns south and ends after a short distance. The dump measures 300 feet long, 45 feet wide, and 25 feet thick (Figures 3.75-8). Scrap metal is scattered along the northwest part of the dump (Figure 3.75-9), as well as piled around the buildings. A compressor is on the northeast edge of the dump. Several fuel barrels are in a small frame enclosure on the northeast side of the dump near the compressor, and a large fuel tank is on the slope above the adit. The disturbed area covers 2-3 acres.

3.75.4.2 Sample Locations

3.75.4.2.1 Solid Samples
No solid samples were collected.

3.75.4.2.2 Water Samples

Water sample E8109907 was taken from the water discharging from the adit.

<table>
<thead>
<tr>
<th>Sample No</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (° F)</th>
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<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<td>Buckhorn Mine, adit water</td>
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<td>44</td>
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3.75.4.2.3 Analytical Results

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

In the EPA 200.8 tests, adit water sample E8109907 exceeds the Primary MCL for arsenic and is within the range of the Aquatic Life Chronic standard for lead. No standards are exceeded in the dissolved metals screen. In the total recoverable metals screen, iron exceeds the Secondary MCL.

3.75.5 Structures

There are six structures at this site, including the ore bin. An older cabin is just west of the main Buckhorn road, and two fairly new cabins are between the Buckhorn road and the road to the portal. Two shop buildings are on the west edge of the dump, across from the portal and north of the ore bin.

3.75.6 Safety

There are no significant safety hazards at this site. The adit is blocked by a gate a short distance inside the portal.
Figure 3.75-1. Location of the Buckhorn Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.75-2. Sketch of the Buckhorn Mine.
Figure 3.75-3. Entrance to the Buckhorn adit. The portal is open, but a gate blocks the adit a short distance inside (Roll 99E18, frame #6).

Figure 3.75-4. Looking east at the Buckhorn adit. A large pile of timbers is to the left of the adit, and a smaller pile is to the right. A large fuel tank is on the slope above the adit (Roll 99E18, frame #5).
Figure 3.75-5. Looking north across the waste dump at the Buckhorn Mine. One spur of the mine rails is at the bottom of the picture. The shop building is at the left. Miscellaneous materials are piled around the site (Roll 99E18, frame #7).

Figure 3.75-6. Ore bin on the side of the waste dump at the Buckhorn Mine. One of the log buildings along the access road is behind the bin (photograph by E. H. Bennett, 1995).
Figure 3.75-7. Looking east at the ore bin at the Buckhorn Mine from the access road (Roll 99E18, frame #11).
Figure 3.75-8. Looking northeast at the side of the waste dump for the Buckhorn adit. The shop building and a shed are on top of the dump (Roll 99E18, frame #10).

Figure 3.75-9. Junk strewn on the north edge of the waste dump at the Buckhorn Mine (Roll 99E18, frame #9).
3.76 WILD HOPE MINE (Site No. EC-519)
Alternate names—Gilt Edge Mine; New Gilt Edge.

Note: Comparison of information in Shenon and Reed (1934), the Golden 7.5-minute
topographic map, and the U.S. Bureau of Land Management claim records shows that
"Wild Hope Mine" is a recent (1960s) name for the property that was originally known as
the "Gilt Edge Mine." The two database entries have been combined under the number
originally used for the Gilt Edge.

3.76.1 Site Location and Access (Figure 2.1-1)

The Wild Hope Mine is in the NE¼ of the NE¼ of the SW¼ of section 7 (unsurveyed), T. 28 N.,
R. 7 E., on the Golden 7.5-minute quadrangle (Figure 3.76-1). Access from State Highway 14 is
via FS Road 212 south about 2 miles to the junction with FS Road 1894 at the townsite of Old
Golden, then southeast on FS Road 1894 about 1½ miles to Road 1894B. The property is ¼ mile
southeast on Road 1894B and is on Forest Service land. The buildings shown on the topographic
map appear to have been burned.

3.76.2 Geologic Features (Figure 2.2-1)

The Wild Hope Mine is in Late Cretaceous biotite granodiorite (Lewis and others, 1990, 1993).
The quartz vein strikes N. 80° W. and dips 75° NE.

3.76.3 Site History

The Gilt Edge Mine was originally located by Dan Bennett (Shenon and Reed, 1934). The Gilt
Edge Mining Company, a Minnesota corporation, filed to do business in Idaho in 1904 and
forfeited its charter in 1912. Whether this company was related to the Gilt Edge Mine is not
known; however, Thomson and Ballard (1924) refer to the property as the Gilt Edge.

By 1916, the shaft on the property was 100 feet deep (Shenon and Reed, 1934). The Seattle-
Idaho Mines Company (incorporated in 1918) acquired an option on the Gilt Edge around that
time. Workings included a 100-foot shaft and 200 feet of drifts. There was a small mill on the
property, but the company noted that its operation was not successful. Seattle-Idaho forfeited its
corporate charter in 1919. By 1923, according to the Idaho Mine Inspector, the property was
owned by Frank Osgood of Seattle. Osgood owned the mine until 1930. The following year, the
owners were listed as "Crosby & Daley."

Gilt Edge Mines, Incorporated, was organized in 1931 and filed to do business in Idaho in 1933.
In 1934, the mine had five tunnels (40 feet, 75 feet, 80 feet, 90 feet, and 260 feet) and a 103-foot
shaft. The mill included amalgamation equipment, a concentrating table, and flotation cells.
According to Shenon and Reed (1934), all the ore was processed by amalgamation. Gilt Edge
Mines withdrew from Idaho in 1935.
In the early 1960s, old tailings from the Gilt Edge were shipped under the name “Wild Hope.” In the mid-1980s, Alotta Resources, Ltd., prospected nearby areas for gold.

3.76.4 Environmental Conditions

3.76.4.1 Site Features

The mine was visited by Ted Erdman on August 10, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 0:20:47-0:25:06). Documenting photographs are Roll 99E18, frames 12-14.

This site has one collapsed shaft with a small dump. The shaft is 15 feet in diameter and 10 feet deep (Figure 3.76-2). The dump is 20 feet long, 20 feet wide, and 15 feet thick (Figure 3.76-3 and 3.76-4). The disturbed area covers about 0.1 acre.

3.76.4.2 Sample Locations

3.76.4.2.1 Solid Samples
   No solid samples were collected.

3.76.4.2.2 Water Samples
   No water samples were collected.

3.76.5 Structures

There are no structures at this site, although several are shown on the topographic map. They appear to have been burned. The area is now overgrown with trees.

3.76.6 Safety
   There are no safety hazards at this site.
Figure 3.76-1. Location of the Wild Hope Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.76-2. Caved shaft at the Wild Hope Mine (Roll 99E18, frame #12).

Figure 3.76-3. View across the waste dump of the shaft at the Wild Hope Mine (Roll 99E18, frame #13).
Figure 3.76-4. Face of the waste dump for the shaft at the Wild Hope Mine, looking north (Roll 99E18, frame #14).
3.77 CENTER STAR MINE (Site No. EC-544)

3.77.1 Site Location and Access (Figure 2.1-1)

The Center Star Mine is in the center of the SE¼ of the NW¼ of section 35 (unsurveyed), T. 29 N., R. 7 E., on the Center Star Mountain 7.5-minute quadrangle (Figure 3.77-1). Access is via FS Road 9875. This road leaves the South Fork of the Clearwater River ¼ mile east of mile marker 40. The bridge across the river has been removed. The mine is on Forest Service land approximately 1½ mile south up Center Star Creek on Road 9875.

3.77.2 Geologic Features (Figure 2.2-1)

The Center Star Mine is in the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence (Lewis and others, 1990, 1993). Brook (1984, p. 18) stated: “Gold occurs at Center Star in northeast striking, southeast dipping quartz veins varying from a few inches to twenty feet in width. These veins are contained within a 75 to 100 foot wide shear zone which creates the potential for multiple veins.” The shear zone hosting the Center Star vein has a projected strike length of two miles (Brook, 1984). Mapping along a logging road north of the mine revealed a shear zone that is probably an extension of the Center Star system. It is possible that this shear zone extends to the northeast and is the same system that hosts the South Fork Mine (Site No. EC-536) (Bennett and others, 1999).

3.77.3 Site History

The Center Star was discovered in 1907 by a Mr. Murphy. Herman Brown, Charles Tiedeman, and Mike Freeh [or Walter Fresh, according to Brook (1984)] later purchased shares in the property (Shenon and Reed, 1934). The mine shipped ore in 1915, and active development was reported in 1923 and 1924. In 1926, the mine had a 370-foot lower tunnel and two upper tunnels (Childs, 1926).

Day Development Company (incorporated in 1928 as the Hercules Exploration Company; name changed to Day Development Company in 1930; corporation dissolved in 1948) leased the Center Star Group in 1930. The company built four miles of trail, installed a gas-driven compressor, and started sinking a 200-foot inclined shaft. The shaft, which gained a vertical depth of 150 feet, was completed in 1931 and a small amount of drifting was done from the bottom before the company stopped all operations. Day’s option was relinquished later in the year.

Some of the ore produced in 1933 was amalgamated, while a small amount was shipped directly to a smelter. Three small lots of gold ore, averaging 3-6 ounces of gold per ton, were shipped from the mine in 1934 and additional shipments were made in 1935. In 1938, Ted Ward and W. J. Walker of Ely, Nevada, leased the mine and worked it with a crew of seven men. Development continued in 1939, with fourteen men completing a new 50-tpd mill and doing surface work. A small amount of ore was processed in 1939, and a much larger amount was
shipped in 1940, when 6,538 tons of ore was milled. A maximum production of 6,880 tons was reached in 1941. Production fell off in 1942 to 4,900 tons. In the mill, jig concentrates were treated by amalgamation and flotation concentrates were shipped to a smelter. The mine was closed by War Production Board Act L-208 and remained closed until the late 1950s.

In 1959, a Mrs. Ward, with help from Harold Lynch, began an exploration program and started to rehabilitate the mine. The property was acquired from Mrs. Ward and incorporated as Center Star Gold Mines, Inc., in 1961. In 1963, a small drilling program was conducted on the main level. Additional underground work was done, and twenty-two more core holes were drilled in an attempt to find ore shoots indicated in the first drilling program. There was little else accomplished in the following years except for normal assessment work to maintain the claims (Bennett and others, 1999).

The most recent work on the property was in the early 1980s. Brook (1984, p. 10-11) reported:

In 1970 a group calling itself “Big Three” took a ten year option on the property and in 1980 submitted the property to Ruddock Resources Inc. of Reno, Nevada. . . . In December of 1980, Ruddock Resources Inc., and World Tech, an Oklahoma based investor group, entered into an agreement with Center Star for an exploration and development program. . . . About $700,000 was spent on this program. [The program included extensive rehabilitation; the lower four levels of the mine were cleaned out, mapped, and extensively sampled.]

In 1982, the investors signed an agreement with the Midas Group for further development of the mine. This program was designed to test reserves indicated by the earlier work. A new 100-foot crosscut was driven from the surface to the intermediate level of the mine, the mill was refurbished, and a tailings disposal site built at a cost of approximately $250,000. All the equipment for the new mill was delivered. Ore was mined at 25 tpd, and the initial mill capacity was 50 tpd. In 1985, development of reserves continued (Bennett and others, 1999). Century Star Mining Company was incorporated in 1986 and apparently acquired the property soon afterwards; handwritten notes on Brook’s (1984) report indicate that Century Star was the new owner of the property.

3.77.4 Environmental Conditions

3.77.4.1 Site Features

The Center Star Mine was visited by Ted Erdman on August 11, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 0:25:12-0:31:43). Documenting photographs are Roll 99E18, frames 15-19. Additional photographs of the site were taken by E. H. Bennett in 1995.

This site consists several caved adits, one open adit, and a gravity mill building (Figure 3.77-2). Only the open (main) adit and the mill were visited during this visit. One of the caved adits was
visited by E. H. Bennett in 1995. The main adit, the Weiss or No. 1 tunnel, was driven southeast into the slope near the bottom of the gully (Figure 3.77-3). A gate on the portal of the main adit (closed in 1995; Figure 3.77-4) is open, but the adit is caved not far inside. Some of the portal timbers are broken and beginning to collapse (Figure 3.77-5). A small stream discharging from the portal at a rate of 5 gallons per minute is contained in a pipe until it reaches the north edge of the dump. The large waste dump measures 150 feet long, 70 feet wide, and 20 feet thick. It appears to have been revegetated with grass (Figure 3.77-6).

A second adit, possibly the Murphy tunnel, was visited by Earl Bennett in 1995. This adit is a short distance up the gully from the main adit and was also driven southeast into the slope. This adit was caved, with a few old, collapsed planks and beams from the portal exposed below a shallow trough on the slope (Figure 3.77-7). The waste dump was not extensive.

The mill building is several hundred feet northwest of the main adit. The mill tailings, at the eastern end of the mill building, cover an area estimated to be 30 feet long, 40 feet wide, and 5 feet thick (Figures 3.77-8 and 3.77-9). The mine and mill cover about 2-3 acres.

3.77.4.2 Sample Locations

3.77.4.2.1 Solid Samples

Sample E8119902 was taken from the mill tailings area below the mill building.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E8119902</td>
<td>Center Star Mine, mill tailings</td>
<td>Yes</td>
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</table>

3.77.4.2.2 Water Samples

Water sample E8119901 was taken from the discharge of the main adit.

<table>
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<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>Center Star Mine, main adit</td>
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<td>41</td>
<td>7.1</td>
<td>3-5</td>
<td>Yes</td>
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</table>
3.77.4.2.3 Analytical Results

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

Compared to expected background (Tables 1.5-4 and 1.5-5) and environmental (Table 1.5-6) values, sample E8119902 from the mill tailings at the Center Star Mine has elevated levels of arsenic, cadmium, chromium, copper, nickel, zinc, and lead in the element screen. No metals of concern are leaching in the TCLP for metals test.

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

Sample E8119901 from the main adit is within the range of the Aquatic Life Chronic standard for lead in the EPA 200.8 test. No other standards are exceeded in any of the tests.

3.77.5 Structures

There are two structures near the main adit, the largest of which is the mill building (Figure 3.77-10). Most of the walls of the mill are standing, but the roof has collapsed in several places. Overall, the mill is in disrepair. A small building is on the road just above the mill (Figure 3.77-11). Less than ¼ mile north of the mine is a large house with wood siding and a shake roof that may have been a boarding house when the mine was operating (Figure 3.77-12).

3.77.6 Safety

The main adit has an unlocked gate that can be easily entered, although the adit is caved several feet behind the gate.
Figure 3.77-1. Location of the Center Star Mine, Idaho County, Idaho (U.S. Geological Survey Center Star Mountain 7.5-minute topographic map).
Figure 3.77-2. Sketch of the Center Star Mine.
Figure 3.77-3. Portal of the main adit at the Center Star Mine (the Weiss or No. 1 tunnel), looking southeast (photograph by E. H. Bennett, 1995).

Figure 3.77-4. Close-up of the entrance to the main Center Star adit as it was in 1995, showing the closed iron gate. An old air pipe is at the upper right corner (photograph by E. H. Bennett, 1995).
Figure 3.77-5. Portal of the main Center Star adit in 1999. Some of the timbers are broken and beginning to collapse. Although not visible in this picture, the iron gate, which was closed in 1995, is now open (Roll 99E18, frame #16).

Figure 3.77-6. Looking north across the waste dump for the main adit at the Center Star Mine (Roll 99E18, frame #17).
Figure 3.77-7. One of the caved adits at the Center Star Mine, visited in 1995. This may be either the Murphy tunnel or another nearby tunnel, located south of and up the gully from the main adit (photograph by E. H. Bennett, 1995).
Figure 3.77-8. Smaller of the two ponds at the Center Star tailings impoundment. A collapsed wooden platform is on the tailings dam (photograph by E. H. Bennett, 1995).

Figure 3.77-9. Larger of the two ponds at the Center Star tailings impoundment. The collapsed wooden platform at the left is the same one seen in the previous figure (photograph by E. H. Bennett, 1995).
Figure 3.77-10. Mill building at the Center Star Mine, looking west. Old power lines to the site enter from the right side of the picture (Roll 99E18, frame #18).

Figure 3.77-11. Small shed above the mill building at the Center Star Mine. An old metal tub is at the lower edge of the picture (photograph by E. H. Bennett, 1995).
Figure 3.77-12. Large house north of the Center Star Mine (photograph by E. H. Bennett, 1995).
3.78 SOUTH FORK MINE (Site No. EC-536)

3.78.1 Site Location and Access (Figure 2.1-1)

The South Fork Mine is in the SW¼ of the SE¼ of the SW¼ of section 24 (unsurveyed; Protraction Block 52 [PB 52]), T. 29 N., R. 7 E., on the Center Star Mountain 7.5-minute quadrangle (Figure 3.78-1). The mine is 300-500 feet north of State Highway 14 at mile post 42. The road to the mine leaves the highway 500 feet west of the draw where the mine is located. Most of the workings are on patented claims.

3.78.2 Geologic Features (Figure 2.2-1)

The South Fork Mine is near the contact between the biotite schist and gneiss unit and the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence. It is associated with a northeast-trending fault that offsets the contact between these two units (Lewis and others, 1990, 1993). The ore was in a white or bluish, massive quartz vein that contained pyrite, arsenopyrite, galena, and chalcopyrite (Shenon and Reed, 1934).

3.78.3 Site History

The South Fork Mine was discovered in 1905 by E. E. Espy. Between 1906 and 1909, the mine was partly owned by Mr. Adams and Frank Peck. In 1909, Peck sold his interest to W. Stowell, who operated the mine from 1909 to 1913. Between 1905 and 1916, the mine produced a total of 6,036 ounces of gold and 1,529 ounces of silver from 11,639 tons of ore (Shenon and Reed, 1934). Stowell’s company, the Elk City Mines Corporation, was incorporated in 1910. The mine produced steadily from 1909 to 1913 and was the largest producer in the district in 1912. The ore was processed in a 15-tpd five-stamp mill. By 1913, the mine had 3,000 feet of tunnels and 500 feet of inclines. Elk City Mines forfeited its corporate charter in 1914.

A new company, the South Fork Mining and Milling Company, was incorporated in 1914. The officers included many of the same people as Elk City Mines. South Fork Mining did little more than assessment work for the next decade. Lessees operated part of the property in at least 1916 and 1917. In 1922, the property had about 3,500 feet of workings, including 1,000-foot, 1,050-foot, and 1,200-foot tunnels. In 1928, the company reported seven tunnels and one shaft, but still only 3,500 feet of workings. Five of the claims had been patented sometime in the previous year. South Fork Mining forfeited its corporate charter in 1927.

Stowell Gold Mining Company was incorporated in 1926, again with many of the same officers. The mortgage on the property was foreclosed in 1930, and Stowell Gold Mining forfeited its corporate charter in 1932. In 1945, Minerals Exploration and Research, Inc. (ME&R), purchased the “Stowell claims” of the South Fork property from W. H. Stowell, the son of the original owner; other claims were purchased from their various owners. ME&R was authorized to do business in Idaho in 1947. University of Idaho students conducted a geologic study at the mine in June 1948. The company forfeited its charter in 1949.
Mr. and Mrs. R. W. Larson acquired the property in the early 1950s. Alpine Minerals Corporation (incorporated in 1983) optioned the mine in 1983. Alpine reopened the two lower tunnels and a raise from the No. 2 tunnel to the surface. The work stopped near the end of the 1986 field season due to lack of funds, and Alpine forfeited its corporate charter in 1989.

3.78.4 Environmental Conditions

3.78.4.1 Site Features

The South Fork Mine was visited by Ted Erdman on August 13, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 031:47-044:54). Documenting photographs are Roll 99E18, frames 20-25, and Roll 99E19, frames 1-6.

The site has three adits, two collapsed and one open (Figure 3.78-2). Several roads in the area provide access to the adits. An old power line crossing the area has mostly fallen to the ground.

Adit 1, the uppermost of the three, is completely collapsed and forms a large scarp (Figure 3.78-3). The dump is 50 feet long, 30 feet wide, and 10 feet thick. There is a more recent mound of material on the old dump surface (Figure 3.78-4). Several bulldozer roads and cuts disturb the area between Adit 1 and Adit 2 (Figure 3.78-5).

Adit 2, the middle of the three adits, is open at the portal (Figure 3.78-6) and remains open underground for at least 10-15 feet (Figure 3.78-7). The adit has several sets of timbers near the portal. A wooden dam across the portal (Figure 3.78-8) was probably constructed to hold back water, although at the time of the visit, the adit was dry. There is abundant scrap metal just east of Adit 2, and two small sheds are across the access road from the adit. The dump measures 40 feet long, 20 feet wide, and 10 feet thick.

Adit 3, the lowermost, is completely caved (Figures 3.78-9 and 3.78-10). This adit is discharging water at 1-2 gallons per minute. The dump area is 75 feet long, 35 feet wide, and 15 feet thick (Figures 3.78-11 and 3.78-12).

The total disturbed area for the South Fork Mine covers 5-10 acres.

3.78.4.2 Sample Locations

3.78.4.2.1 Solid Samples

No solid samples were collected.

3.78.4.2.2 Water Samples

Sample E8139901 was taken from the stream discharging from Adit 3.
<table>
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<th>Sample No.</th>
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</tbody>
</table>

### 3.78.4.2.3 Analytical Results

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

Sample E8139901 from Adit 3 exceeds the Primary MCL for arsenic in the EPA 200.8 test. No other water quality standards are exceeded.

### 3.78.5 Structures

There are two small, plywood-sided sheds just east of Adit 2 (Figure 3.78-13).

### 3.78.6 Safety

Adit 2 can be entered for several feet underground.
Figure 3.78-1. Location of the South Fork Mine, Idaho County, Idaho (U.S. Geological Survey Center Star Mountain 7.5-minute topographic map).
Figure 3.78-2. Sketch of the South Fork Mine.
Figure 3.78-3. Scarp of caved Adit 1 at the South Fork Mine, looking northeast (Roll 99E18, frame #20).

Figure 3.78-4. Looking southwest across the waste dump for Adit 1 at the South Fork Mine. A more recent mound of material has been piled on the old dump surface (Roll 99E18, frame #21).
Figure 3.78-5. Large, open, disturbed area with bulldozer roads between Adits 1 and 2 at the South Fork Mine, looking south. Two small sheds in the distance are near Adit 2 (Roll 99E18, frame #22).

Figure 3.78-6. Open Adit 2 at the South Fork Mine, looking east. An old power line is on the ground in front of the adit (Roll 99E18, frame #24).
Figure 3.78-7. View into Adit 2 at the South Fork Mine. Several sets of timbers support the adit. The top of the wooden dam across the adit is at the bottom of the picture (Roll 99E18, frame #25).

Figure 3.78-8. Wooden dam across the portal of Adit 2 at the South Fork Mine, viewed from inside the adit (Roll 99E19, frame #2).
Figure 3-78-9  Caved Adit 3 at the South Fork Mine, looking northeast (Roll 99E19, frame #3)

Figure 3-78-10  Close-up of caved Adit 3 at the South Fork Mine (Roll 99E19, frame #4)
Figure 3.78-11. Looking southwest across the waste dump for Adit 3 at the South Fork Mine (Roll 99E19, frame #5).

Figure 3.78-12. Profile view of the waste dump for Adit 3 at the South Fork Mine, looking west (Roll 99E19, frame #6).
Figure 3.78-13. Two small, plywood-sided sheds near Adit 2 at the South Fork Mine (Roll 99E18, frame #23).
3.79 RED RIVER QUARRY (Site No. E8149901)

3.79.1 Site Location and Access (Figure 2.1-1)

The Red River Quarry is in the NW¼ of the SE¼ of the SW¼ of section 34 (unsurveyed), T. 28 N., R. 9 E., on the Trapper Creek 7.5-minute quadrangle (Figure 3.79-1). This site is on County Road 234 approximately 0.9 miles northeast of Red River Ranger Station. The quarry is on the west side of the road and is on Forest Service land.

3.79.2 Geologic Features (Figure 2.2-1)

This site is in the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence. The quarry is east of the northeast-trending Blanco Creek Shear Zone, and there are numerous Eocene dikes in the area (Lewis and others, 1990, 1993). The bedrock at the quarry is quartzite. The rock is very pyrite rich (1-2 percent) and heavily iron stained.

3.79.3 Site History

The quarry was a source for road metal in the area.

3.79.4 Environmental Conditions

3.79.4.1 Site Features

The Red River Quarry was visited by Ted Erdman on August 14, 1999. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 0:44:66-0:49:07). Documenting photographs are Roll 99E19, frames 7-8.

The site consists of a rock quarry with dimensions of 300 feet northeast-southwest and 230 feet northwest-southeast (Figures 3.79-2). The highwall is about 40 feet high. There is a 3-foot-high and 15-foot-wide berm along the southeast edge of the quarry, paralleling the main road, and several other piles of rock, probably from cleaning ditches in the area. The disturbed area covers about 2 acres.

3.79.4.2 Sample Locations

3.79.4.2.1 Solid Samples

No solid samples were collected.

3.79.4.2.2 Water Samples

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

3.79.6 Safety
   There are no safety hazards at this site.
Figure 3.79-1. Location of the Red River Quarry, Idaho County, Idaho (U.S. Geological Survey Trapper Creek 7.5-minute topographic map).
Figure 3.79-2. Looking southwest at the rock quarry, Site No. E8149901, on Road 234 (Roll 99E19, frame #7).
3.80 JUMBO MINE (Site No. EC-148)

Note: In the field and on the video segment, the Jumbo chlorination vat site was designated as Site No. E8179905, but further research showed that this site was an extension of the Jumbo millsite.

3.80.1 Site Location and Access (Figure 2.1-1)

The Jumbo Mine is in section 26 (unsurveyed; Protraction Block 52 [PB 52]), T. 26 N., R. 6 E., on Buffalo Hump 7.5-minute quadrangle (Figure 3.80-1). Adit 1 is in the SW¼ of the SW¼ of the NE¼ of section 26; Adit 2 is in the NE¼ of the NE¼ of the SW¼ of section 26; Adits 3 and 4 are in the NW¼ of the NW¼ of the SE¼ of section 26; and the millsite is in the SW¼ of the NW¼ of the SE¼ of section 26. Access is via FS Road 233 approximately 15 miles south from Orogrande. Road 233 ends at Jumbo Camp, and the mine is ¼ mile east along a very steep slope at the head of Jumbo Canyon. The mill is just below Adit 4. The chlorination vat site is just north of FS Trail 230 about ¼ mile southeast of the mine on the north side of the drainage. The property is on a group of patented claims.

3.80.2 Geologic Features (Figure 2.2-1)

The Jumbo Mine explored a gold-bearing quartz vein in the biotite granodiorite of the Idaho batholith (Thomson and Ballard, 1924). The strike of the vein was a few degrees east of north, and the dip was 50°-70° E. (Shenon and Reed, 1934).

3.80.3 Site History

Shenon and Reed (1934, p. 62) noted: The property was located in the fall of 1898. After a little development a 2-stamp mill was installed, which ran only 30 days before 2 more stamps were added. The 4 stamps in a little over a year crushed ore that yielded over $40,000. Table concentrates were saved. In 1902, a 24-stamp mill was installed and it ran about 2 years. Ore was taken out intermittently by lessees until about 1915. United States Bureau of Mines records for 1902-15 show a gold production of 18,179.43 fine ounces.

The Jumbo Mining and Milling Company, Limited, was incorporated in 1902. By 1905, the mine had four tunnels and total workings of 4,500 feet. The portal of the lower tunnel was at the mill, which had twenty-four stamps, five amalgamation plates, and three concentrating tables. During the dry season, there was insufficient water to power all the stamps. Most of the ore was treated by amalgamation, but there was some gold-bearing pyrite disseminated through the quartz. The pyrite was treated in a chlorination mill that had a capacity of 1 tpd. In 1906, the mine continued to be the principal producer in the district with an output of 2,973 tons of ore which yielded $3.23 per ton in free gold from amalgamation, with the concentrates treated by chlorination.
tailings carried considerable values and were cribbed for future treatment. The main tunnel was 1,250 feet long, with a 210-foot raise connecting the two upper tunnels. There was apparently some activity at the mine the following year, but the Jumbo was idle from 1908 until July 1910, when the property was leased. Lessees worked the mine again in 1911 and milled the ore with ten of the twenty-four stamps in the mill. Jumbo Gold Mines, Inc. (incorporated in 1912), leased the mine in 1912 and 1913, then forfeited its corporate charter at the end of 1913. The mine shipped small quantities of bullion in 1914 and 1915.

By the early 1920s, the mine had four tunnels totaling over 2,700 feet of workings. The No. 1 (upper) tunnel was less than 200 feet long, the No. 2 tunnel was 510 feet long, the No. 3 tunnel was 850 feet long, and the No. 4 tunnel was 1,255 feet long. The upper workings were mostly inaccessible. Production from the mine was valued at close to $225,000 (Thomson and Ballard, 1924). By the early 1930s, all the workings were inaccessible (Shenon and Reed, 1934).

From 1934 to 1938, lessees treated by the old Jumbo tailings by cyanidation. In 1937, the lessees treated 1,700 tons of old tailings. In 1941, the mine was leased to Jumbo Mines, Inc. (incorporated in 1941). This company produced some gold before forfeiting its corporate charter late in the year. The ore (probably tailings or dump material) was processed in a 20-tpd mill equipped with a ball mill and concentrating tables. During World War II, interest on government bonds constituted Jumbo Mining and Milling's entire income. The company's corporate charter expired in 1952.

In 1987 and 1988, Pegasus Gold, Inc., drilled 5,000 feet in the Buffalo Hump area. This project covered an area that included the Jumbo Mine.

3.80.4 Environmental Conditions

3.80.4.1 Site Features

The Jumbo Mine was visited by Ted Erdman on August 16 and 17, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 0:49:12-1:13:27). Documenting photographs are Roll 99E19, frames 9-25, and Roll 99E20, frames 1-5.

The site has four adits (one of which is open), a collapsed mill building, two tailings areas, and chlorination vats (Figures 3.80-2 and 3.80-3). Adit 1, the northernmost, is small and collapsed, with very little surface expression (Figure 3.80-4). The dump is 25 feet long, 20 feet wide, and 10 feet thick (Figure 3.80-5). There is minor scrap metal on the surface around the collapsed portal and a log structure, possibly an ore bin, near the base of the dump. The disturbed area is minimal.

Adit 2 is about 400 feet southwest of and 80 feet vertically below Adit 1. This adit is also caved with very little surface expression (Figure 3.80-6). The dump covers a large area of the slope and is 100 feet long, 15 feet wide, and 10 feet thick (Figures 3.80-7 and 3.80-8). The disturbed area covers less than 0.25 acre.

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Adit 3 is 300 feet east of Adit 2 at approximately the same elevation. This adit has a small opening (Figures 3.80-9 and 3.80-10). The dump extends 150 feet to the northeast, with a large part in the middle missing, and is 10 feet wide and 15 feet thick (Figure 3.80-11). The disturbed area is minimal.

Adit 4 is the lowermost adit on the property and is collapsed (Figure 3.80-12). A small stream discharges 3 gallons per minute, creating a swampy area on the dump. The dump has abundant drill steel and mine rails, as well as a winch, scattered along its surface (Figure 3.80-13). The dump is 140 feet long, 20 feet wide, and 15 feet thick (Figure 3.80-14). The disturbed area covers less than 0.25 acre.

The mill building is 50 feet south of Adit 4 and is completely collapsed (Figures 3.80-15, 3.80-16, and 3.80-17). There is an area containing tailings, measuring approximately 30 feet long, 20 feet wide, and 5 feet thick, at the lower (south) end of the mill building (Figure 3.80-18). A pile of what may be concentrates is on the northeast side of the mill building. The mill site covers about 2-3 acres.

The Jumbo leach vat site has seven or eight circular wooden chlorination vats (most of which are collapsed), a large tailings pile, and two collapsed buildings. The vats are 50 feet northeast of the buildings and range in diameter from 8 feet to 14 feet (Figure 3.80-19, 3.80-20, and 3.80-21). A few of the vats have material in them and others are empty. The tailings are just north of the vats and cover an area measuring 130 feet long, 60 feet wide, and 5 feet thick (Figure 3.80-22). There are mine rails running nearly the full length of the pile. Abundant scrap metal is scattered around the entire site, which covers 1-2 acres.

### 3.80.4.2 Sample Locations

#### 3.80.4.2.1 Solid Samples

Sample E8179901 was collected from the tailings area at the south end of the mill building. Sample E8179903 was collected from the pile of probable concentrates on the northeast side of the mill building. Sample E8179906 was collected from the large tailings area at the leach vat site.

<table>
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<tr>
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<td>Jumbo Mine, tailings at mill site</td>
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</tr>
<tr>
<td>E8179903</td>
<td>Jumbo Mine, concentrates at mill site</td>
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<tr>
<td>E8179906</td>
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</table>
3.80.4.2.2 Water Samples

Sample E8169901 was collected from the water flowing from Adit 4. Sample E8179902 was taken downstream from the mill on a tributary to Jumbo Creek. Sample E8179904 was collected from the seep below the mill.

<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>
</tr>
</thead>
<tbody>
<tr>
<td>E8169901</td>
<td>Jumbo Mine, Adit 4</td>
<td>39</td>
<td>43</td>
<td>6.9</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>E8179902</td>
<td>Jumbo Mine, downstream, tributary to Jumbo Creek</td>
<td>48</td>
<td>44</td>
<td>7.2</td>
<td>2 ft. wide, 0.5 ft. deep</td>
<td>Yes</td>
</tr>
<tr>
<td>E8179904</td>
<td>Jumbo Mine, seep from mill tailings</td>
<td>47</td>
<td>45</td>
<td>7.5</td>
<td>minor seep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.80.4.2.3 Analytical Results

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

Compared to expected background (Table 1.5-3) and environmental (Table 1.5-6) values, sample E8179901 from the tailings near the mill has elevated levels of arsenic, cadmium, copper, manganese, zinc, and lead in the element screen. No metals of concern are leaching from the sample in the TCLP for metals test.

Compared to expected background (Table 1.5-3) and environmental (Table 1.6-6) values, sample E8179903 from the probable concentrates near the mill has elevated levels of arsenic, cadmium, copper, lead, and zinc in the element screen. Lead is leaching from the sample in the TCLP for metals test.

Compared to expected background (Table 1.5-3) and environmental (Table 1.6-6) values, sample E8179906 from the tailings near the chlorination vats contains elevated levels of arsenic, cadmium, copper, zinc, and lead in the element screen. No metals of concern are leaching from the sample in the TCLP for metals test.

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

No water quality standards are exceeded in Sample E8169901 from Adit 4 at the Jumbo Mine.

Downstream sample E8179902 is within the range of the Aquatic Life Chronic standard for lead in the EPA 200.8 test.
Sample E8179904 from the tailings seep at the mill site exceeds the Secondary MCL for iron in the total recoverable metals screen and the Aquatic Life Chronic standard for lead in the EPA 200.8 test.

3.80.5 Structures

The main structure at this site is the collapsed mill building. The remains of at least two batteries of stamps are in the wreckage of the mill. There are two nearly collapsed log buildings along Trail 230 near the chlorination vat site (Figure 3.80-23).

3.80.6 Safety

Adit 3 is open and can be entered for some distance underground. Due to the remoteness of the site, the mine probably has few visitors.
Figure 3.80-1. Location of the Jumbo Mine and mill, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.80-2. Sketch of the Jumbo Mine and mill.
Figure 3.80-3. Sketch of the Jumbo chlorination vat site. The upper sketch shows the relationship of this area to the main millsite.
Figure 3.80-4. Caved Adit 1 at the Jumbo Mine, looking north (Roll 99E19, frame #9).
Figure 3.80-5. Waste dump for Adit 1 at the Jumbo Mine, looking west. A log structure, possibly an ore bin, is near the base of the dump at the lower left (Roll 99E19, frame #10).

Figure 3.80-6. Caved Adit 2 at the Jumbo Mine, looking northeast. Little expression remains of the adit (Roll 99E19, frame #11).
Figure 3.80-7. Looking southwest along the dump for Adit 2 at the Jumbo Mine (Roll 99E19, frame #12).

Figure 3.80-8. Profile view of the waste dump for Adit 2 at the Jumbo Mine, looking southwest (Roll 99E19, frame #13).
Figure 3.80-9. Opening of Adit 3 at the Jumbo Mine, looking west (Roll 99E19, frame #14).
Figure 3.80-10. Close-up of the opening into Adit 3 at the Jumbo Mine (Roll 99E19, frame #15).

Figure 3.80-11. Waste dump for Adit 3 at the Jumbo Mine, viewed from the portal (Roll 99E19, frame #16).
Figure 3.80-12. Trough of caved Adit 4 at the Jumbo Mine, looking northwest (Roll 99E19, frame #17).
Figure 3.80-13. Waste dump for Adit 4 at the Jumbo Mine, looking north (Roll 99E19, frame #20).
Figure 3.80-14. Looking southwest across the dump of Adit 4 at the Jumbo Mine. Old drill rod, rails, and other miscellaneous scrap metal are on the dump (Roll 99E19, frame #19).
Figure 3.80-15. Looking northwest at the collapsed mill building at the Jumbo Mine. Two sets of stamps are in the debris (Roll 99E19, frame #21).

Figure 3.80-16. Looking west at the lower part of the collapsed mill building (Roll 99E19, frame #22).
Figure 3.80-17. One set of stamps at the collapsed Jumbo mill. The frame contained 10 stamps (Roll 99E19, frame #25).
Figure 3.80-18. Some of the mill tailings south of the collapsed mill building (Roll 99E19, frame #24).

Figure 3.80-19. One of the intact chlorination vats (about 8 feet in diameter) at the Jumbo millsite (Roll 99E20, frame #2).
Figure 3.80-20. Another mostly intact vat at the Jumbo millsite. This vat is about 14 feet in diameter (Roll 99E20, frame #3).

Figure 3.80-21. Several partly collapsed vats at the Jumbo chlorination vat site (Roll 99E20, frame #5).
Figure 3.80-22. Probable tailings with mine rails north of the chlorination vats at the Jumbo millsite, looking northeast (Roll 99E20, frame #4).

Figure 3.80-23. One of the partly collapsed cabins along Trail 230 at the Jumbo Mine (Roll 99E20, frame #1).
3.81 DEL RIO MINE (Site No. EC-150)
Alternate name—Venture Mine.

Note: In the field, the Del Rio millsite was given a site number of E8179908.

3.81.1 Site Location and Access (Figure 2.1-1)

The Del Rio Mine is in the NE¼ of the SE¼ of the SW¼ of section 26 (unsurveyed; Protraction Block 52 [PB 52]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.81-1). Access is via FS Road 233 approximately 15 miles south from Orogrande to Jumbo Camp. From Jumbo Camp, FS Trail 230 goes about ¼ mile southeast to the floor of Jumbo Canyon. No trail continues from the floor of the canyon, but the mine is just south of Jumbo Creek opposite the Jumbo Mine. The Del Rio mill is just below the mine. Although there are patented claims nearby, the mine is on Forest Service land. The mill may be near or partly on patented land.

3.81.2 Geologic Features (Figure 2.2-1)

The Del Rio Mine is in biotite granodiorite that has large xenoliths of black schist. The vein strikes north-south to N. 25° E. and dips about 75° SE. It may be a continuation of the Jumbo vein. Ore minerals in the gold-bearing quartz vein include pyrite, galena, chalcopyrite, covellite, and molybdenite (Shenon and Reed, 1934).

3.81.3 Site History

In the early 1900s, the Del Rio consisted of ten claims owned by Gus Schultz, W. L. Farnsworth, M. F. Fuchs, and George Terhaar of Cottonwood, Idaho. The property had a 1,000-foot tunnel, and 25 tons of ore had been run through the Jumbo mill (Jellum, 1909). The property was active in 1913, by which time the name had been changed to Venture.

In the early 1930s, the mine was owned by A. F. and C. A. Schultz. The adit was 1,400 feet long, and a two-stamp, water-powered mill was on the property (Shenon and Reed, 1934). Bullion, which was recovered by amalgamation, and table concentrates were produced in 1933 and 1934.

3.81.4 Environmental Conditions

3.81.4.1 Site Features

The Del Rio Mine was visited by Ted Erdman on August 17, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:13:31-1:23:14). Documenting photographs are Roll 99E20, frames 6-12.

This site consists of one collapsed adit with a large dump and a collapsed mill building (Figure 3.81-2). A trough on the slope marks the location of the caved adit (Figure 3.81-3). Several
sections of metal pipe are near the mouth of the trough. Water discharging from the adit at a rate of 2-3 gallons per minute forms a large, iron-stained, swampy area on top of the dump (Figure 3.81-4), then drains around the southern edge of the dump. Large pieces of metal equipment and abundant scrap metal are on the dump. The dump has several lobes, but overall it measures about 100 feet long, 30 feet wide, and 20 feet thick (Figures 3.81-5 and 3.81-6).

The mill building, just below the waste dump, is large and completely collapsed (Figure 3.81-7). A substantial amount of corrugated sheet metal, scrap metal, and machinery is scattered around the site (Figure 3.81-8). In the northwestern part of the mill is a small area of what appears to be mill tailings.

3.81.4.2 Sample Locations

3.81.4.2.1 Solid Samples

Sample E8179909 was taken from a pile of possible tailings inside the collapsed mill.

<table>
<thead>
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<th>Sample No.</th>
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<th>Analyzed (Yes/No)</th>
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<tbody>
<tr>
<td>E8179909</td>
<td>Del Rio Mine, mill tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.81.4.2.2 Water Samples

Sample E8179907 was taken from the water discharging from the Del Rio 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>E8179907</td>
<td>Del Rio Mine, adit water</td>
<td>50</td>
<td>38</td>
<td>7.1</td>
<td>2-3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.81.4.2.3 Analytical Results

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

Compared to expected background (Table 1.5-3) and environmental (Table 1.5-6) values, sample E8179909 from the tailings in the mill building contains elevated levels of arsenic, cadmium, copper, and lead in the element screen. No metals of concern are leaching from the sample in the TCLP for metals test.
Water Samples (Tables 2.5-1 and 2.5-2)

Sample E8179907 from the Del Rio adit exceeds the Secondary MCLs for iron and manganese in the dissolved metals screen. In the total recoverable metals screen, iron exceeds the Secondary MCL and the Aquatic Life Acute standard, and manganese exceeds the Secondary MCL. In the EPA 200.8 test, lead is within the range of the Aquatic Life Chronic standard.

3.87.5 Structures

The collapsed mill is just northeast of the mine. One or more totally collapsed buildings are just west of the mill building (Figure 3.81-9).

3.81.6 Safety

The collapsed mill building contains numerous nails and other sharp-edged materials. No other hazards were noted.
Figure 3.81-1. Location of the Del Rio Mine and mill, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.81-2. Sketch of the Del Rio Mine and mill.
Figure 3.81-3. Caved adit at the Del Rio Mine, looking southwest. Water from the adit flows toward the lower left of the picture (Roll 99E20, frame #6).

Figure 3.81-4. Looking north at the iron-stained water and scrap metal on the waste dump for the adit at the Del Rio Mine (Roll 99E20, frame #7).
Figure 3.81-5. Northeast end of the waste dump at the Del Rio adit, showing two of the lobes and some of the scrap metal and rails. The view is to the northeast (Roll 99E20, frame #8).

Figure 3.81-6. Face and toe of the waste dump at the Del Rio adit, looking northwest (Roll 99E20, frame #9).
Figure 3.81-7. View uphill of the collapsed mill building at the Del Rio Mine. The waste dump for the adit is in the distance at the top center of the picture (Roll 99E20, frame #11).

Figure 3.81-8. View from above of the collapsed mill building at the Del Rio Mine. Note the abundant corrugated metal sheets and other scrap metal in the debris (Roll 99E20, frame #10).
Figure 3.81-9. Large area of collapsed buildings west of the mill building at the Del Rio Mine (Roll 99E20, frame #12).
3.82 UNNAMED PROSPECT (Site No. EC-149)

3.82.1 Site Location and Access (Figure 2.1-1)

This unnamed prospect is in the NE¼ of the SE¼ of the SE¼ of section 27 (unsurveyed), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.82-1). Access from Orogrande is via FS Road 233 approximately 15 miles south to Jumbo Camp. From Jumbo Camp, FS Trail 202 heads about ¼ mile west to the prospect, which is shown on the topographic map and is on Forest Service land.

3.82.2 Geologic Features (Figure 2.2-1)

This site is in Middle Proterozoic calc-silicate gneiss and schist of the Buffalo Hump roof pendant. It is on a north-northeast-striking fault (Lund and Esparza, 1990).

3.82.3 Site History

No information is available on the history of this site.

3.82.4 Environmental Conditions

3.82.4.1 Site Features

This site was visited by Ted Erdman on August 17, 1999. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:23:17-1:24:33). Documenting photograph is Roll 99E20, frame 13.

This site has numerous small, very shallow prospect pits and trenches, none of which are very significant. One of the larger pits is shown in Figure 3.82-2. The disturbed area at the site is negligible.

3.82.4.2 Sample Locations

3.82.4.2.1 Solid Samples

No solid samples were collected.

3.82.4.2.2 Water Samples

No water samples were collected.

3.82.5 Structures

There are no structures at this site.

3.82.6 Safety

There are no safety concerns associated with this site.
Figure 3.82-1. Location of Unnamed Prospect, Site No. EC-149, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.82-2. One of the shallow prospect pits at Site No. EC-149 (Roll 99E20, frame #13).
3.83 UNNAMED SHAFT (Site No. E8179910)

3.83.1 Site Location and Access (Figure 2.1-1)

This unnamed shaft is in the NE¼ of the SW¼ of the NW¼ of section 26 (unsurveyed; Protraction Block 52 [PB 52]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.83-1). Access from Orogrande is south via FS Road 233 approximately 14½ miles. The shaft is about ¼ mile north of Jumbo Camp and about 50 feet east of the road. The site is probably on Forest Service land.

3.83.2 Geologic Features (Figure 2.2-1)

This shaft is in Middle Proterozoic calc-silicate gneiss and schist of the Buffalo Hump roof pendant near a north-northeast-striking fault (Lund and Esparza, 1990). The shaft explored a quartz vein in mixed granitic and metamorphic rock.

3.83.3 Site History

---

No information is available on the history of this shaft.

3.83.4 Environmental Conditions

3.83.4.1 Site Features

This site was visited by Ted Erdman on August 17, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:24:35-1:27:50). Documenting photographs are Roll 99E20, frames 14-16.

This site has one open shaft and two trenches (Figure 3.83-2). The shaft has rotten timbers extending down some distance (Figure 3.83-3). The dump for the shaft measures 15 feet long, 15 feet wide, and 5 feet thick (Figure 3.83-4). The two trenches are shallow and of little significance. The disturbed area covers less than 0.25 acre.

3.83.4.2 Sample Locations

3.83.4.2.1 Solid Samples

No solid samples were collected.

3.83.4.2.2 Water Samples

No water samples were collected.

3.83.5 Structures

There are no structures at this site
3.83.6 Safety

The shaft is open to an undetermined depth, with no cover, fence, or warning signs.
Figure 3.83-1. Location of Unnamed Shaft, Site No. E8179910, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.83-2. Sketch of Site No. E8179910.
Figure 3.83-3. Looking southwest at the open shaft at Site No. E8179910. Old boards and timbers in the shaft are rotten and collapsing (Roll 99E20, frame #15).
Figure 3.83-4. Waste dump for the shaft at Site No. E8179910, looking northeast (Roll 99E20, frame #16).
3.84 DEWEY OCCURRENCE (Site No. EC-146)

3.84.1 Site Location and Access (Figure 2.1-1)

The Dewey Occurrence is in the SE¼ of the NW¼ of the SW¼ of section 23 (unsurveyed; Protraction Block 50 [PB 50]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.84-1). Access from Orogrande is south via FS Road 233 approximately 14 miles. The adit is about 1 mile north of Jumbo Camp and 150 feet northwest of the road. The site appears to be on a patented claim.

3.84.2 Geologic Features (Figure 2.2-1)

This shaft is in an area dominated by Middle Proterozoic calc-silicate gneiss and schist of the Buffalo Hump roof pendant near a north-northeast-striking fault (Lund and Esparza, 1990). The vein strikes N. 20º E. and dips 80º SE., and it is about 5 feet wide (Shenon and Reed, 1934). The Dewey explored a gold-bearing quartz vein in mixed granitic and metasedimentary rocks.

3.84.3 Site History

In the early 1930s, the Dewey was owned by Reuben McGregor of Elk City.

3.84.4 Environmental Conditions

3.84.4.1 Site Features

The Dewey Occurrence was visited by Ted Erdman on August 18, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:27:52-1:30:50). Documenting photographs are Roll 99E20, frames 17-20.

The site has one caved adit with a large dump (Figure 3.84-2). The portal is nearly hidden by very dense vegetation (Figure 3.84-3). A swampy area is on the dump near the caved portal, but there is no flowing water. The two-lobed dump is 70 feet long, 30 feet wide, and 15 feet thick (Figures 3.84-4 and 3.84-5). A new building, unrelated to the mining activity, is on the ridge west of the adit. The disturbed area covers less than 0.5 acre.

3.84.4.2 Sample Locations

3.84.4.2.1 Solid Samples

No dump samples were collected.

3.84.4.2.2 Water Samples

No water samples were collected.
3.84.5 Structures
There are no mining-related structures at this site.

3.84.6 Safety
There are no safety hazards associated with this property.
Figure 3.84-1. Location of the Dewey Occurrence, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.84-2. Sketch of the Dewey Occurrence site.
Figure 3.84-3. Caved adit at the Dewey Occurrence, looking northeast (Roll 99E20, frame #17).

Figure 3.84-4. Looking southwest across the waste dump at the Dewey adit (Roll 99E20, frame #18).
Figure 3.84-5. Looking north-northeast at the two lobes of the waste dump at the Dewey Occurrence. The new building on the skyline is unrelated to the mining activity (Roll 99E20, frame #20).
3.85 ST. LOUIS MINE (Site No. EC-147)

Note: In the field, the St. Louis millsite was given a site number of E8189902.

3.85.1 Site Location and Access (Figure 2.1-1)

The St. Louis Mine is in the SE¼ of the SW¼ of section 23 (unsurveyed; Protraction Block 50 [PB 50]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.85-1). Access from Orogrande is south via FS Road 233 approximately 14½ miles. The mine is about 1 mile north of Jumbo Camp at the end of a spur road that turns south off Road 233. The mill is 500 feet east of the road to Jumbo Camp and on the east side of the broad valley cut by the headwaters of Jumbo Creek. The mine is on private property about 0.3 mile from Road 233, and the mill is on property administered by the Forest Service.

3.85.2 Geologic Features (Figure 2.2-1)

This mine is in an area dominated by Middle Proterozoic calc-silicate gneiss and schist of the Buffalo Hump roof pendant near the contact with Cretaceous granitic rocks of the Idaho batholith (Lund and Esparza, 1990). The workings explored a gold-bearing quartz vein in mixed granitic and metasedimentary rock. Sulfide minerals in the vein included galena, pyrite, chalcopyrite, and sphalerite (Jellum, 1909).

3.85.3 Site History

In the early 1900s, the principal owner of the St. Louis Mine was Galen M. Stone of Boston, Massachusetts. The mine had a 160-foot shaft and 140 feet of drifts (Jellum, 1909). In the early 1920s, the mine had an adit connecting to the shaft (Thomson and Ballard, 1924). By the early 1930s, the property was owned by Galen Stone’s estate. The workings included a 120-foot crosscut and a 95-foot drift along a strong vein (Shenon and Reed, 1934).

In 1938, lessees at the St. Louis Mine produced several thousand tons of gold ore that was treated at the Clearwater Concentrating Company’s custom mill at the mouth of Crooked River. In 1939, a lessee constructed a new 25-tpd flotation plant that operated a short time during the last quarter of the year. The mine and mill operated in 1940 and 1941.

3.85.4 Environmental Conditions

3.85.4.1 Site Features

The St. Louis Mine was visited by Ted Erdman on August 18, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:30:53-1:40:24). Documenting photographs are Roll 99E20, frames 21-26, and Roll 99E21, frames 1-3.
This property has an open adit, an open shaft, a collapsed mill, and a tailings area (Figure 3.85-2). The adit, approximately 120 feet long, appears fairly stable and has only a minor amount of rock debris on the floor (Figures 3.85-3 and 3.85-4). A small stream from the adit, flowing at 1-2 gallons per minute, forms a pool on the dump before flowing off to the south (Figure 3.85-5). The dump is somewhat irregular, with a main upper part that is flat (Figure 3.85-5) and a lower part that slopes (Figure 3.85-6). Overall, the dump measures about 100 feet long, 75 feet wide, and 15 feet thick. Old boards, mine rails, and other scrap metal are scattered over the dump, and a small concrete foundation is just south of the portal.

The shaft is about 100 feet above and is connected with the adit (Figure 3.85-7). Rotten timbers line the shaft. The lack of a waste dump indicates the material was removed through the adit below.

The mill site has a large, completely collapsed mill building (Figure 3.85-8) and a substantial area of tailings (Figure 3.85-9). The collapsed mill is scattered for approximately 100 feet down the hill. The tailings cover an area 300 feet long, 300 feet wide, and 5 feet thick. A stream crosses the tailings area and has deposited material downstream for an unknown distance.

The total disturbed area covers approximately 2-3 acres.

3.85.4.2 Sample Locations

3.85.4.2.1 Solid Samples

Sample E8189903 was taken from the large tailings area west of the mill building.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E8189903</td>
<td>St. Louis Mine, mill tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.85.4.2.2 Water Samples

Sample E8189901 was taken from the water discharging from the St. Louis adit. Samples E8189904 and E8189905 were taken upstream and downstream, respectively, from the stream that crosses the tailings area.
### 3.85.4.2.3 Analytical Results

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

Compared to expected background (Tables 1.5-3, 1.5-4, and 1.5-5) and environmental (Table 1.5-6) values, tailings sample E8189903 has elevated levels of cadmium, copper, zinc, and lead in the element screen. In the TCLP for metals test, lead is leaching from the sample.

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

Adit water sample E8189901 exceeds the Aquatic Life Chronic standards for cadmium, equals or exceeds both Aquatic Life standards for copper, and is within the range of the Aquatic Life Chronic standard for zinc in the dissolved metals screen. Lead exceeds all standards in the EPA 200.8 test. Copper equals or exceeds both Aquatic Life standards in the total recoverable metals screen.

Water sample E8189904, taken upstream from the mill tailings, is within the range of the Secondary MCL for aluminum in the dissolved metals screen. No standards are exceeded in the total recoverable metals screen.

Water sample E8189905, taken downstream from the mill tailings, equals the Aquatic Life Chronic standard and is within the range of the Secondary MCL for aluminum in the dissolved metals screen. No standards are exceeded in the total recoverable metals screen.

### 3.85.5 Structures

There is a small, completely collapsed shed just west of the shaft. The mill building is totally collapsed.
3.85.6 Safety

The open shaft, possibly 100 feet deep, has no warning signs or barriers around the collar. The open adit can easily be entered.
Figure 3.85-1. Location of the St. Louis Mine, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.85-2. Sketch of the St. Louis Mine.
Figure 3.85-3. Open adit at the St. Louis Mine, looking east (Roll 99E20, frame #21).

Figure 3.85-4. View inside the open adit at the St. Louis Mine. The rock appears relatively competent (Roll 99E20, frame #22).
Figure 3.85-5. Looking west across the upper, flat part of the waste dump for the adit at the St. Louis Mine. Water from the adit pools on the dump, supporting the grasses at the lower right (Roll 99E20, frame #23).

Figure 3.85-6. Lower, sloping part of the dump at the St. Louis adit, looking west. Scrap metal, mine rails, and old boards are scattered on the dump (Roll 99E20, frame #25).
Figure 3.85-7. View down into the St. Louis shaft. The shaft is open and may be 100 feet deep (Roll 99E20, frame #26).

Figure 3.85-8. Collapsed mill building at the St. Louis Mine, looking uphill to the east (Roll 99E21, frame #1).
Figure 3.85-9. Light-colored mill tailings cut by Jumbo Creek. The view is to the southwest from the mill (Roll 99E21, frame #3).
3.86 ALHAMBRA MINE (Site No. EC-136)

3.86.1 Site Location and Access (Figure 2.1-1)

The Alhambra Mine is in the NE¼ of the SW¼ of the NW¼ of section 24 (unsurveyed), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.86-1). Access from Orogrande is via FS Road 233 south approximately 14 miles to FS Trail 235, which is approximately ½ mile east of the Concord airstrip. This trail leads over Mineral Hill toward Bear Lake. The adit is ¼ mile from the trail head and just west of the trail as it starts to descend the very steep slope above Bear Lake. The site is on Forest Service land within the Gospel Hump Wilderness.

3.86.2 Geologic Features (Figure 2.2-1)

The adit explored a large quartz vein along a shear zone in biotite granodiorite of the Idaho batholith.

3.86.3 Site History

In the early 1930s, the Alhambra was owned by W. D. Vincent of Spokane, Washington, William Nichols, Frank Culbertson, and others (Shenon and Reed, 1934).

3.86.4 Environmental Conditions

3.86.4.1 Site Features

The Alhambra Mine was visited by Ted Erdman on August 18, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:40:28-1:43:11). Documenting photographs are Roll 99E21, frames 4-6.

The property has one open adit about 20 feet long (Figures 3.86-2 and 3.86-3). The small amount of excavated material is scattered down the steep slope (Figure 3.86-4). The disturbed area is minimal.

3.86.4.2 Sample Locations

3.86.4.2.1 Solid Samples

No solid samples were collected.

3.86.4.2.2 Water Samples

No water samples were collected.

3.86.5 Structures

There are no structures at this site.
3.86.6 Safety

Although the adit is open, it is only 20 feet in length.
Figure 3.86-1. Location of the Alhambra Mine, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.86-2. Open adit at the Alhambra Mine, looking south. The thick, iron-stained quartz vein follows a shear zone in the granodiorite (Roll 99E21, frame #4).

Figure 3.86-3. View inside the short adit at the Alhambra Mine. The adit is no more than 20 feet in length (Roll 99E21, frame #5).
Figure 3.86-4. Minor amount of excavated material from the short adit at the Alhambra Mine, looking east (Roll 99E21, frame #6).
3.87 ROB ROY MINE (Site No. EC-121)
Alternate name—Dice Mine.

Note: The Rob Roy and the Dice were apparently adjacent claims, each with about the same amount of workings. It is not certain which of these claims is the one described here.

3.87.1 Site Location and Access (Figure 2.1-1)

This mine is in the SE¼ of the NE¼ of the SW¼ of section 35 (unsurveyed; Protraction Block 44 [PB 44]), T. 27 N., R. 6 E., on the North Pole 7.5-minute quadrangle (Figure 3.87-1). Access from Orogrande is via FS Road 233 approximately 11 miles south to Hump Lake. From Hump Lake, FS Trail 299 goes about 1½ miles north to Crystal Lake. The adit is on Forest Service land north of and 250 feet in elevation above Crystal Lake.

3.87.2 Geologic Features (Figure 2.2-1)

The mine is in the Middle Proterozoic calc-silicate gneiss and schist unit that forms part of the Buffalo Hump roof pendant. The adit is near a major north-northeast-trending fault (Lund and Esparza, 1990). The adit explored a quartz vein hosted by the metasedimentary rocks.

3.87.3 Site History

In the early 1900s, the Rob Roy and Dice claims were owned by E. M. Griffith of Grangeville, Frank Peck of Elk City, and L. C. Staley of Pullman. The Rob Roy had a 500-foot tunnel, and the Dice claim had a 450-foot tunnel (Jellum, 1909).

3.87.4 Environmental Conditions

3.87.4.1 Site Features

The site was visited by Ted Erdman on August 19, 1999. A video segment describing the property, which refers to the site as the Rob Roy/Dice Mine, is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:43:15-1:47:02). Documenting photographs are Roll 99E21, frames 7-9.

This site has one collapsed adit with a minor seep and a small waste dump (Figure 3.87-2). A small trough on the slope marks the adit location (Figure 3.87-3). The waste dump is about 40 feet long, 20 feet wide, and 10 feet thick (Figures 3.87-4 and 3.87-5). Minor scrap metal includes car body parts and an engine, miscellaneous pipe fittings, and metal barrels. The disturbed area is minimal.
3.87.4.2 Sample Locations

3.87.4.2.1 Solid Samples
   No solid samples were collected.

3.87.4.2.2 Water Samples
   The seep discharging from the adit was too small to sample.

3.87.5 Structures
   There are no structures at this site.

3.87.6 Safety
   There are no safety concerns at this site.
Figure 3.87-1. Location of the Rob Roy Mine, Idaho County, Idaho (U.S. Geological Survey North Pole 7.5-minute topographic map).
Figure 3.87-2. Sketch of the Rob Roy Mine.
Figure 3.87-3. Caved adit at the Rob Roy Mine, looking north (Roll 99E21, frame #7).
Figure 3.87-4. Looking up at the face of the small waste dump for the Rob Roy adit. View is to the north from Trail 299 (Roll 99E21, frame #9).

Figure 3.87-5. Looking west at the veneer of waste rock from the Rob Roy adit on the steep slope. An old car body is on the lip of the dump at the upper right (Roll 99E21, frame #8).

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3.88 WISEBOY MINE (Site No. EC-616)
Alternate name—Wise Boy.

3.88.1 Site Location and Access (Figure 2.1-1)

The Wiseboy Mine is in the SE¼ of the NE¼ of the NW¼ of section 35 (unsurveyed; Protraction Block 44 [PB 44]), T. 27 N., R. 6 E., on the North Pole 7.5-minute quadrangle (Figure 3.88-1). Access from Orogrande is via FS Road 233 approximately 11 miles south to Hump Lake. From this lake, FS Trail 299 heads north. The Wiseboy is about 2½ miles from the start of the trail and one mile past Crystal Lake. The adit is 1,000 feet east of and 450 feet in elevation above the trail. The topographic map places this adit on a patented claim.

3.88.2 Geologic Features (Figure 2.2-1)

The Wiseboy Mine explored a quartz vein in biotite granodiorite that contains abundant xenoliths of schist. Shenon and Reed (1934, p. 71) stated: “the strike of the foliation of the inclusions ranges between N. 10° W. and N. 60° W., and the dips between 65° W. and 65° E. The [tunnel] ... follows a fault trending N. 10° W. and dipping 60° E.”

3.88.3 Site History

In the early 1900s, the Wiseboy Mine was owned A. C. Moore, W. E. Kelly, and other, unnamed people from Grangeville. The upper tunnel on the property exposed some of the richest ore in the district. The 600-foot-long lower tunnel missed the vein. A mill at the property never operated due to litigation. It was finally sold at a sheriff’s sale (Jellum, 1909). By the early 1930s, the mine was owned by the E. N. Oliver estate of Grangeville, Idaho. The mine operated between 1900 and 1902, but showed little production (Shenon and Reed, 1934).

3.88.4 Environmental Conditions

3.88.4.1 Site Features

The property was visited by Ted Erdman on August 19, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:47:06-1:50:36). Documenting photographs are Roll 99E21, frames 10-12.

The adit at this site is open and dry (Figure 3.88-2 and 3.88-3). It may be connected underground with the North Star Mine, which is to the west and several hundred feet in elevation downhill. Several rotten timbers and some old tools are just inside the adit. The small waste dump measures 30 feet long, 10 feet wide, and 4 feet thick (Figure 3.88-4). The disturbed area covers less than 0.25 acre.
3.88.4.2 Sample Locations

3.88.4.2.1 Solid Samples
    No solid samples were taken at this mine.

3.88.4.2.2 Water Samples
    No water samples were collected.

3.88.5 Structures
    There are no structures at this site.

3.88.6 Safety

The Wiseboy adit is open and has some collapsed debris on the floor, but the site is very remote and probably has few visitors. The adit may be connected to the North Star Mine by a shaft, which, if open, would pose a significant hazard.
Figure 3.88-1. Location of the Wiseboy Mine, Idaho County, Idaho (U.S. Geological Survey North Pole 7.5-minute topographic map).
Figure 3.88-2. Open adit at the Wiseboy Mine, looking east (Roll 99E21, frame #10).

Figure 3.88-3. View inside the Wiseboy adit. Several old, rotten timbers and a few tools are inside the portal (Roll 99E21, frame #11).
Figure 3.88-4. Small waste dump for the adit at the Wiseboy Mine, looking north (Roll 99E21, frame #12).
3.89 NORTH STAR MINE AND MILL (Site No. EC-615)

Note: In the field, the millsite was given a site number of E8199902.

3.89.1 Site Location and Access (Figure 2.1-1)

The North Star Mine is in the SE¼ of the NE¼ of the NW¼ of section 35 (unsurveyed; Protraction Block 44 [PB 44]), T. 27 N., R. 6 E., on the North Pole 7.5-minute quadrangle (Figure 3.89-1). Access from Orogrande is via FS Road 233 approximately 11 miles south to Hump Lake. From the lake, FS Trail 299 heads north. The mine is 2½ miles from the head of the trail and one mile past Crystal Lake. The North Star adit is 700 feet east of and 300 feet in elevation above the trail, and it is just below the Wiseboy adit. The topographic map shows this adit on Forest Service land near the patented claim containing the Wiseboy adit. The millsite is along the main trail west of the mine and is marked “Ruins” on the topographic map. It appears to be just within the Gospel Hump Wilderness.

3.89.2 Geologic Features (Figure 2.2-1)

The North Star Mine is in Cretaceous granitic rocks of the Idaho batholith (Lund and Esparza, 1990). The adit developed quartz veins in mixed metasedimentary rock and biotite granodiorite.

3.89.3 Site History

There is no specific information on the history of the North Star Mine. However, the description of the adit (see below) suggests that it is the lower Wiseboy adit (see section 3.88.3). That would mean the millsite is the remains of the mill built for the Wiseboy Mine.

3.89.4 Environmental Conditions

3.89.4.1 Site Features

The property was visited by Ted Erdman on August 19, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 5, index 1:50:40-1:57:52). Documenting photographs are Roll 99E21, frames 13-18.

The mine has one open adit with a large waste dump and a collapsed mill down the slope west of the adit (Figure 3.89-2). The adit has a few rotten timbers near the portal, but otherwise is unsupported (Figure 3.89-3). A very small adit seep forms a lush, swampy area on the dump (Figure 3.89-4). The water percolates through the dump and disappears. Mine rails extend out of the adit and across the dump, which is 60 feet long, 30 feet wide, and 15 feet thick (Figure 3.89-5 and 3.89-6). A minor amount scrap metal is also on the dump. The disturbed area covers about 0.25 acre.
The totally collapsed mill building (Figure 3.89-7) has parts from a ten-stamp mill, plus a large amount of scrap metal and machinery (Figure 3.89-8). A large flat area measuring about 75 feet in diameter is enclosed by a 4-foot-high rock retaining wall (Figure 3.89-8). No tailings were found in the vicinity of the mill. Remnants of a tramway extend from the North Star Mine westward to the millsite, which encompasses an area of about 1 acre.

3.89.4.2 Sample Locations

3.89.4.2.1 Solid Samples
No solid samples were collected.

3.89.4.2.2 Water Samples

Water sample E8199901 was taken from the seep discharging from the North Star Adit.

<table>
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<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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<td>44</td>
<td>7.4</td>
<td>&lt;1</td>
<td>Yes</td>
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</tbody>
</table>

3.89.4.2.3 Analytical Results

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

No water quality standards are exceeded in any of the analytical tests.

3.89.5 Structures

The only structure at this site is the totally collapsed mill building.

3.89.6 Safety

The North Star Mine adit is open and can be easily entered, although the area is very remote and probably has few visitors.
Figure 3.89-1. Location of the North Star Mine, Idaho County, Idaho (U.S. Geological Survey North Pole 7.5-minute topographic map).
Figure 3.89-2. Sketch of the North Star Mine.
Figure 3.89-3. View into the open adit at the North Star Mine, looking east (Roll 99E21, frame #14).

Figure 3.89-4. Looking east toward the North Star adit. The lush green vegetation is growing where the adit water pools on the waste dump (Roll 99E21, frame #13).
Figure 3.89-5. Looking west from the portal of the North Star adit. Rails from the adit extend across and are suspended over the face of the dump (center left of the picture; Roll 99E21, frame #15).

Figure 3.89-6. Profile view of the waste dump at the North Star adit. The suspended rails are in the upper right part of the picture (Roll 99E21, frame #16).
Figure 3.89-7. Sketch of the North Star millsite.
Figure 3.89-8. Collapsed debris of the North Star mill, looking northwest. Parts of a ten-stamp mill and other scrap metal are visible (Roll 99E21, frame #17).

Figure 3.89-9. Rock retaining wall near the collapsed North Star mill, looking north (Roll 99E21, frame #18).
3.90 MOTHER LODE MINE (Site No. EC-132)
Alternative names—Concord Mine; Concorde.

3.90.1 Site Location and Access (Figure 2.1-1)

The Mother Lode Mine is in the SE¼ of the NE¼ of the SW¼ of section 14 (unsurveyed; Protraction Block 45 [PB 45]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.90-1). Access from Orogrande is south via FS Road 233 approximately 14 miles to the townsite of Concord at the Concord airstrip. The mine is 300 feet west of the northeast end of the airstrip and is on patented claims.

3.90.2 Geologic Features (Figure 2.2-1)

The mine is in Middle Proterozoic gneiss and schist and is on a major north-south-trending fault that transects the district (Lund and Esparza, 1990). The vein dipped steeply to the west and had a strike of N. 18° E. at the mine (Shenon and Reed, 1934).

3.90.3 Site History

The Mother Lode Mine was discovered in the fall of 1898 by P. J. Turner, who sold it that winter for $100,000 dollars to Galen L. Stone (Shenon and Reed, 1934). Within the next few years, eighteen claims at the mine were patented (Jellum, 1909). Thomson and Ballard (1924) noted that the mine was called the “Concord,” after the name of the company owning it. This may have been the Concord Mining Company, which was incorporated in 1903 and forfeited its corporate charter in 1915. In the early 1920s, the mine had a four-compartment shaft that extended to the bottom of the mine (to a estimated depth of between 277 and 295 feet), a single-compartment shaft extending to the first level of the mine (the vertical depth was 77 feet, but mine maps show this was an inclined shaft), and 1,620 feet of drifts and crosscuts (Thomson and Ballard, 1924). The mine was inaccessible in the early 1930s and was owned by Galen Stone’s estate (Shenon and Reed, 1934).

In 1987 and 1988, Pegasus Gold, Inc., drilled 5,000 feet to explore for gold in the Buffalo Hump district in an area that included the Mother Lode Mine.

3.90.4 Environmental Conditions

3.90.4.1 Site Features

This property was visited by Ted Erdman on August 18, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:00:44-0:08:01). Documenting photographs are Roll 99E21, frames 19-23.
The mine has two shafts and associated waste dumps (Figure 3.90-2). The largest shaft is the southernmost and is covered with boards (Figure 3.90-3). The extent to which this shaft is open is unknown. An air pipe extends above the shaft collar. The area around the shaft contains several barrels and abundant scrap metal. The dump has been spread out and reworked. It covers an area of approximately 150 feet by 150 feet and is 20 feet thick (Figure 3.90-4 and 3.90-5). The smaller shaft is approximately 200 feet northeast of the larger shaft and is collapsed, forming a pit 20 feet in diameter and 20 feet deep (Figure 3.90-6). A cable attached to metal poles, one of which has a warning notice, surrounds the shaft collar, but most of the cable has fallen down (Figure 3.90-7). The dump is about 10 feet in diameter and 10 feet thick. There is abundant machinery and scrap metal scattered between the two shafts. The total disturbed area covers 2-3 acres.

3.90.4.2 Sample Locations

3.90.4.2.1 Solid Samples
   No solid samples were collected.

3.90.4.2.2 Water Samples
   No water samples were collected.

3.90.5 Structures
   There are no structures at this site.

3.90.6 Safety

The northern shaft is 20 feet deep with steep sides and no surrounding barrier. The larger, southern shaft is covered with wood and appears fairly secure.
Figure 3.90-1. Location of the Mother Lode Mine, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.90-2. Sketch of the Mother Lode Mine.
Figure 3.90-3. Southern shaft at the Mother Lode Mine, looking south. The shaft is covered with plywood and boards, and an air pipe extends about 4-5 feet above the cover. Logs, metal barrels, and other scrap litters the site (Roll 99E21, frame #19).

Figure 3.90-4. Flat area around the southern shaft at the Mother Lode Mine. Much of this area may contain waste rock that has been spread out (Roll 99E21, frame #21).
Figure 3.90-5. Looking northwest at the bulldozed, spread-out waste rock from the southern shaft at the Mother Lode Mine. The air pipe from the shaft is above the dump at the right (Roll 99E21, frame #20).

Figure 3.90-6. Pit of the caved northern shaft at the Mother Lode Mine (Roll 99E21, frame #23).
Figure 3.90-7. Looking southwest across the northern shaft at the Mother Lode Mine. The cable attached to the metal pole surrounds the shaft, but most of it is on the ground (Roll 99E21, frame #22).
3.91 AJAX MINE (Site No. E8209901)

3.91.1 Site Location and Access (Figure 2.1-1)

The Ajax Mine is in the SE¼ of the NW¼ of the SW¼ of section 14 (unsurveyed; Protraction Block 45 [PB 45]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.91-1). Access from Orogrande is via Road 233 south approximately 14 miles to the townsite of Concord at the Concord Airstrip. The mine is approximately 1,500 feet west of the Concord Airstrip and is on patented claims.

3.91.2 Geologic Features (Figure 2.2-1)

The Ajax Mine is in the Middle Proterozoic calc-silicate gneiss and schist unit that forms part of the Buffalo Hump roof pendant. The mine is between two prominent north-northeast-striking faults (Lund and Esparza, 1990). The Ajax explored a quartz vein hosted by mixed metasedimentary and granitic rock.

3.91.3 Site History

No information is available on the history of this mine.

3.91.4 Environmental Conditions

3.91.4.1 Site Features

The Ajax Mine was visited by Ted Erdman on August 20, 1999. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:08:06-0:11:23). Documenting photographs are Roll 99E21, frames 24-26.

The site has a collapsed shaft and a large waste dump (Figure 3.91-2). The pit of the caved shaft is 20 feet in diameter and 20 feet deep (Figure 3.91-3). The dump is 175 feet long, 15 feet wide, and 15 feet thick, and has two lobes (Figure 3.91-4 and 3.91-5). The main, larger lobe extends northwest from the shaft, and the other lobe branches to the north from the main lobe. A grave site is near the east edge of the waste dump, and a large pond is just south of the shaft. The disturbed area covers about 0.5 acre.

3.91.4.2 Sample Locations

3.91.4.2.1 Solid Samples

No solid samples were collected.

3.91.4.2.2 Water Samples

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

3.91.6 Safety

   The collapsed shaft is 20 feet deep and has moderately steep walls.
Figure 3.91-1. Location of the Ajax Mine, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.91-2. Sketch of the Ajax Mine.
Figure 3.91-3. Looking east at the pit of the caved shaft at the Ajax Mine. Although the photograph was taken in mid-August, a small patch of snow covers the bottom of the pit (Roll 99E21, frame #24).

Figure 3.91-4. Looking northwest across the main lobe of the waste dump at the Ajax shaft (Roll 99E21, frame #25).
Figure 3.91-5. Profile view of the waste dump, looking east (Roll 99E21, frame #26).
3.92 SPOKANE MINE (Site No. EC-144)

3.92.1 Site Location and Access (Figure 2.1-1)

The Spokane Mine is in the NW¼ of the NE¼ of the NW¼ of section 25 (unsurveyed; Protraction Block 51 [PB 51]), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.92-1). Access from Orogrande is via FS Road 233 approximately 14 miles south to FS Trail 235. The trail is approximately ½ mile east of the Concord Airstrip. Trail 235 goes about ½ mile to Mineral Hill Ridge. From there, a spur trail continues south along the ridge approximately ½ mile. This trail ends in a saddle above Ruby Lake. From the saddle, the mine is about ¾ mile southeast and just south of Ruby Lake. The adits are approximately 600 feet south of the lake and are within the Gospel Hump Wilderness.

3.92.2 Geologic Features (Figure 2.2-1)

This mine explored a quartz vein in biotite granodiorite of the Idaho batholith. The vein is up to 30 feet wide, trends slightly east of north, and dips 60°-65° SE. (Shenon and Reed, 1934).

3.92.3 Site History

In the early 1930s, the mine was owned by A. F. Schultz and Pete Klinkhammer. It was developed by three levels (Shenon and Reed, 1934). Esparza and others (1984) reported one adit that was at least 240 feet long and five prospect pits or possible caved shafts.

3.92.4 Environmental Conditions

3.92.4.1 Site Features

The Spokane Mine was visited by Ted Erdman on August 21, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:11:28-0:16:49). Documenting photographs are Roll 99E22, frames 1-4.

This mine has two very minor collapsed adits (Figure 3.92-2). As noted above, Shenon and Reed (1934) stated the property was developed by three levels. No evidence of a third tunnel was found, and the two that are described do not appear to have enough waste rock to have had multiple underground levels. It is possible that neither of the workings described here are those noted by Shenon and Reed (1934), although Adit 1 is probably the one reported by Esparza and others (1984).

Adit 1 is by far the largest of the two adits, with a large scarp marking its location (Figure 3.92-3). The dump is 20 feet long, 30 feet wide, and 10 feet thick, and densely overgrown (Figures 3.92-4 and 3.92-5). An old wheelbarrow is on the dump near a large rock. Caved Adit 2 is 20 feet east of Adit 1 and is very insignificant. A shallow trough and small waste dump mark its location (Figures 3.92-6). The disturbed area at the site is minimal.
3.92.4.2 Sample Locations

3.92.4.2.1 Solid Samples
No solid samples were collected.

3.92.4.2.2 Water Samples
No water samples were collected.

3.92.5 Structures
There are no structures at this site.

3.92.6 Safety
There are no safety hazards at this site.
Figure 3.92-1. Location of the Spokane Mine, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.92-2. Sketch of the Spokane Mine.
Figure 3.92-3. Caved Adit 1 at the Spokane Mine, looking south (Roll 99E22, frame #1).
Figure 3.92-4. Overgrown waste dump of Adit 1 at the Spokane Mine, looking west. An old wheelbarrow is next to the large rock (Roll 99E22, frame #2).

Figure 3.92-5. Face of the waste dump for Adit 1 at the Spokane Mine, looking east (Roll 99E22, frame #4).
Figure 3.92-6. Caved Adit 2 at the Spokane Mine, looking south (Roll 99E22, frame #3).
3.93 TIGER PROSPECT (Site No. EC-142)

3.93.1 Site Location and Access (Figure 2.1-1)

The Tiger Prospect is in the NW¼ of the NE¼ of the SW¼ of section 24 (unsurveyed), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.93-1). Access from Orogrande is via FS Road 233 approximately 14 miles south to FS Trail 235 (approximately ½ mile east of the Concord Airstrip). This trail goes ½ mile to Mineral Hill Ridge, then a spur trail continues south along the ridge for approximately ½ mile. From the end of the trail, travel southeast to just north of Ruby Lake. The adit is approximately 1,000 feet north of and 600 feet in elevation above the lake. The site is within the Gospel Hump Wilderness.

3.93.2 Geologic Features (Figure 2.2-1)

The prospect explored a quartz vein in biotite granodiorite. The vein was reported to be about 10 feet wide (Shenon and Reed, 1934).

3.93.3 Site History

The Tiger claims were located by L. J. Anderson in 1903 (Esparza and others, 1984). In the early 1930s, the Tiger Prospect was owned by Lou Anderson (Shenon and Reed, 1934).

3.93.4 Environmental Conditions

3.93.4.1 Site Features

The Tiger Prospect was visited by Ted Erdman on August 21, 1999. A video segment describing the mine is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:16:55-0:21:12). Documenting photographs are Roll 99E22, frames 5-7.

The site has one collapsed adit (Figure 3.93-2). The waste dump measures 35 feet long, 25 feet wide, and 10 feet thick, indicating a relatively short adit (Figure 3.93-3). A pile of mine rails is on the dump in front of the caved adit (Figure 3.93-4). The disturbed area is minimal.

3.93.4.2 Sample Locations

3.93.4.2.1 Solid Samples
No solid samples were collected.

3.93.4.2.2 Water Samples
No water samples were collected.

3.93.5 Structures
There are no structures at this site.
3.93.6 Safety

There are no safety concerns at this site.
Figure 3.93-1. Location of the Tiger Prospect, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.93-2. Small scarp and loose rock rubble covering the caved adit at the Tiger Prospect, looking north (Roll 99E22, frame #5).

Figure 3.93-3. Looking east at the profile of the waste dump for the adit at the Tiger Prospect (Roll 99E22, frame #7).
Figure 3.93-4. Stack of mine rails in front of the adit at the Tiger Prospect, looking south. Ruby Lake is in the distance below the mine (Roll 99E22, frame #6).
3.94 ALTOONA CLAIM (Site No. EC-143)

3.94.1 Site Location and Access (Figure 2.1-1)

The Altoona Claim is in the NW¼ of the SW¼ of the SW¼ of section 24 (unsurveyed), T. 26 N., R. 6 E., on the Buffalo Hump 7.5-minute quadrangle (Figure 3.94-1). Access from Orogrande is south via FS Road 233 approximately 14 miles to FS Trail 235 (approximately ½ mile east of the Concord Airstrip). This trail goes ½ mile to Mineral Hill Ridge. From the west side of the ridge, a spur trail continues south along the ridge for approximately ½ mile. From the end of the trail, travel southeast ¼ mile to the property. The adit is approximately 1,000 feet west of and 600 feet in elevation above Ruby Lake. The site is within the Gospel Hump Wilderness.

3.94.2 Geologic Features (Figure 2.2-1)

This property is in biotite granodiorite of the Idaho batholith. The quartz vein is 1-2 feet wide, strikes northeast, and dips 65°-75° SE. A 4-foot-wide diorite dike cuts both the vein and the biotite granodiorite (Esparza and others, 1984).

3.94.3 Site History

No information is available on the history of the Altoona Claim.

3.94.4 Environmental Conditions

3.94.4.1 Site Features

The Altoona Claim was visited by Ted Erdman on August 22, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:21:18-0:25:21). Documenting photographs are Roll 99E22, frames 8-13.

This site has one open adit and two shallow shafts (Figure 3.94-2). The adit is reported to be 90 feet long (Lund and Esparza, 1990). The adit was driven S. 70° W. into the slope and has several log cross-braces at the portal (Figures 3.94-3 and 3.94-4). The dump is 45 feet long, 25 feet wide, and 3 feet thick. It consists mostly of coarse rock fragments (Figure 3.94-5). The two shafts are west of the adit. Shaft 1, the northern of the two, is 15 feet deep (Figure 3.94-6), and Shaft 2 is 10 feet deep (Figure 3.94-7). A minor amount of scrap metal is scattered around the site. The disturbed area covers less than 0.25 acre.

3.94.4.2 Sample Locations

3.94.4.2.1 Solid Samples

No solid samples were collected.

3.94.4.2.2 Water Samples

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

3.94.6 Safety

   The adit is open and is reported to be 90 feet long. The pits of the two shafts have steep walls
   and are deep enough to be traps.
Figure 3.94-1. Location of the Altoona Mine, Idaho County, Idaho (U.S. Geological Survey Buffalo Hump 7.5-minute topographic map).
Figure 3.94-2. Sketch of the Altoona Mine.
Figure 3.94-3. Open adit at the Altoona Mine, looking southwest. An old metal tank and other scrap metal are in the foreground (Roll 99E22, frame #8).

Figure 3.94-4. Close-up of the adit at the Altoona Mine. Several log cross-braces support the walls at the portal (Roll 99E22, frame #9).
Figure 3.94-5. Coarse rock rubble of the thin waste dump of the adit at the Altoona Mine, looking north (Roll 99E22, frame #11).
Figure 3.94-6. Shaft 1 at the Altoona Mine. This shaft, which is above and northwest of the adit, is about 15 feet deep (Roll 99E22, frame #12).
Figure 3.94-7. Shaft 2 at the Altoona Mine. This shaft, which is above and southwest of the adit, is about 10 feet deep (Roll 99E22, frame #13).
3.95 BROWN BEAR MINE (Site No. EC-25)  
Alternate name—Red River Mines, Inc.

3.95.1 Site Location and Access (Figure 2.1-1)

The Brown Bear Mine is in the SE¼ of the SW¼ of the SE¼ of section 33, T. 29 N., R. 8 E., on the Elk City 7.5-minute quadrangle (Figure 3.95-1). The adit is 0.6 mile south of the junction of State Highway 14 with County Road 222 (the Red River Road) and is on the west side of Red River. The mine is on BLM land just north of the National Forest boundary.

3.95.2 Geologic Features (Figure 2.2-1)

This mine is in the Middle Proterozoic augen gneiss of Red River (Lewis and others, 1990, 1993). The quartz vein in the upper tunnel on the west side of the river strikes N. 80° E. to N. 80° W. and dips 60° south. The hanging wall of the vein is augen gneiss, and the footwall is a porphyry dike. The vein is brecciated, with gouge on both walls (Shenon and Reed, 1934).

3.95.3 Site History

In the early 1930s, the mine was owned by Frank Shuemaker and the E. C. Skoglar estate. The property had four adits, two on each side of the river (Shenon and Reed, 1934). Red River Mines, Inc., was incorporated in 1948 and took a lease on the Brown Bear later that year. At the time, two of the tunnels were 150 feet long and the other two were 338 feet long and 201 feet long. The company later dropped its option, citing unfavorable economic conditions. Red River Mines forfeited its corporate charter in 1973.

3.95.4 Environmental Conditions

3.95.4.1 Site Features

The Brown Bear Mine was visited by Ted Erdman on September 16, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:25:25-0:30:09). Documenting photographs are Roll 99E24, frames 1-4.

As noted above, this property was reported to have four adits. However, only one was found. The adit is collapsed and has a very minor seep that forms a stagnant pool on the waste dump (Figure 3.95-2). The pyrite-rich dump, which measures about 35 feet long, 15 feet wide, and 5 feet thick, extends to the Red River (Figure 3.95-3). The disturbed area covers less than 0.1 acre.

3.95.4.2 Sample Locations

3.95.4.2.1 Solid Samples

Sample E9169901 was taken from the Brown Bear dump.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E9169901</td>
<td>Brown Bear Mine Dump</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.95.4.2.2 Water Samples
No water sample was taken from the minor seep discharging from the adit.

3.95.4.2.3 Analytical Results
Compared to background (Tables 1.5-3, 1.5-4, and 1.5-5) and environmental (Table 1.5-6) values, waste dump sample E9169901 has elevated levels of arsenic, cadmium, copper, and lead in the element screen. No metals of concern are leaching from the sample in the TCLP for metals test.

3.95.5 Structures
There are no structures at this site.

3.95.6 Safety
There are no safety concerns associated with this site.
Figure 3.95-1. Location of the Brown Bear Mine, Idaho County, Idaho (U.S. Geological Survey Elk City 7.5-minute topographic map).
Figure 3.95-2. Stagnant pool of water (lower part of picture) near the caved adit at the Brown Bear Mine, looking east (Roll 99E24, frame #2).
Figure 3.95-3. Looking west across Red River at the waste dump for the Brown Bear adit (Roll 99E24, frame #4).
3.96 UNNAMED MINE (Site No. E9169902)

3.96.1 Site Location and Access (Figure 2.1-1)

This mine is in the SE¼ of the NW¼ of the NE¼ of section 33, T. 29 N., R. 8 E., on the Elk City 7.5-minute quadrangle (Figure 3.96-1). Access is via State Highway 14 approximately 0.4 mile northwest from the junction with County Road 222 (the Red River Road). The adit is on BLM land on the east side of the American River.

3.96.2 Geologic Features (Figure 2.2-1)

This mine is in the Middle Proterozoic augen gneiss of Red River (Lewis and others, 1990, 1993). The adit explored a quartz vein in the country rock.

3.96.3 Site History

No information is available on the history of this property.

3.96.4 Environmental Conditions

3.96.4.1 Site Features

This unnamed mine was visited by Ted Erdman on September 16, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:30:14-0:34:00). Documenting photographs are Roll 99E24, frames 5-7.

This site has one small, collapsed, overgrown adit (Figure 3.95-2). There is a minor seep discharging from the adit and forming a swampy area on the dump. The site is very brushy, and the dump is the primary evidence of an adit at this site. The dump is 40 feet long, 25 feet wide, and 20 feet thick; and it extends northwest to an area of extensive dredge tailings at the edge of the American River. The disturbed area covers less than 0.25 acre.

3.96.4.2 Sample Locations

3.96.4.2.1 Solid Samples

No solid samples were collected.

3.96.4.2.2 Water Samples

No water samples were collected.

3.96.5 Structures

There are no structures at this site.

3.96.6 Safety

There are no safety hazards related to this site.
Figure 3.96-1. Location of Unnamed Mine, Site No. E9169902, Idaho County, Idaho (U.S. Geological Survey Elk City 7.5-minute topographic map).
Figure 3.96-2. Caved, overgrown adit at Site No. E9169902. Old rotten mine timbers are in the brush at the lower part of the picture (Roll 99E24, frame #5).
3.97 UNNAMED MINE (Site No. EC-537)

3.97.1 Site Location and Access (Figure 2.1-1)

This site is in the NW¼ of the NW¼ of the NW¼ of section 25 (unsurveyed; Protraction Block 53 [PB 53]), T. 29 N., R. 7 E., on the Center Star Mountain 7.5-minute quadrangle (Figure 3.97-1). Access is via State Highway 14 to approximately 0.2 mile west of mile marker 42. The adit is on Forest Service land on the south side of the South Fork of the Clearwater River.

3.97.2 Geologic Features (Figure 2.2-1)

This mine is in the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence. It is on the fault that extends between the Center Star Mine and the South Fork Mine (Lewis and others, 1990, 1993). The adit explored a quartz vein in the country rock.

3.97.3 Site History

No information is available on the history of this property. However, it may be related to the South Fork Mine, which is to the northeast across the South Fork of the Clearwater River.

3.97.4 Environmental Conditions

3.97.4.1 Site Features

This property was visited by Ted Erdman on September 16, 1999. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:34:07-0:37:11). Documenting photographs are Roll 99E24, frames 8-10.

This unnamed mine has one small collapsed adit (Figure 3.97-2). The site is heavily timbered and brushy, making the adit difficult to find. The dump, which forms a large flat area, is 80 feet long, 30 feet wide, and 20 feet thick (Figures 3.97-3 and 3.9-4). There is an outhouse just north of the dump. The disturbed area covers less than 0.5 acre.

3.97.4.2 Sample Locations

3.97.4.2.1 Solid Samples

No solid samples were collected.

3.97.4.2.2 Water Samples

No water samples were collected.
3.97.5 Structures

The only structure at this site is a small outhouse.

3.97.6 Safety

There are no safety hazards related to this site.
Figure 3.97-1. Location of Unnamed Mine, Site No. EC-537, Idaho County, Idaho (U.S. Geological Survey Center Star Mountain 7.5-minute topographic map).
Figure 3.97-2. Sketch of Site No. EC-537.
Figure 3.97-3. Flat, open surface of the waste dump for the adit at Site No. EC-537, looking northwest (Roll 99E24, frame #9).

Figure 3.97-4. Face of the waste dump for the adit at Site No. EC-537, looking southeast (Roll 99E24, frame #10).
3.98 TUNGSTAR MINE (Site No. EC-502)

3.98.1 Site Location and Access (Figure 2.1-1)

The Tungstar Mine is in the NE¼ of the NW¼ of the NE¼ of section 36 (unsurveyed; Protraction Block 53 [PB 53]), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.98-1). Access is via State Highway 14 to FS Road 78536, which joins the highway 0.2 mile west of mile marker 33 near the site of Fall Creek. FS Road 78536 goes approximately ½ mile northwest. The adit is near the end of this road, either on Forest Service land adjacent to a patented claim or just on the claim.

3.98.2 Geologic Features (Figure 2.2-1)

This mine is near the contact between Late Cretaceous biotite granodiorite and the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence. North-south-striking and east-west-striking faults intersect near the mine (Lewis and others, 1990, 1993). The mine explored scheelite-bearing quartz veins in the country rock.

3.98.3 Site History

The Tungstar Mine produced tungsten in 1951.

3.98.4 Environmental Conditions

3.98.4.1 Site Features

This site was visited by Ted Erdman on September 17, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:37:16-0:42:11). Documenting photographs are Roll 99E24, frames 11-15.

The site has one small, collapsed adit and a large exploration cut (Figure 3.98-2). The cut, which exposes a large quartz vein, is on an old access road west of and above the adit. It measures about 100 feet long and 30 feet high (Figures 3.98-3 and 3.98-4). The adit is caved and has a collapsed wooden framework around the portal, as well as some pipe and minor scrap metal (Figure 3.98-5). The dump, consisting predominantly quartz vein material, is 40 feet long, 30 feet wide, and 15 feet thick (Figure 3.98-6). The disturbed area covers 1-2 acres.

3.98.4.2 Sample Locations

3.98.4.2.1 Solid Samples

No solid samples were collected.

3.98.4.2.2 Water Samples

No water samples were collected.
3.98.5 Structures
   No structures were found at this site.

3.98.6 Safety
   There are no safety hazards at this site.
Figure 3.98-1. Location of the Tungstar Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.98-2. Sketch of the Tungstar Mine.
Figure 3.98-3. Exploration cut at the Tungstar Mine, looking southwest (Roll 99E24, frame #12).

Figure 3.98-4. Exploration cut at the Tungstar Mine, looking north. Large fragments of the quartz vein are on the slope of the cut at the left (Roll 99E24, frame #11).
Figure 3.98-5. Collapsed timbers at the portal of the caved adit at the Tungstar Mine, looking northwest (Roll 99E24, frame #13).

Figure 3.98-6. Face of the waste dump for the adit at the Tungstar Mine, looking north. Quartz vein fragments comprise most of the material (Roll 99E24, frame #14).
3.99 SCHEELITE MINE (Site No. EC-506)
Alternate name—Sheetite Mine; Shealite Mine.

3.99.1 Site Location and Access (Figure 2.1-1)

The Scheelite Mine is in the NW¼ of the NE¼ of the NE¼ of section 36 (unsurveyed; Protraction Block 53 [PB 53]), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.99-1). Access is via State Highway 14 to FS Road 78536, which joins the highway 0.2 mile west of mile marker 33 near the site of Fall Creek. The first switchback on FS Road 78536 is approximately 600 feet west of the highway. The adit is just north of the switchback and is on a patented claim.

3.99.2 Geologic Features (Figure 2.2-1)

This mine is near the contact between Late Cretaceous biotite granodiorite and the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence. North-south-striking and east-west-striking faults intersect near the mine (Lewis and others, 1990, 1993). The mine explored scheelite-bearing quartz veins in the country rock.

3.99.3 Site History
No information is available on the history of the Scheelite Mine.

3.99.4 Environmental Conditions

3.99.4.1 Site Features

The Scheelite Mine was visited by Ted Erdman on September 17, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:42:16-0:45:19). Documenting photographs are Roll 99E24, frames 16-17.

This site has one open adit with a very small dump (Figure 3.99-2). Some rock material has sloughed in front of the adit, but a large opening, about 3-4 feet high and 4-5 feet wide, provides access into the dry adit (Figures 3.99-3 and 3.99-4). The dump is very small and may have been disrupted by road building. An estimate of the size of the dump is 30 feet long, 20 feet wide, and 10 feet thick. The total disturbed area is less than 0.1 acre.

3.99.4.2 Sample Locations

3.99.4.2.1 Solid Samples
No solid samples were collected.

3.99.4.2.2 Water Samples
No water samples were collected.
3.99.5 Structures
There are no structures on this site.

3.99.6 Safety

The Scheelite Mine is open and can be easily entered. The site is readily accessible from State Highway 14.
Figure 3.99-1. Location of the Scheelite Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.99-2. Sketch of the Scheelite Mine.
Figure 3.99-3. Looking west at the open adit at the Scheelite Mine (Roll 99E24, frame #16).

Figure 3.99-4. View into the open adit at the Scheelite Mine (Roll 99E24, frame #17).
3.100 SENTINEL MINE (Site No. EC-509)

3.100.1 Site Location and Access (Figure 2.1-1)

The Sentinel Mine is in the SW¼ of the SW¼ of the NW¼ of section 35 (unsurveyed; Protraction Block 52 [PB 52]), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.100-1). Access from Golden is via State Highway 14 southwest approximately ¾ mile. The mine is on Forest Service land on the north side of the South Fork of the Clearwater River. The lower adit is 30 feet north of the highway, and the upper adit is 400 feet northeast of the lower adit and 300 feet above the highway.

3.100.2 Geologic Features (Figure 2.2-1)

The Sentinel Mine is near the contact between the schist and quartzite unit and the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence. The mine is on the northeast-trending Golden shear zone (Lewis and others, 1990, 1993). The mine explored gold-bearing quartz veins in the country rock.

3.100.3 Site History

Sentinel Mines Corporation was incorporated in 1930. At that time, the property had a 200-foot tunnel. The following year, the property had four tunnels (30 feet, 55 feet, 140 feet, and 800 feet). Little work was done in the next few years, and by 1937, the company reported five tunnels at the mine (two were 15 feet long; the others were 25 feet, 60 feet, and 175 feet long). The company applied for patents on four of its claims in 1937. In 1938, the tunnels were said to be 63 feet, 100 feet, 105 feet, 271 feet, and 328 feet long; the total development was 765 feet.

An 8-tpd stamp mill with amalgamation plates was apparently brought to the property in 1942, but War Production Board Limitation Order L-208 closed all non-essential (gold) mines before the mill could be installed. A 1,200-foot tramway was installed at about the same time. Only assessment work was done after the war. The company apparently received patents on its four claims in late 1954 or early 1955. The mine was listed in the Idaho Mine Inspector’s annual reports until about 1970, but little or no activity took place at the property.

During the 1980s and 1990s, the company forfeited its corporate charter and had it reinstated three times. During the same period, the company also changed its name four times; the last name was Consolidated Eco-Systems, Inc. This company was dissolved in February 2000.

3.100.4 Environmental Conditions

3.100.4.1 Site Features

The Sentinel Mine was visited by Ted Erdman on September 17, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:45:22-0:52:52). Documenting photographs are Roll 99E24, frames 18-22.
There are two adits at the mine, one open and one collapsed (Figure 3.100-2). Adit 1 (the lower adit) is open and dry (Figure 3.100-3 and 3.100-4). The dump, which extends down to the highway, is 25 feet long, 20 feet wide, and 10 feet thick. Part of the dump may have been removed by construction of the highway.

Adit 2 (the upper adit) is collapsed and forms a large scarp on the slope (Figure 3.100-5). The dump is 40 feet long, 20 feet wide, and 15 feet thick. Logs have been stacked on the south edge of the dump (Figure 3.100-6). Along a trail 130 feet east of Adit 2 are two nearly collapsed wooden structures (Figure 3.100-7). The structures are at the upper (northeast) end of a tramway that extends down to the highway.

The total disturbed area covers about 0.25 acre.

3.100.4.2 Sample Locations

3.100.4.2.1 Solid Samples
No solid samples were collected.

3.100.4.2.2 Water Samples
No water samples were collected.

3.100.5 Structures

There are two nearly collapsed wooden structures east of Adit 2. These are at the upper end of a tramway that extends down to the highway.

3.100.6 Safety

The lower adit is open and can be easily entered. State Highway 14 provides easy access to the property.
Figure 3.100-1. Location of the Sentinel Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.100-2. Sketch of the Sentinel Mine.
Figure 3.100-3. Looking north at open Adit 1 at the Sentinel Mine (Roll 99E24, frame #18).

Figure 3.100-4. Close-up of Adit 1 at the Sentinel Mine (Roll 99E24, frame #19).
Figure 3.100-5. Collapsed Adit 2 at the Sentinel Mine, looking northeast (Roll 99E24, frame #20).

Figure 3.100-6. Looking south from Adit 2 at the Sentinel Mine. The log pile is on the south edge of the waste dump (Roll 99E24, frame #21).
Figure 3.100-7. Nearly collapsed wooden structures at the upper end of the tramway east of Adit 2 (Roll 99E24, frame #22).
3.101 CLEARWATER MINE (Site No. EC-510)

3.101.1 Site Location and Access (Figure 2.1-1)

The Clearwater Mine is on the east side of Reed Creek in the NW¼ of the NE¼ of the SE¼ of section 34 (unsurveyed; Protraction Block 51 [PB 51]), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.101-1). Access is via State Highway 14 to Reed Creek. The site is ½ mile north of the highway on FS Trail 822 and is on Forest Service land.

3.101.2 Geologic Features (Figure 2.2-1)

The Clearwater Mine is in the schist and quartzite unit of the Middle or Early Proterozoic Syringa metamorphic sequence near contacts with the quartzite and schist unit of the Syringa sequence and the Late Cretaceous biotite granodiorite. The mine is on the northeast-trending Golden shear zone (Lewis and others, 1990, 1993). The property explored gold-bearing quartz veins in the country rock.

3.101.3 Site History

The Clearwater Mining Company was incorporated in 1925. This company held a large group of claims along a gold-bearing shear zone. [Note: this company's description of the location of its property is somewhat vague, and it is not certain that this is the same property as is discussed in the rest of this section.] In 1925, the workings on the property were said to consist of eight tunnels (the longest of which was 130 feet) and twenty-four 10- to 12-foot shafts, for a total of 1,000 feet of workings. By 1928, the workings were reported to total 7,500 feet and include thirty tunnels. The company forfeited its corporate charter in 1929.

The Clearwater Mining Co. was incorporated in 1931 and apparently restaked the Clearwater Mining Company's claims. [The abbreviated “Co.” is apparently part of the legal name of the second company.] The workings included two tunnels (40 feet and 70 feet long) and numerous cuts and trenches. Work during 1931 included digging a 1,280-foot ditch for water power and clearing land for a millsite. By 1937, the property had six tunnels (35 feet, 60 feet, 118 feet, 160 feet, 210 feet, and 280 feet) and 933 feet of workings. A 15-tpd mill was under construction. The mill was completed and put into service the following year. A dispute over ownership ended in 1939 with Clearwater agreeing to lease the nearby Blackbird property (section 3.102). Little development was done on the property after the end of 1938, although the company continued to do its assessment work through 1941. Clearwater forfeited its corporate charter in 1944.

3.101.4 Environmental Conditions

3.101.4.1 Site Features

The Clearwater Mine was visited by Ted Erdman on September 18, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:52:57-0:55:51). Documenting photographs are Roll 99E24, frames 23-24.
One open adit was found at this site (Figure 3.101-2). Several log support timbers are at the portal, and several more are inside the adit (Figure 3.101-3). The small waste dump is 15 feet long, 15 feet wide, and 5 feet thick. Most of the dump may have been removed by road building, or the adit may be very short. There may be remnants of a mill west of the adit near Reed Creek, although the site was not visited. The disturbed area covers less than 0.1 acre.

3.101.4.2 Sample Locations

3.101.4.2.1 Solid Samples
No solid samples were collected.

3.101.4.2.2 Water Samples
No water samples were collected.

3.101.5 Structures
There are no structures at this site.

3.101.6 Safety

The adit for the Clearwater Mine is open and can easily be entered.
Figure 3.101-1. Location of the Clearwater Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.101-2. Open adit at the Clearwater Mine, looking east (Roll 99E24, frame #23).

Figure 3.101-3. View inside the open adit at the Clearwater Mine. Several upright log support timbers can be seen in the adit (Roll 99E24, frame #24).
3.102 BLACKBIRD MINE (Site No. EC-512)

3.102.1 Site Location and Access (Figure 2.1-1)

The Blackbird Mine is in the SW¼ of the NE¼ of the SW¼ of section 35 (unsurveyed; Protraction Block 52 [PB 52]), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.102-1). Access is via State Highway 14. The workings are 0.2 mile west of mile marker 31 on the steep slope south of the South Fork of the Clearwater River and are 300-500 feet above the river. The adits and shaft are on Forest Service land.

3.102.2 Geologic Features (Figure 2.2-1)

The mine is in the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence along a northeast-trending shear zone that intersects the Golden shear zone (Lewis and others, 1990, 1993). The mine explored quartz veins in the country rock.

3.102.3 Site History

In 1935, the Blackbird was owned by J. M. Reed, V. P. Roe, and Jim Strickland. The property had one 10-foot-long cut (Hershey, 1935). A short shaft was sunk on the property by lessees in 1937 (Bennett and others, 1999). The mine was leased by the Clearwater Mining Co. in 1938 as the result of a dispute over ownership. About 5,000 tons of ore was shipped to the Clearwater mill on Reed Creek in 1938. Production continued at a lower rate until 1942.

3.102.4 Environmental Conditions

3.102.4.1 Site Features

The Blackbird Mine was visited by Ted Erdman on September 18, 1999. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 0:55:55-1:00:17). Documenting photographs are on Roll 99E25, frames 1-4. Additional photographs were taken by E. H. Bennett during a visit to the site in 1995.

This site has a lower (main) adit, an upper adit, and a shaft (Figure 3.102-2). The main adit for the Blackbird Mine is 150 feet below the upper adit and was not visited during this survey. It had previously been visited by Earl Bennett in 1995, and his description and photographs of the main adit are included below.

The main adit (Adit 1) was open when visited in 1995 (Figure 3.102-3). Immediately in front of the adit is a large, dilapidated, partly collapsed wood loading ramp for the tramway (Figure 3.102-4). An old compressor and an air tank are among the collapsed boards of the ramp (Figures 3.102-5 and 3.102-6). A junk car frame, scrap metal, and old mine rails are on the dump (Figures 3.102-7 and 3.102-8), which consists mostly of coarse rock fragments (Figure 3.102-9).
A metal flume on the slope below the adit (Figure 3.102-10) probably fed water to the power plant for the Lone Pine mill at Golden.

The upper adit (Adit 2) is open but nearly hidden by a fallen tree (Figures 3.102-11 and 3.102-12). Little remains of the dump. This adit is probably short, and the small amount of waste material may have been carried down the steep slope. There is an open shaft or stope 25 feet southeast of and above the adit. The shaft connects with Adit 2 (Figure 3.102-13). A tramway cable is anchored just above the adit and extends to the north several hundred feet, crossing the river and highway (Figures 3.102-14 and 3.102-15).

The total disturbed area covers about 1 acre.

3.102.4.2 Sample Locations

3.102.4.2.1 Solid Samples
No solid samples were collected.

3.102.4.2.2 Water Samples
No water samples were collected.

3.102.5 Structures

The concrete foundation of the old power plant for the Lone Pine mill is near the mouth of Tenmile Creek on the south side of the South Fork of the Clearwater River (Figure 3.102-16). The collapsing, dilapidated loading ramp for the tramway is at Adit 1. There are no structures associated with the upper adit.

3.102.6 Safety

Adit 2 and the nearby connecting shaft are open. Adit 1 was open in 1995 and could easily be entered. However, there is no direct access to any of the workings, so casual visitors to the site are unlikely.
Figure 3.102-1. Location of the Blackbird Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.102-2. Sketch of the Blackbird Mine.
Figure 3.102-3. Open Adit 1 at the Blackbird Mine, as it appeared in 1995. Several large blocks have fallen onto the floor (photograph by E. H. Bennett, 1995).

Figure 3.102-4. Dilapidated, collapsing loading ramp in front of Adit 1 at the Blackbird Mine. The adit is at the upper right. The top of an old compressor is at the lower right (photograph by E. H. Bennett, 1995).
Figure 3.102-5. Old compressor in the collapsed loading ramp at Adit 1 of the Blackbird Mine (photograph by E. H. Bennett, 1995).

Figure 3.102-6. Air tank in the collapsed loading ramp at Adit 1 of the Blackbird Mine (photograph by E. H. Bennett, 1995).
Figure 3.102-7. Junk car frame on the waste dump for Adit 1 at the Blackbird Mine (photograph by E. H. Bennett, 1995).

Figure 3.102-8. Mine rails on the waste dump for Adit 1 at the Blackbird Mine (photograph by E. H. Bennett, 1995).
Figure 3.102-9. Coarse rock rubble on the face of the waste dump for Adit 1 at the Blackbird Mine (photograph by E. H. Bennett, 1995).

Figure 3.102-10. Part of the metal flume on the slope below Adit 1 at the Blackbird Mine (photograph by E. H. Bennett, 1995).
Figure 3.102-11. Limb of fallen tree in front of the opening for Adit 2 at the Blackbird Mine, looking northwest (Roll 99E25, frame #1).

Figure 3.102-12. View into open Adit 2 at the Blackbird Mine (Roll 99E25, frame #2).
Figure 3.102-13. Open shaft above Adit 2 at the Blackbird Mine. The shaft connects with the adit (Roll 99E25, frame #4).
Figure 3.102-14. Anchor for the tramway cable near Adit 2 at the Blackbird Mine (Roll 99E25, frame #3).

Figure 3.102-15. Tramway cable at the Blackbird Mine, looking south (photograph by E. H. Bennett, 1995).
Figure 3.102-16. Concrete foundation and collapsed boards at the power plant for the Lone Pine mill along the South Fork of the Clearwater River below Adit 1 at the Blackbird Mine (photograph by E. H. Bennett, 1995).
3.103 IRON MOUNTAIN GROUP (Site Nos. EC-467 and EC-468)

Note: Site No. EC-467 is listed as an unnamed prospect in the IGS database, but is probably part of the Iron Mountain Group, which consisted of thirty-two claims in 1957 (Reid, 1957).

3.103.1 Site Location and Access (Figure 2.1-1)

These prospects are on Iron Mountain in the N½ of section 2 (unsurveyed), T. 30 N., R. 7 E., on the Iron Mtn. 7.5-minute quadrangle (Figure 3.103-1). Access from Elk City is on County Road 1199 (which becomes FS Road 1199) to the junction with FS Road 471, then north on Road 471 to FS Road 464. The Iron Mountain turnoff is about 1 mile north on Road 464. From the turnoff, the road heads north until it ends at the communications relay station on top of Iron Mountain. The prospects are on the north and west side of Iron Mountain on Forest Service land. Bulldozer roads lead to the prospects from the top of the mountain (Figure 3.103-2).

3.103.2 Geologic Features (Figure 2.2-1)

The prospect is in the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence (Lewis and others, 1990, 1993). Reid (1957) noted: "Thorite in biotite gneiss. Individual veins (disseminated) 4'-4' thick--parallel to foliation." The dimensions of the deposit were estimated as 1 mile in length and 75 feet in width, with a strike of N. 10° E. and a dip of 35° NW. (Reid, 1957).

3.103.3 Site History

In 1957, the property was owned by Arnold Erickson of Lewiston, Idaho, and consisted of thirty-two claims. Exploration was confined to trenching to expose the veins (Reid, 1957).

3.103.4 Environmental Conditions

3.103.4.1 Site Features

The Iron Mountain Group was visited by John Kauffman on July 5, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:00:21-1:04:24). Documenting photographs are Roll 00K3, frames 1-3.

These prospects consist of bulldozer trenches and shallow pits (Figure 3.103-2). The largest trench, at the site of the prospect symbol on the topographic map west of Iron Mountain, is about 50 feet long, 6-8 feet deep, and 15 feet in maximum width (Figure 3.103-3). The excavated material forms a dump 35 feet long, 20 feet wide, and 6-8 feet thick (Figure 3.103-4). Another shallow pit is just to the north of the communications relay station on top of the mountain (Figure 3.103-5). The total disturbed area at all of the excavations covers about 1 acre.
3.103.4.2 Sample Locations

3.103.4.2.1 Solid Samples
No solid samples were collected.

3.103.4.2.2 Water Samples
No water samples were collected.

3.103.5 Structures
There are no mining-related structures at the site. Several concrete-block buildings belonging to the communications relay station are near one of the pits on top of the mountain.

3.103.6 Safety
There are no safety hazards at the site.
Figure 3.103-1. Location of the Iron Mountain Group, Idaho County, Idaho (U.S. Geological Survey Iron Mtn. 7.5-minute topographic map).
Figure 3.103-2. Sketch of the Iron Mountain Group prospects.
Figure 3.103-3. Looking east up the trough of the largest trench at the Iron Mountain Group. This is at Site No. EC-467 (Roll 00K3, frame #1).

Figure 3.103-4. Looking southeast at the toe of the waste dump for the trench at Site No. EC-467 (Roll 00K3, frame #2).
Figure 3.103-5. Shallow prospect pit north of the communications relay station on top of Iron Mountain, looking north. Fragments of vein material are on the small pile of excavated material to the right of the pit. This is one of the prospects at Site No. EC-468 (Roll 00K3, frame #3).
3.104 IRON CROWN MINE (Site No. EC-474)

3.104.1 Site Location and Access (Figure 2.1-1)

The Iron Crown Mine is on the ridge northwest of Beaver Creek in the SW¼ of the NE¼ of section 20 (unsurveyed), T. 30 N., R. 7 E., on the Iron Mtn. 7.5-minute quadrangle (Figure 3.104-1). Access from State Highway 14 is on FS Road 1858 up Newsome Creek about 5½ miles to FS Road 1826 (gated), on Road 1826 about 1¼ miles to FS Road 1832, and then on Road 1832 about 1½ miles to the property. The last part of the road is partly overgrown and is now an all-terrain-vehicle trail. The site is on Forest Service land.

3.104.2 Geologic Features (Figure 2.2-1)

The Iron Crown Mine is near the contact between the biotite schist and gneiss unit and the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence. A patch of Miocene lacustrine and fluvial sediments is on the ridge nearby (Lewis and others, 1990, 1993). Jellum (1909, p. 32-33) noted:

This vein is of the blanket type and 6 to 15 inches of ore averaging about $15 per ton was milled. Both walls of the vein are decomposed for a distance of 18 inches and will average about $5 per ton in gold. A parallel vein has recently been encountered at a depth of 18 feet below the present vein in which a shaft is being sunk. The lower vein is about 2 feet thick and shows good values.

3.104.3 Site History

Jellum (1909, p. 32-33) reported the following about the history of this mine:
The Iron Crown mine has the distinction of being the first dividend paying quartz mine in Idaho county, and although only a small mine has been a profitable one during the long time it was steadily operated. It was discovered in 1888 by Nate B. Pettibone of Stites and James Doran, who, after some development, sold it to Dr. J. A. Lauterman, a mining man of Pueblo, Colorado. A Kincaid mill was installed on the property and operated continuously for 10 or 12 years, during which time it produced bullion in an amount variously reported at from $70,000 to $250,000. . . .

The Iron Crown has recently been bonded by the W. V. Garret Company of Spokane, composed of Spokane and Milwaukee men. It is the intention of the new owners to thoroughly develop the property and to equip it with a very complete mill.
3.104.4 Environmental Conditions

3.104.4.1 Site Features

The Iron Crown Mine was visited by John Kauffman on July 6, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:04:28-1:11:32). Documenting photographs are Roll 00K3, frames 4-5.

Two prospect cuts, possibly short caved workings, and a small impoundment with possible stamp mill tailings were found at this site (Figure 3.104-2). The northern of the two cuts is a scarp along the east side of the road (Figure 3.104-3). A wide section of the road adjacent to the cut may be a small waste dump. The southern of the cuts is on the slope east of the road and is marked by a prospect symbol on the topographic map. This prospect is a trough up the slope (Figure 3.104-4) with a shallow pit above the trough. South of this cut, in a broad gully below the road, are the remnants of a dam across part of the gully. Crushed rock behind the dam may be tailings from an old mill that reportedly operated for ten to twelve years in the late 1800s. The amount of material in the impoundment, which measures about 25 feet in diameter, does not support an operating period of that length. The disturbed area at the site covers less than 0.5 acre.

3.104.4.2 Sample Locations

3.104.4.2.1 Solid Samples

A sample of the possible stamp mill tailings (K7060001) was collected from the impoundment.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K7060001</td>
<td>Iron Crown Mine, tailings(?)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.104.4.2.2 Water Samples

No water samples were collected.

3.104.4.2.3 Analytical Results

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

Compared to expected background (Tables 1.5-4 and 1.5-5) and environmental (Table 1.5-6) values, sample K7060001 has elevated levels of arsenic, chromium, copper, lead, nickel, zinc, and cadmium in the element screen. In the TCLP for metals test, no elements of concern are leaching from the sample.
3.104.5 Structures
There are no structures at the site.

3.104.6 Safety
There are no safety hazards at the site.
Figure 3.104-1. Location of the Iron Crown Mine, Idaho County, Idaho (U.S. Geological Survey Iron Mtn. 7.5-minute topographic map).
Figure 3.104-2. Sketch of the Iron Crown Mine.
Figure 3.104-3. Looking northeast at the north cut or caved adit at the Iron Crown Mine (Roll 00K3, frame #4).

Figure 3.104-4. Looking northeast at the trough of the south cut or caved adit at the Iron Crown Mine (Roll 00K3, frame #5).
3.105 NORTHERN PACIFIC (Site No. EC-475)

3.105.1 Site Location and Access (Figure 2.1-1)

This prospect is just south of the Iron Crown Mine along the crest of the ridge west of Beaver Creek in the NE¼ of the SW¼ of section 20 (unsurveyed), T. 30 N., R. 7 E., on the Iron Mtn. 7.5-minute quadrangle (Figure 3.105-1). Access is the same as for the Iron Crown Mine (Site No. EC-474; section 3.104). The site is on Forest Service land.

3.105.2 Geologic Features (Figure 2.2-1)

The Northern Pacific is in Miocene lacustrine and fluvial sediments on a ridge underlain by the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence (Lewis and others, 1990, 1993).

3.105.3 Site History

In the early 1900s, the property consisted of three claims owned by people from Stites and Cottonwood. The property had about 500 feet of workings (Jellum, 1909).

3.105.4 Environmental Conditions

3.105.4.1 Site Features

The Northern Pacific Prospect was visited by John Kauffman on July 6, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:11:55-1:13:24). Documenting photograph is Roll 00K3, frame 6.

Several shallow trenches and prospect pits were found on the top of the ridge just west of the old access road (now an all-terrain-vehicle trail). Another trench about 5-8 feet deep is on the east side of the trail. All of the excavations are old, sloughed in, and overgrown with trees and underbrush (Figure 3.105-2). The original disturbed area probably covered about 1 acre.

3.105.4.2 Sample Locations

3.105.4.2.1 Solid Samples
No solid samples were collected.

3.105.4.2.2 Water Samples
No water samples were collected.

3.105.5 Structures
There are no structures at the site.
3.105.6 Safety

There are no safety hazards at the site.
Figure 3.105-1. Location of the Northern Pacific Prospect, Idaho County, Idaho (U.S. Geological Survey Iron Mtn. 7.5-minute topographic map).
Figure 3.105-2. One of the overgrown trenches at the Northern Pacific Prospect (Roll 00K3, frame #6).
3.106 LITTLE GIANT PROSPECT (Site No. EC-481)

3.106.1 Site Location and Access (Figure 2.1-1)

The Little Giant Prospect is at the mouth of Beaver Creek in the SW¼ of the NE¼ of section 31 (unsurveyed), T. 30 N., R. 7 E., on the Pilot Knob 7.5-minute quadrangle (Figure 3.106-1). Access from State Highway 14 is on FS Road 1858. The site is about 5 miles north of the highway. The Newsome Work Center and a small campground are on the south side of Beaver Creek, and the workings are on the nose of the ridge on the north side of the creek. A prospect symbol on the topographic map marks the site, which is on Forest Service land.

3.106.2 Geologic Features (Figure 2.2-1)

The Little Giant Prospect is in the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence (Lewis and others, 1990, 1993). The workings are along a shear zone in thinly bedded quartzite that strikes about north-south and dips about 45° east.

3.106.3 Site History

In the early 1900s, the Little Giant was owned by Harry W. Cone and C. L. Hopkins. The property had about 400 feet of shafts and tunnels on a large, low-grade vein that carried a streak of high-grade ore (Jellum, 1909).

3.106.4 Environmental Conditions

3.106.4.1 Site Features

The Little Giant Prospect was visited by John Kauffman on July 6, 2000. A video segment documenting the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:13:27-1:21:39). Documenting photographs are Roll 00K3, frames 7-11.

This property has three adits, several prospect pits, and an old water ditch (Figure 3.106-2). Open Adit 1 is just above a large pit at the base of the ridge. The adit is to the east of an old cabin on the jeep road that follows the north side of Beaver Creek (Figures 3.106-3 and 3.106-4). The waste dump for the adit has been reworked or removed by bulldozer work. A small camping area is across Beaver Creek to the south (Figure 3.106-5).

Adit 2 is about 30 feet above Adit 1 and is caved. Portal timbers are in the caved rubble (Figure 3.106-6). There is essentially no waste rock associated with this adit. Some material may have been bulldozed down the slope, or the tunnel may be very minor. Adit 3, in a thick stand of small trees several hundred feet north of Adit 2, is also caved. The waste dump is very small, indicating a short tunnel.
In addition to these adits, several small pits are aligned along the same north-south trend as the adits. Also, an old water ditch follows the contours of the ridge north from Adit 2, crosses in front of Adit 3, and continues northward for an undetermined distance.

The total disturbed area at the site covers less than 0.5 acre.

3.106.4.2 Sample Locations

3.106.4.2.1 Solid Samples
No solid samples were collected.

3.106.4.2.2 Water Samples
No water samples were collected.

3.106.5 Structures

The cabin near Adit 1 has a sign that reads “Mary Reed cabin” nailed to the side (Figure 3.106-7). The exterior is in relatively good condition, but the interior is in disrepair.

3.106.6 Safety

Adit 1 is open and can easily be entered. A warning sign that apparently had been posted at the entrance was thrown into the pit below the adit. The adit is easily accessible from the Newsome Creek road and is also visible from the campground just across Beaver Creek.
Figure 3.106-1. Location of the Little Giant Prospect, Idaho County, Idaho (U.S. Geological Survey Pilot Knob 7.5-minute topographic map).
Figure 3.106-2. Sketch of the Little Giant Prospect.
Figure 3.106-3. Looking north at open Adit 1 at the Little Giant Prospect. A warning sign has been thrown into the pit below the adit (Roll 00K3, frame #7).
Figure 3.106-4. View into Adit 1 at the Little Giant Prospect (Roll 00K3, frame #8).
Figure 3.106-5. Looking south from the mouth of Adit 1 at the Little Giant Prospect. The campground is just across Beaver Creek from the adit (Roll 00K3, frame #9).
Figure 3.106-6. Portal timbers of caved Adit 2 at the Little Giant Prospect, looking northeast (Roll 00K3, frame #11).

Figure 3.106-7. Old cabin near Adit 1 at the Little Giant Prospect. A wooden sign (at the left edge of the cabin) identifies this as the “Mary Reed cabin.” The yellow sign is a Forest Service property notice (Roll 00K3, frame #10).
3.107 EASTERN MINE (Site No. EC-482)
Alternate names—Golden Age Mine; Meadow Creek Mine; Black Sam.

3.107.1 Site Location and Access (Figure 2.1-1)

The Easter Mine is on the north side of the West Fork of Newsome Creek in the SE¼ of section 7 (unsurveyed; Protraction Block 43 [PB 43]), T. 29 N., R. 7 E., on the Golden 7.5-minute quadrangle (Figure 3.107-1). Access from State Highway 14 is on FS Road 1858 about 2½ miles north to FS Road 440 (or 440A). The mine is about 2 miles up Road 440. Several patented claims are along the creek, and one of the adits is probably on these claims. Road 440 is gated just beyond the mine site. The main workings, as well as the placered gullies to the north, appear to be on Forest Service land.

3.107.2 Geologic Features (Figure 2.2-1)

The Easter Mine is near the contact between the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence and the overlying Miocene lacustrine and fluvial sediments (Lewis and others, 1990, 1993). The vertical quartz vein has an east-west strike and contained free gold, pyrite, galena, and telluride minerals (Shenon and Reed, 1934; Jellum, 1909).

3.107.3 Site History

In the early 1900s, the property was under bond to W. M. Luther and was owned by W. B. Houston and associates (Jellum, 1909). By the early 1930s, the owners were Marlow, Holder, and Wolson. The mine had a 130-foot adit and a 100-foot vertical shaft from which 220 feet of drifts had been driven (Shenon and Reed, 1909).

3.107.4 Environmental Conditions

3.107.4.1 Site Features

The Easter Mine was visited by John Kauffman on July 6, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:21:43-1:27:52). Documenting photographs are Roll 00K3, frames 12-15.

The lode workings at the site include two caved adits and a caved shaft (Figure 3.107-2). There is also a large area of placered Tertiary gravels north of the lode workings. Caved Adit 1 and the caved shaft are north of the access road and just east of the Forest Service gate. There is a minor seep coming from the adit, but the volume was too small to sample. The waste dump is 50 feet long, 10-15 feet wide, and 10 feet thick (Figure 3.107-3). The shaft is above the trough of the caved adit. It is completely caved, forming a pit about 8 feet deep (Figure 3.107-4). Much of the forest floor around the workings is bare, probably from animals frequenting a salt lick set out by
the local landowners (Figure 3.107-5). Adit 2, also caved, is a minor tunnel with a small waste dump that measures 10 feet long, 6 feet wide, and 5-6 feet thick. This adit is probably on the patented claims. The disturbed area is less than 0.5 acre.

To the north and west of these workings are deep ravines cut into the slope. These ravines are placer workings in the Tertiary gravels that cap some of the ridges in the area. The placer workings cover an area at least 500 feet long and 300-500 feet wide.

3.107.4.2 Sample Locations

3.107.4.2.1 Solid Samples
   No solid samples were collected.

3.107.4.2.2 Water Samples
   No water samples were collected.

3.107.5 Structures

Two homes (summer residences(?)) are on the patented claims across the creek from the workings. These are probably unrelated to the mine.

3.107.6 Safety
   There are no safety hazards at the site.
Figure 3.107-1. Location of the Easter Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.107-2. Sketch of the Easter Mine.
Figure 3.107-3. Waste dump for Adit 1 at the Easter Mine. Large and small trees are growing on the dump. The end of the dump has been cut by a bulldozer (Roll 00K3, frame #15).

Figure 3.107-4. Young moose at the salt lick near Adit 1 and the shaft. The slope has been denuded of underbrush and grass for a significant area around the lick. One of the homes on the patented claims is visible through the trees at the upper right of the picture (Roll 00K3, frame #13).
Figure 3.107-5. Pit of the caved shaft at the Easter Mine. Several trees are growing in the pit (Roll 00K3, frame #14).
3.108 MACKAY MINE (Site No. EC-490)
Alternate name—Mackey.

3.108.1 Site Location and Access (Figure 2.1-1)

The Mackay Mine adit is on the Right Fork of Fall Creek in the NE¼ of the NE¼ of section 22 (unsurveyed), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.108-1). A second adit, included here with the Mackay Mine, is in section 14 near the adjoining corners of sections 14, 15, 22, and 23 (unsurveyed) in the same township and range. Access to both sites from State Highway 14 is on FS Road 649 westward for about 8 miles to the junction with FS Road 9841. After about ¾ mile on Road 9841, Trail 426 exits to the west. The trail passes below the second adit, continues around the ridge, and heads northwest (Figure 3.108-2). A branch off the trail goes down the slope to the Right Fork of Fall Creek, crosses the creek, and follows the west side of the creek southeast to a collapsing log cabin at the Mackay Mine. The Mackay adit is below the cabin on the east side of the creek. Both adits are on Forest Service land.

3.108.2 Geologic Features (Figure 2.2-1)

The Mackay Prospect is in Late Cretaceous biotite granodiorite (Lewis and others, 1990, 1993). McHugh (1991, p. 11) reported: “Quartz veins are in granodiorite and gneiss. The gneiss apparently occurs as small bodies enclosed in the granodiorite; contacts are indistinct.”

3.108.3 Site History

Claims were staked in the area as early as 1910, and the prospect was worked by George Mackey as early as 1915 (McHugh, 1991).

3.108.4 Environmental Conditions

3.108.4.1 Site Features

The Mackay Mine was visited by John Kauffman on July 6, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:27:56-1:37:08). Documenting photographs are Roll 00K3, frames 16-25.

The adit and cabin at the Mackay Mine are noted on the topographic map, and McHugh (1991) mapped the property (Figure 3.108-2). The open adit (Adit 1; Figures 3.108-3 and 3.108-4) has a small waste dump that measures 15 feet long, 8 feet wide, and 10-12 feet thick (Figure 3.108-5). This is probably the 35-foot-long adit reported by McHugh (1991). The dump reaches the drainage and consists almost entirely of coarse rock fragments.

Caved Adit 2 is about ¼ mile northeast of Adit 1 on the north side of Trail 426. The waste dump measures 25 feet long, 10-12 feet wide, and 15 feet thick (Figure 3.108-6). Several shallow
prospect pits are in the vicinity of Adit 2. The disturbed area at these two adits is less than 0.5 acre.

3.108.4.2 Sample Locations

3.108.4.2.1 Solid Samples
   No solid samples were collected.

3.108.4.2.2 Water Samples
   No water samples were collected.

3.108.5 Structures

The roof of the log cabin near Adit 1 has collapsed, but the walls are still standing, although in poor condition (Figure 3.108-7). A small collapsed building, either an outhouse or shed, is in the creek bottom near Adit 1 (Figure 3.108-8). Several hundred yards northwest of the cabin, where the trail to the site crosses the creek, there is an old, low, earthen dam across the Right Fork of Fall Creek (Figure 3.108-9). The dam has a central wooden gate and a metal flume pipe (Figure 3.108-10).

3.108.6 Safety

Adit 1 is open and can be easily entered. The mine location is accurately shown on the topographic map, so some visitors to the site are likely.
Figure 3.108-1. Location of the Mackay Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.108-2. Map of the Mackay Mine (McHugh, 1991, Figure 4).
Figure 3.108-3. Open Adit 1 at the Mackay Mine, looking east (Roll 00K3, frame #16).

Figure 3.108-4. View into Adit 1 at the Mackay Mine (Roll 00K3, frame #17).
Figure 3.108-5. Waste dump for Adit 1 at the Mackay Mine, looking southeast. The small dump reaches the creek. Most of the material consists of large fragments (Roll 00K3, frame #19).

Figure 3.108-6. Waste dump for Adit 2 at the Mackay Mine, looking north (Roll 00K3, frame #25).
Figure 3.108-7. Old log cabin near Adit 1 at the Mackay Mine. The walls are mostly intact, but the roof has completely collapsed (Roll 00K3, frame #20).

Figure 3.108-8. Collapsed outhouse or small shed in the creek below Adit 1 at the Mackay Mine (Roll 00K3, frame #18).
Figure 3.108-9. Earthen dam across the Right Fork of Fall Creek north of the cabin at the Mackay Mine. The old pond behind the dam is now a grass-covered bog (Roll 00K3, frame #21).

Figure 3.108-10. Central wooden gate and metal flume pipe in the dam at the Mackay Mine (Roll 00K3, frame #22).
3.109 RAINY DAY CREEK PROSPECT (Site No. K7070001)

Note: This prospect may be associated with the Blackbird Mine (Site No. EC-512; section 3.102), which is less than ½ mile to the northeast.

3.109.1 Site Location and Access (Figure 2.1-1)

This prospect is on the east slope above Rainy Day Creek in the SW¼ of the SW¼ of section 35 (unsurveyed; Protraction Block 52 [PB 52]), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.109-1). Access is by foot on the Rainy Day Creek Trail (FS Trail 842), which starts from FS Road 1875 just south of the bridge across the South Fork of the Clearwater River. The trail appears to connect with FS Road 9824 on the ridge east of Rainy Day Creek. The workings are ¼-1 mile up the trail and are on Forest Service land.

3.109.2 Geologic Features (Figure 2.2-1)

This prospect is near the contact between the schist and quartzite unit and the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence. These rocks have been intruded by Late Cretaceous biotite granodiorite. The prospect is between the Golden shear zone and a northeast-trending fault that intersects the shear zone (Lewis and others, 1990, 1993).

3.109.3 Site History

No information is available on the history of this prospect.

3.109.4 Environmental Conditions

3.109.4.1 Site Features

This prospect was visited by John Kauffman on July 7, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 6, index 1:37:16-1:44:52). Documenting photographs are Roll 00K4, frames 1-4.

Two adits were found at this site. Adit 1, the southern of the two, is beside the trail and is open (Figures 3.109-2 and 3.109-3). The entrance is 8 feet across and was originally about 8 feet high, although some collapsed rock forms a mound at the mouth. A very minor seep, probably less than 0.1 gallon per minute, trickles from the adit. The waste dump is small, measuring only 15 feet long, 10 feet wide, and 8 feet thick, indicating that the adit is short. A rail was found in front of the opening, however, which would generally be an indication of a longer tunnel. Sheet metal and other debris is on the face of the small, brush-covered dump (Figure 3.109-4).

Adit 2, along the trail about 200 feet north of Adit 1, is completely caved (Figure 3.109-5). The waste dump is insignificant, so this was probably a very short prospect adit. A few old boards along the trail 100 feet north of Adit 1 may be the remains of a shed or very small cabin. The disturbed area is less than 0.25 acre.
3.109.4.2 Sample Locations

3.109.4.2.1 Solid Samples
   No solid samples were collected.

3.109.4.2.2 Water Samples
   No water samples were collected.

3.109.5 Structures

There are no structures at the site, although a few boards and some scrap metal north of Adit 1 may be the remains of a shed or small cabin.

3.109.6 Safety

Adit 1 has a large opening and is adjacent to the trail, although the trail has not been maintained and probably receives minimal use.
Figure 3.109-1. Location of the Rainy Day Creek Prospect, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.109-2. Large opening of Adit 1 at the Rainy Day Creek Prospect, looking southeast. An old rail is sticking out of the brush in front of the opening (Roll 00K4, frame #1).

Figure 3.109-3. View into Adit 1 at the Rainy Day Creek Prospect. A mound of collapsed rock is at the mouth. From this view, the adit appears to be short (Roll 00K4, frame #2).
Figure 3.109-4. Looking north at the side of the brush-covered waste dump for Adit 1. Some sheets of metal and old boards are scattered in the brush (Roll 00K4, frame #3).

Figure 3.109-5. Looking east at the trough of caved Adit 2 at the Rainy Day Creek Prospect. A piece of scrap metal is on the left side of the trough beside the tree (Roll 00K4, frame #4).
3.110 BUFFALO-IDAHO MINE (Site No. EC-491)
Alternate names—Mackay Mine; Mackey Mine; Gold King Mine.

3.110.1 Site Location and Access (Figure 2.1-1)

The Buffalo-Idaho Mine is on the north side of Fall Creek near the center of the N\(\frac{1}{2}\) of the N\(\frac{1}{2}\) of section 23 (unsurveyed), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.110-1). Access from State Highway 14 is on FS Road 649. About 8 miles from Highway 14, FS Trail 426 crosses Road 649. The mine is about \(\frac{1}{4}\) mile south on Trail 426 on old patented claims that have been acquired by the Forest Service. Several of the old buildings at the site are noted on the topographic map.

3.110.2 Geologic Features (Figure 2.2-1)

The Buffalo-Idaho Mine is in an area that is crossed by the contact between the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence and the Late Cretaceous biotite granodiorite of the Idaho batholith (Lewis and others, 1990, 1993). McHugh (1991, p. 11) described the geology of the deposit in more detail:

The area is underlain by gneiss, which consists of diversely oriented, alternating quartz- and biotite-rich bands. White, recrystallized quartzite is intermixed with the gneiss in places and predominates to the east. To the west, gneiss is in gradational contact with granodiorite (fig. 5 [Figure 3.110-2]). North-trending pegmatite dikes as much as 10 ft thick transect the gneiss in the vicinity of the workings.

Mining centered on two parallel quartz veins in shear zones that cut the gneiss. Both veins are reported to strike N. 85° W. and dip 60° SW (Shenon and Reed, 1934, p. 72). The northern vein is exposed at the head of a 150-ft-long trench that follows the trend of the vein. The 40 ft segment of shear zone exposed in a drift of the mill-level adit contains little quartz. All other underground workings are caved. Where exposed at the surface, the quartz vein is 1.5 ft thick; intense argillic alteration and limonite staining characterize the wallrock gneiss. Alignment of the workings suggests the vein extends for at least 700 ft along strike. Two adits reportedly explored the southern vein (Shenon and Reed, 1934, p. 72); one of these is caved, and the other was apparently obscured by subsequent surface work.

3.110.3 Site History

Shenon and Reed (1934, p. 71-72) reported:
According to reports, the location was made about 1900 by George Mackay [sic; the correct spelling apparently was “Mackey”], and the property was called the Mackay or Gold King mine until 1927, when it was taken over by the Buffalo-Idaho Mining Co., of which J. A. Fields is the manager.
The total production appears to have been over $10,000, and most of this has been won since 1929. According to Fields the ore plated between $6 and $23 to the ton and averaged around $15.

Bullion was shipped from the Gold King property from 1915 to 1918. The Buffalo-Idaho Mining Company was incorporated in 1927 and purchased its original claims from J. H. Lamb of Stites, Idaho, and Augusta Mackey, George Mackey’s widow. (The company referred to its property as the “Mackey Mine.”) In 1928, the Buffalo-Idaho had two tunnels (298 feet and 320 feet) and a 40-foot, two-compartment, inclined shaft that gained a vertical depth of 34 feet. Total development was about 1,285 feet of workings. A four-stamp mill was built in 1929, and about $4,000 of gold bullion was recovered by amalgamation during the year. Throughout most of the 1930s, the mine produced small amounts of ore which was mined as the company was doing its annual assessment work. In 1933, the property had five tunnels (200 feet, 210 feet, 220 feet, 275 feet, and 375 feet), one 65-foot vertical shaft, and 1,500 total feet of workings. By 1937, the company was announcing plans for a major development campaign, but nothing came of this. The Buffalo-Idaho Mining Company forfeited its corporate charter in 1951. According to McHugh (1991), between 1915 and 1938 the Buffalo-Idaho produced 4,004 tons of ore that averaged 0.24 ounce per ton of gold and 0.4 ounce per ton of silver.

3.110.4 Environmental Conditions

3.110.4.1 Site Features

The Buffalo-Idaho Mine was visited by John Kauffman on July 24, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 7, index 0:00:43-0:15:57). Documenting photographs are Roll 00K10, frames 9-16.

The property has at least five adits, a shaft, and numerous trenches, some of which were placer workings (Figure 3.110-2). There are also several buildings, mostly collapsed, and the remains of a four-stamp mill.

Adit 1, identified as the mill-level adit by McHugh (1991), was the main tunnel at the mine. The adit is nearly caved but has a crawl-space opening 1½-2 feet wide and 1-1½ feet high (Figures 3.110-3 and 3.110-4). Water is seeping from beneath the material in front of the adit at a rate of about 2 gallons per minute. The waste dump has two lobes, one extending out into the drainage for about 100 feet and the other branching to the south along the slope for about 200 feet. The maximum width is 50 feet, and the thickness averages about 15 feet.

Adit 2 is very short, about 8 feet in length, and is at the west end of a long trench in the drainage above Adit 1. Several additional trenches that cut across the drainage are between Adit 1 and the trench at Adit 2. The material excavated from the trenches forms small dumps along the drainage.

Adit 3, about 300-400 feet south of Adit 1, is completely caved and has a small waste dump. There is a minor seep coming from this adit, but it was too small to sample. Several old cuts and
a large placer pit are on the slope above the adit. The road shown on Figure 3.110-2 from the mill-level adit to Adit 3 is obscure and overgrown.

Adit 4 is just below Trail 426 southeast of Adit 1. Although the USBM map shows this adit as caved, it does have a small opening (Figure 3.110-5). There is a minor seep coming from this adit, but the amount of water was too small to sample. The waste dump is 30 feet long, 6 feet wide, and 5 feet thick.

Adit 5 is only 4 feet long, undercut into the slope with a trough in front of the short opening. The trail crosses the small waste dump.

The caved shaft is west of Adit 3 on the gentle slope south of the collapsed buildings. A section of ventilation pipe and old boards are in the shallow pit (Figure 3.110-6). Waste rock about 5 feet thick rims the southern half of the pit. Another trench is north of the shaft and west of the collapsed buildings.

Ruins of the stamp mill are on the slope below the south end of the waste dump for Adit 1 (Figures 3.110-7 and 3.110-8). Possible tailings, overgrown with weeds, are in the drainage below the mill. These possible tailings cover an area about 40 feet long, 20 feet wide, and an estimated 6 feet thick.

The total disturbed area at the site, including the adits, trenches, placer workings, and building sites, covers 5-10 acres.

3.110.4.2 Sample Locations

3.110.4.2.1 Solid Samples

Sample K7240002 was collected along the drainage from the waste dump for Adit 1. Sample K7240003 was collected from the possible mill tailings along the drainage below the old stamp mill.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K7240002</td>
<td>Buffalo-Idaho Mine, Adit 1 dump</td>
<td>Yes</td>
</tr>
<tr>
<td>K7240003</td>
<td>Buffalo-Idaho Mine, possible mill tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.110.4.2.2 Water Samples

Sample K7240001 was collected from the water flowing from Adit 1. Sample K7240004 was collected from the drainage about 100 feet downstream from the possible mill tailings.
<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>K7240001</td>
<td>Buffalo-Idaho Mine, Adit 1</td>
<td>27</td>
<td>42</td>
<td>7.75</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>K7240004</td>
<td>downstream from tailings</td>
<td>22</td>
<td>56</td>
<td>7.4</td>
<td>2-3 ft. wide, 0.5 ft. deep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### 3.110.4.2.3 Analytical Results

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

Compared to expected background (Tables 1.5-3, 1.5-4, and 1.5-5) and environmental (Table 1.5-6) values, dump sample K7240002 from Adit 1 has elevated levels of arsenic, cadmium, lead, manganese, nickel, and zinc in the element screen. In the TCLP for metals test, arsenic is leaching from the sample.

Compared to expected background (Tables 1.5-3, 1.5-4, and 1.5-5) and environmental (Table 1.5-6) values, possible tailing sample K7240003 has elevated levels of arsenic, lead, manganese, nickel, zinc, and cadmium in the element screen. In the TCLP for metals test, no elements of concern are leaching from the sample.

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

Sample K7240001 from Adit 1 exceeds the Secondary MCL for iron in the dissolved metals screen. In the EPA Test 200.8, the sample exceeds the Aquatic Life Chronic standard for mercury. In the total recoverable metals screen, cadmium equals or exceeds all standards, iron exceeds the Secondary MCL, and copper is at the lower limit of the Aquatic Life Chronic standard.

Sample K7240004, taken downstream from the mine and the possible tailings, exceeds the Secondary MCL for iron in the dissolved metals screen. In the total recoverable metals screen, cadmium equals or exceeds both Aquatic Life standards and iron exceeds the Secondary MCL.

### 3.110.5 Structures

There are several buildings at the site, although most are collapsed. These include a log cabin with a partly collapsed roof (Figure 3.110-9), two completely collapsed cabins, one collapsed shed, and the ruins of the stamp mill. Only the stamps remain standing, and they are leaning.
3.110.6 Safety

Adits 1 and 4 have small openings that could be enlarged to gain entry. Adits 2 and 5 are very short and pose very minor hazards. The mine is noted on the topographic map and the access road, Trail 426, can be navigated by all-terrain vehicles, so some visitors to the site are likely.
Figure 3.110-1. Location of the Buffalo-Idaho Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.110-2. Map of the Buffalo-Idaho Mine (McHugh, 1991, Figure 5).
Figure 3.110-3. Rock outcrop above Adit 1 at the Buffalo-Idaho Mine. The opening has nearly been covered by rock and soil debris (Roll 00K10, frame #9).

Figure 3.110-4. View into the small opening at Adit 1 of the Buffalo-Idaho Mine (Roll 00K10, frame #10).
Figure 3.110-5. Small opening into Adit 4 at the Buffalo-Idaho Mine (Roll 00K10, frame #16).

Figure 3.110-6. Old boards and ventilation pipe in the pit of the caved shaft at the Buffalo-Idaho Mine (Roll 00K10, frame #14).
Figure 3.110-7. View from above of the remains of the mill building at the Buffalo-Idaho Mine. Possible tailings below the mill are overgrown with brush and small trees (Roll 00K10, frame #11).
Figure 3.110-8. Close-up view from below of the four-stamp mill (Roll 00K10, frame #12).
Figure 3.110-9. Old log cabin at the Buffalo-Idaho Mine. Although mostly intact from this view, the roof on the opposite side has collapsed into the cabin (Roll 00K10, frame #13).
3.111 NEW YORK MINE (Site No. EC-492)
Alternate names—Shamrock Mine; Anaconda Group; Anaconda and Illinois; Fall Creek; Ace Gold Mine.

3.111.1 Site Location and Access (Figure 2.1-1)

The New York Mine is on the north side of Fall Creek in the SE¼ of the NE¼ of section 23 (unsurveyed) and the SW¼ of the NW¼ of section 24 (unsurveyed), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.111-1). Access from State Highway 14 is on FS Road 649 about 7 miles to FS Road 78528, then west about ½ mile to the end of Road 78528 at the mine. The property is on a block of formerly patented claims that have been acquired by the Forest Service.

3.111.2 Geologic Features (Figure 2.2-1)

The New York Mine is in the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence (Lewis and others, 1990, 1993). McHugh (1991, p. 15) described the deposit as follows:

The main mineralized structure, the Shamrock vein, strikes N. 10-30° W. and dips about 40° NE. in white, recrystallized quartzite. Massive white quartz that comprises the vein contains numerous small stringers and lenses of pyrite, arsenopyrite, galena, sphalerite, scheelite, and molybdenite. The vein is difficult to distinguish from the enclosing quartzite, but in places both hanging wall and foot wall are marked by thin gouge seams. The 3- to 5-ft thick vein was developed by 11 underground levels (fig. 7 [Figure 3.111-2]) over a vertical distance of 370 ft (Shaffer, 1944, p. 5); only the lowermost, mill-level adit (Level 1) remains open to the surface (fig. 8 [Figure 3.111-3]). The vein was stoped for at least 720 ft up-dip and 320 ft along strike.

A second mineralized zone, the Ontario vein, is poorly exposed in surface workings east of the Shamrock vein. The quartz-bearing Ontario vein trends N. 85° W. in quartzite and granodiorite, and is offset by north-trending faults (Wartes, 1946, p. 10). Intensely sheared, argillized, oxidized, pyritic granodiorite below the vein outcrop is cut by the 320-ft-long Georgia adit.

3.111.3 Site History

Shenon and Reed (1934, p. 80) reported:

The Anaconda group is reported to have been located in 1900, and the New York and Illinois Groups by Conrad Smith in 1910. The Graham-Ross Co. operated the Anaconda in 1905. It was last worked in 1911, and some production is reported. Production from the New York began in 1915. The ore from these properties was treated in the Anaconda group mill, which was a 5-stamp steam mill with a
capacity of 9 tons in 24 hours. It is reported that 85 percent of the assay value was saved by amalgamation and vanner concentration. According to E. L. Jones, Jr., the properties had produced $17,360 in bullion from 1,093 tons of ore by August 1916. The total production from the New York mine appears to have been between $40,000 and $45,000. The present company [New York Consolidated Gold Mines Corporation] took over the property from the Central Idaho Gold Mines, Inc., in 1931.

Shenon and Reed (1934, p. 78) also noted:
The New York Consolidated Gold Mines Corporation controls several groups of claims, among them the New York, the Anaconda, and the Illinois. ...

The company at present is confining its activities to the New York mine, which is developed on five levels by adit tunnels. An amalgamation mill lies just above Fall Creek at the first mine level. In 1931 Fahrenwald flotation cells were added.

In 1915, the New York Mine was the largest producer in the district. The mine shipped both bullion and concentrates. The mine was again the largest producer in the district the following year, but production declined during the next few years. In 1920, the mine shipped a small lot of gold bullion, but was idle most of the year. The New York operated about two months in 1925. The property had a five-stamp mill and recovered gold bullion by amalgamation. All the supplies and equipment used at the mine were hauled from Stites, a distance of 52 miles. During part of this period, the mine may have been operated by The New York Mining Company (incorporated in 1917), which lost its property in a mortgage foreclosure in 1921. The company forfeited its corporate charter in 1922.

The Central Idaho Gold Mines, Incorporated, was organized in 1928 to work the New York and Anaconda properties. About $900 in gold bullion was recovered during the year. In 1928, the company reported ten tunnels and one shaft on twenty-nine claims. There were two five-stamp mills on the property, one water driven and the other steam powered. By 1930, the property had 3,200 feet of workings, including three tunnels and a shaft on the Anaconda Group, one tunnel on the Georgia Group, one tunnel on the Illinois Group, and six tunnels on the New York Group. The mine was leased during the first half of 1931, but the company resumed operations in June. Flotation equipment was installed in the New York mill, and the company produced some ore.

New York Consolidated Gold Mines, Inc., was organized in October 1931. Late in the year, the property was transferred to the new company. Central Idaho Gold forfeited its corporate charter in 1932. New York Consolidated forfeited its corporate charter in 1933. Only assessment and repair work was done at the property in 1934, but the mine operated profitably in 1935. In 1937, the mine was being operated by the owner, H. W. White (Lorain, 1938). During the year, White made a rich strike and operated at a profit. The mine was in good ore when sold to a Seattle firm in December 1938.
Mountain Producers Gold Co. was incorporated in 1939. This company leased six claims that apparently had been staked over the main workings on the New York Group. In 1939, the property had fourteen tunnels (some of which were caved), twenty raises, and ten crosscuts, for a total of 3,500 feet of workings. Mountain Producers employed six men and mined a small amount of gold from the New York. In 1940, the company shipped some dump ore, again employing six men. Mountain Producers forfeited its corporate charter in 1940.

In 1940, the mine was under the control of White Mines, Inc., which actually was incorporated the following year. Updated mill equipment was installed in 1941. The mine produced ore in 1941, 1942, and 1943. Also in 1943, scheelite was discovered in all eleven tunnels at the mine. Despite this tungsten discovery, War Production Board Limitation Order L-208 closed the mine for the duration of World War II. White Mines apparently did little work after the war, and the company was dissolved in 1948.

Ace Gold Mines, Inc., was organized in 1946. In 1947, the company refurbished the mill and mine camp. The property had thirteen tunnels and 3,625 feet of workings. Surface work apparently continued the following year, and some ore was shipped in 1950. Ace forfeited its corporate charter in 1952.

The New York Mining Company, Inc., was organized in 1953. According to Zierold (1969), this company purchased the property on contract from Harvey White in 1955. New York did some development, but ran into difficulties with its creditors in 1958. The company forfeited its charter in 1959. Mr. Herman A. Zierold (president of New York Mining) became the owner of the property as a result of loans he had made to the company (Nelson, 1965). Annual assessment and maintenance work was done for the next decade, and several diamond drill holes were drilled in 1968 (Zierold, 1969).

Additional exploratory work done since 1968 includes surface mapping and sampling, underground mapping and sampling, an induced polarization/resistivity survey, and putting in a decline from the lowest adit. The milling equipment was sold and removed from the property around 1980. In late 1982, the claims were under lease to the Shamrock Mining Company, a wholly owned subsidiary of International Mining and Development, Inc. (Koehler, 1983). Shamrock Mining was incorporated in 1981 and forfeited its corporate charter in 1984. International Mining and Development, Inc., was incorporated in 1982, merged with Havilah Mines, Ltd., in July 1982, and forfeited its charter in 1984.

By mid-1983, the claims were apparently leased to AuDyne U.S.A., Inc. Exploration work conducted in 1983 for AuDyne included driving an underground crosscut from the mill level adit, surface and underground diamond drilling, underground mapping and sampling, a soil geochemistry survey, and a variety of geophysical surveys (Free, 1983). AuDyne was incorporated in 1982 and forfeited its corporate charter in 1984.

In 1989, Newmont Exploration Limited began an exploration program near Golden on the South Fork of the Clearwater River. The company acquired 180 claims, including the New York Mine,
and did an airborne magnetic survey and soil sampling program that summer. The next year’s program included drilling and road construction in the Fall Creek and the Little Leggett Creek areas, as well as surface sampling and mapping. About twenty-five reverse-circulation holes were drilled in 1991. A low-grade disseminated gold resource was identified extending from the Anaconda Prospect to Little Leggett Creek. However, the reserves were not large enough for Newmont’s requirements and the project was terminated.

Adjacent to the New York Mine in the 1930s and 1940s, the old Anaconda claims were, for a time, operated independently. The Green-Hill Mining Corporation was incorporated in 1936. This company acquired the Anaconda claims, which had been part of the old New York property. Green-Hill cleaned out some of the old tunnels and did assessment work on the property for a few years before forfeiting its corporate charter in 1944. Expansion of the Shamrock (New York) property reincorporated the Anaconda claims at some later date. Free (1983) states the Anaconda Prospect had two adits, the Georgia (335 feet long) and the Mississippi (250 feet). Since the Georgia and the Mississippi claims were part of the original Georgia Group of the old New York Mine, it appears that the “Anaconda Group” must have either been expanded or relocated to include these adits.

3.111.4 Environmental Conditions

3.111.4.1 Site Features

The New York Mine was visited by John Kauffman on July 24, 2000. A video segment describing the site is on the Nez Perce National Forest Elk City Area Videotape (Tape 7, index 0:16:01-0:32:43). Documenting photographs are Roll 00K10, frames 17-25. Additional photographs were taken by Earl Bennett during a visit to the property in 1995.

McHugh (1991; Figure 3.111-2) shows eleven adit levels along the Shamrock vein (Figure 3.111-3) and two, the Georgia and Mississippi adits, to the east. All were caved except the mill-level adit (Adit 1 of this report), the Georgia adit about ½ mile to the east, and possibly the Mississippi adit. All of the ten adits above the mill-level adit remain caved, and some are indistinguishable as adits, appearing to be slumps or scarps on the slope. Some of the waste dumps overlap or have been modified by bulldozer work. None of the dumps at these caved adits are substantial.

Adit 1, the mill-level adit, has a concrete portal and is open (Figure 3.111-4), much as reported by McHugh (1991). Inside, the rock appears competent with no supporting timbers as far in as could be seen (Figure 3.111-5). Rails extend out of the adit to the face of the waste dump, a distance of about 150 feet (Figure 3.111-6). The maximum width of the dump is 25 feet, and the average thickness is 40-50 feet (Figure 3.111-7). A wooden ore chute is on the side of the dump (Figure 3.111-8). Several buildings or their remains, including the mill, are at this site (see section 3.111.5, below). No tailings were found below the mill, although Shenon and Reed (1934) indicate it operated. The creek flows along the lower edge of the mill and may have washed away the tailings.
The Georgia adit, probably the Anaconda tunnel of Shenon and Reed (1934), is along Road 78528 about ½ mile east of Adit 1. The portal is covered with a sheet of plywood (Figure 3.111-9), but the adit appears to be open inside.

The Mississippi adit is about 600 feet southeast of the Georgia adit, probably along Road 649A, a spur off Road 649 that parallels Road 78528 about 200 feet lower on the slope. McHugh (1991; Figure 3.111-2) showed this adit as caved, and the plywood-covered portal is nearly covered with rock rubble (Figure 3.111-10). A gap in the plywood provides a view, although for only a short distance, into the adit, and it appears to be open. A very minor seep forms a damp area in front of the adit. The waste dump has slumped down the slope below the road. Several prospect pits and bulldozer trenches are in the general vicinity of the Mississippi adit.

The total disturbed area at these workings covers about 5 acres.

3.111.4.2 Sample Locations

3.111.4.2.1 Solid Samples
No solid samples were collected.

3.111.4.2.2 Water Samples

Sample K7240005 was collected from the water flowing from Adit 1. Sample K7240006 was collected downstream from the mill on Fall Creek. No water quality parameters were taken for sample K7240006.

<table>
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<th>Sample No.</th>
<th>Location</th>
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<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<td>43</td>
<td>7.15</td>
<td>2</td>
<td>Yes</td>
</tr>
<tr>
<td>K7240006</td>
<td>downstream from mill on Fall Creek</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3-6 ft. wide, 1-2 ft. deep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.111.4.2.3 Analytical Results

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

Sample K7240005 from Adit 1 exceeds the Primary MCL for arsenic in the dissolved heavy metals screen. In the total recoverable metals screen, no standards are exceeded.

Sample K7240006 from downstream on Fall Creek does not exceed any standards in the dissolved metals screen. In the total recoverable metals screen, cadmium equals or exceeds all standards.
3.111.5 Structures

Several buildings or their remains are on the New York property. At the millsite, buildings include a cabin, two sheds (one partly covered by the waste dump), an outhouse, a concrete slab, and the collapsed mill building (Figure 3.111-11). Part of the mill building was standing in 1995 (Figure 3.111-12). The concrete slab is the foundation for a cabin that was still intact in 1995 (Figure 3.111-13). In addition to these is another cabin, located where the access road splits about 500 feet east of the millsite. The windows and doors on this cabin are boarded up (Figure 3.111-14).

3.111.6 Safety

The main adit, Adit 1, is open and can easily be reached by all-terrain vehicle or by foot from FS Road 649 by way of FS Road 78528. The rock is competent, although a few rock slabs have fallen to the floor.
Figure 3.111-1. Location of the New York Mine, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.111-2. Surface map of the New York Mine (McHugh, 1991, Figure 7).
Figure 3.111-3. Map of the underground workings at the New York Mine (McHugh, 1991, Figure 8).
Figure 3.111-4. Looking northwest at the concrete portal of Adit 1 at the New York Mine (Roll 00K10, frame #17).

Figure 3.111-5. View inside Adit 1 at the New York Mine. Rails and an air line are still in the adit (Roll 00K10, frame #18).
Figure 3.111-6. Looking southeast across the waste dump for Adit 1 at the New York Mine. The rails extend about 150 feet to the face of the dump. A small cabin is at the left (Roll 00K10, frame #19).

Figure 3.111-7. View down the end of the waste dump at Adit 1 of the New York Mine. A lower road to the base of the mill is at the bottom of the dump. The corner of a small shed, partly covered by the waste dump, is at the upper left of the picture (Roll 00K10, frame #22).
Figure 3.111-8. Wooden ore chute on the side of the waste dump for Adit 1 at the New York Mine (Roll 00K10, frame #21).

Figure 3.111-9. Plywood-covered portal of the Georgia adit at the New York Mine, looking northwest (Roll 00K10, frame #24). This is probably the Anaconda adit of Shenon and Reed (1934).
Figure 3.111-10. Mississippi adit at the New York Mine, looking north. A considerable amount of rock and soil material has sloughed in against the plywood covering of the portal (Roll 00K10, frame #25).

Figure 3.111-11. Collapsed mill building at the New York Mine, looking west (Roll 00K10, frame #20).
Figure 3.111-12. Mill building at the New York Mine as it appeared in 1995 (photograph by E. H. Bennett, 1995).

Figure 3.111-13. Cabin (background left) that formerly stood on the concrete slab, as it appeared in 1995. The slant-roofed shed at the center of the picture has also been removed since 1995 (photograph by E. H. Bennett, 1995).
Figure 3.111-14. Boarded-up cabin along the access road to the New York Mine. This cabin is about 500 feet east of Adit 1 (Roll 00K10, frame #23).
3.112 ILLINOIS PROSPECT (Site No. EC-486)
Alternate name—Blue Quartz Prospect; New York Consolidated Gold Mines Corporation.

3.112.1 Site Location and Access (Figure 2.1-1)

The Illinois Prospect is on Little Leggett Creek in the S½ of the SW¼ of section 13 (unsurveyed), T. 29 N., R. 6 E., on the Golden 7.5-minute quadrangle (Figure 3.112-1). Access from FS Road 649 had been on FS Road 78470, but this road has been contoured and even foot travel is difficult. There may be an old trail up Little Leggett Creek, but this route was not followed. The most direct access is down the slope through the forest from the point where Road 78470 originated. The site is on Forest Service land.

3.112.2 Geologic Features (Figure 2.2-1)

The Illinois Prospect is in the quartzite and schist unit of the Middle or Early Proterozoic Syringa metamorphic sequence (Lewis and others, 1990, 1993). McHugh reported (1991, p. 15, 19):

The mineralized area includes at least three northwet-trending quartz veins in quartzite (fig. 9 [Figure 3.112-2]). The quartzite contains pods of micaceous, argillically altered gneiss and schist. The veins range from 0.8 to 3.7 ft thick and are exposed for as much as 375 ft on the surface, occurring along shear zones that strike generally N. 70° W. and dip steeply to the northeast. The veins contain blebs, disseminations, and stringers of arsenopyrite, pyrite, and bornite (a copper mineral).

3.112.3 Site History

McHugh noted (1991, p. 15):

Conrad Smith located the Illinois group in 1910 (Shenon and Reed, 1934, p. 80); at least 11 claims were staked in the area between 1910 and 1935. No production is recorded.

The Illinois Group was controlled by Central Idaho Gold Mines, Inc., from 1928 until late 1931, and by the New York Consolidated Gold Mines Corporation from 1931 to 1933. It does not seem to have been included in the holdings of later companies that operated the New York Mine, although recent exploration efforts may have included this site.

3.112.4 Environmental Conditions

3.112.4.1 Site Features

The Illinois Prospect was visited by John Kauffman on July 24, 2000. A video segment describing the property is on the Nez Perce National Forest Elk City Area Videotape (Tape 7, index 0:32:48-0:37:44). Documenting photograph is Roll 00K10, frame 26.
Shenon and Reed (1934) noted that the Illinois Group was developed by a water-filled shaft and an adit. McHugh (1991; Figure 3.112-2) mapped three caved adits along Little Leggett Creek, one caved adit on the ridge south of the creek, an open adit on a tributary of Little Leggett Creek, and several trenches and pits. The three caved adits along the creek and the open adit (now gated) along the tributary to Little Leggett Creek were found. The other caved adit reported by McHugh (1991) and the shaft reported by Shenon and Reed (1934) were not found.

The three caved adits along Little Leggett Creek were driven northeast into the slope. The waste dumps are small and of little significance. The adit along the tributary of Little Leggett Creek appeared to be open behind a wooden gate on the portal (Figure 3.112-3). McHugh (1991) reported this adit as being 90 feet in length. The gate was not locked, although some rock debris has sloughed against the bottom of the door, holding it shut. A very minor seep of less than 0.25 gallon per minute creates a small bog in front of the portal. The waste dump extends eastward along the tributary creek for about 100 feet, varies from 3 to 20 feet wide, and is only about 5 feet thick. The dump impinges slightly on the creek but has little evidence of erosion. The prospect pits and trenches noted by McHugh (1991) are sloughed and overgrown with brush.

3.112.4.2 Sample Locations

3.112.4.2.1 Solid Samples
No solid samples were collected.

3.112.4.2.2 Water Samples
No water samples were collected.

3.112.5 Structures

The collapsed remains of a log cabin are on the flat between Little Leggett Creek and the west branch of the creek, as noted by McHugh (1991).

3.112.6 Safety

Although Adit 4 is gated and partly blocked by rock debris, it could be pried open and entered. The adit appeared to be open and is reported by McHugh (1991) to be 90 feet long.
Figure 3.112-1. Location of the Illinois Prospect, Idaho County, Idaho (U.S. Geological Survey Golden 7.5-minute topographic map).
Figure 3.112-2. Map of the Illinois Prospect (McHugh, 1991, Figure 9).
Figure 3.112-3. Wooden door on the open adit on the tributary to Little Leggett Creek at the Illinois Prospect. A minor seep supports the grasses and other plants in front of the adit (Roll 00K10, frame #26).
3.113 BUSTER MINE (Site No. EC-16)
Alternate names—Golden Rule; Protection.

3.113.1 Site Location and Access (Figure 2.1-1)

The Buster Mine is just north of Elk City near the center of the E½ of section 23, T. 29 N., R. 8 E., on the Elk City 7.5-minute quadrangle (Figure 3.113-1). The mine can be reached via FS Road 443 and is about ½-¾ mile north of town on the slope east of Elk Creek. The property is on patented land.

3.113.2 Geologic Features (Figure 2.2-1)

The Buster Mine is in the biotite gneiss and schist unit of the Middle or Early Proterozoic Elk City metamorphic sequence (Lewis and others, 1990, 1993).

3.113.3 Site History

The Buster Mine was discovered in 1870 (Shenon and Reed, 1934). Bennett and others (1999, p. 42) described the history of the mine as follows:

The early history of the Buster mine is hazy. Shenon and Reed (1934) quote Thomson and Ballard (1924) for a description of the deposit. The mine was one of the early producers in the area and is located about one-half mile north of Elk City. The orebody is in a(n) east-west striking quartz vein. The USBM recorded no production from the mine from 1901 to 1906.

In 1906, the property was purchased by the Buster Mining and Milling Company with Fred W. Bradley one of the principals. Bradley was president of the Bunker Hill and Sullivan Mining and Concentrating Company and owned the Alaska Treadwell Company that developed the low-grade (for the time) gold mines near Juneau, Alaska. According to Jellum (1909), the Buster was developed by two tunnels, the upper 200 feet long and the lower, 400 feet long when he visited the property. The lower tunnel cut rich ore. The new company started sinking a winze from the lower tunnel (200 level) to develop a new 300 level. The ore body was 15 feet wide on this level. A 10-stamp mill and cyanide plant was installed (Jellum includes a flow diagram of this mill in his report) that could process about 40 tons-per-day. The winze was sunk to the 400 level and a crosscut from this level had not reached the vein at the time of Jellum’s visit. Production peaked in 1908 and ’09 with 7,032 ounces of gold and 6,707 ounces of silver won from 11,916 tons of ore in 1909. There was no further work until 1936 when the Idaho Buster Mining Company mined 45 tons of ore containing 7 ounces of gold and 9 ounces of silver. In 1939, Bradley’s company mined 62 tons of ore, the last operation at the mine until recently.

In 1983, Resources Engineering and Development Company completed construction of a cyanide heap-leach project near Elk City to process dump material from the Buster mine. The plant was next to Big Elk Creek that serves as
the water supply for Elk City’s 200 residents. The following year, Hoskins-Western-Sonderegger (HWS Gold and Silver Ltd.) shut down the heap leach operation. The closure was caused by a scare late in 1983, when it was reported that cyanide from the operation had contaminated Big Elk Creek. The false alarm was caused by bad analyses of water samples. Although cyanide was present in the mine’s monitoring wells, none had entered the creek. The company acted responsibly in dealing with the false alarm but in the face of adverse public opinion decided to close the operation.

3.113.4 Environmental Conditions

3.113.4.1 Site Features

This site is on private land and was not visited. Because the Buster Mine was one of the larger historical mines in the area, a video segment was taken from a distance. This video segment is on the Nez Perce National Forest Elk City Area Videotape (Tape 7, index 0:37:49-0:40:08).

Figure 3.113-2 shows the open meadow where the heap-leach plant was constructed in the early 1980s, and the new growth of trees on the far slope is in the vicinity of the underground workings.

3.113.4.2 Sample Locations

3.113.4.2.1 Solid Samples
No solid samples were collected.

3.113.4.2.2 Water Samples
No water samples were collected.

3.113.5 Structures
No structures were noted at the site.

3.113.6 Safety
The condition of the workings was not determined.
Figure 3.113-1. Location of the Buster Mine, Idaho County, Idaho (U.S. Geological Survey Elk City 7.5-minute topographic map).
Figure 3.113-2. Looking northward toward the Buster Mine. The old workings are on the far slope in the area covered by small trees. The open meadow was the site of a heap-leach operation in the early 1980s (photograph by E. H. Bennett, 1995).
REFERENCES


Lewis, R.S., R.F. Burmester, E.H. Bennett, and D.L. White, 1993, Geologic map of the Elk City region, Idaho: Idaho Geological Survey unpublished map, scale 1:100,000. [This map is an updated version of Lewis and others, 1990.]


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

LOCATION AND IDENTIFICATION

ID# Site Name(s) FS Watershed Code
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 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 ___ Riparian/marsh
        ___ 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, ___
        ___ Sphalerite, ___ Other Sulfide
Neutralizing Host Rock: ___ Dolomite, ___ Limestone, ___ Marble, ___ Other Carbonate

2. OPERATIONAL HISTORY

Dates of significant mining activity ________________________________________

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

<table>
<thead>
<tr>
<th>MINE PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity(s)</td>
</tr>
<tr>
<td>Production (ounces)</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
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>
<thead>
<tr>
<th>TABLE 1 - ADITS, SHAFTS, PITS, AND OTHER OPENINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Number</td>
</tr>
<tr>
<td>Type of Opening</td>
</tr>
<tr>
<td>Ownership</td>
</tr>
<tr>
<td>Opening Length (ft)</td>
</tr>
<tr>
<td>Opening Width (ft)</td>
</tr>
<tr>
<td>Latitude (GPS)</td>
</tr>
<tr>
<td>Longitude (GPS)</td>
</tr>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>Ground water</td>
</tr>
<tr>
<td>Water Sample #</td>
</tr>
<tr>
<td>Photo Number</td>
</tr>
</tbody>
</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)
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>
<thead>
<tr>
<th>Waste Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Type</td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td></td>
</tr>
<tr>
<td>Area (acres)</td>
<td></td>
</tr>
<tr>
<td>Volume (cu yds)</td>
<td></td>
</tr>
<tr>
<td>Size of Material</td>
<td></td>
</tr>
<tr>
<td>Wind Erosion</td>
<td></td>
</tr>
<tr>
<td>Vegetation</td>
<td></td>
</tr>
<tr>
<td>Surface Drainage</td>
<td></td>
</tr>
<tr>
<td>Indicators of Metals</td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td></td>
</tr>
<tr>
<td>Location with respect to Floodplain</td>
<td></td>
</tr>
<tr>
<td>Distance to Stream</td>
<td></td>
</tr>
<tr>
<td>Water Sample #</td>
<td></td>
</tr>
<tr>
<td>Waste Sample #</td>
<td></td>
</tr>
<tr>
<td>Soil Sample #</td>
<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
</tr>
</tbody>
</table>

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

**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 if 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=None, VEG=Absence of or stressed vegetation, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present

**Stability:** EMER=imminent mass failure, LIKE=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>
</tr>
</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 4 - WATER SAMPLES FROM STREAM(S)

<table>
<thead>
<tr>
<th>Location relative to mine site/features</th>
<th>Upstream (Background)</th>
<th>Downstream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date sample taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampler (Initials)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stream Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators of Metal Release</td>
<td></td>
<td></td>
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<tr>
<td>Indicators of Sedimentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Latitude</td>
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<tr>
<td>Sample Longitude</td>
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<tr>
<td>Field pH</td>
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<tr>
<td>Field SC</td>
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<tr>
<td>Flow (gpm)Method of measurement</td>
<td></td>
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<tr>
<td>Method of measurement</td>
<td></td>
<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>
<thead>
<tr>
<th>Sample Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of sample</td>
<td></td>
</tr>
<tr>
<td>Sampler (Initials)</td>
<td></td>
</tr>
<tr>
<td>Sample Type</td>
<td></td>
</tr>
<tr>
<td>Waste Type</td>
<td></td>
</tr>
<tr>
<td>Feature Number</td>
<td></td>
</tr>
<tr>
<td>Sample Latitude</td>
<td></td>
</tr>
<tr>
<td>Sample Longitude</td>
<td></td>
</tr>
<tr>
<td>Photo Number</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>
<thead>
<tr>
<th>TABLE 6 - SOIL SAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Number</td>
</tr>
<tr>
<td>Date of sample</td>
</tr>
<tr>
<td>Sampler (Initials)</td>
</tr>
<tr>
<td>Sample Type</td>
</tr>
<tr>
<td>Sample Latitude</td>
</tr>
<tr>
<td>Sample Longitude</td>
</tr>
<tr>
<td>Likely Source of</td>
</tr>
<tr>
<td>Contamination</td>
</tr>
<tr>
<td>Feature Number</td>
</tr>
<tr>
<td>Indicators of</td>
</tr>
<tr>
<td>Contamination</td>
</tr>
<tr>
<td>Photo Number</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=Shaft, 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>Waste Number</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Containment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Condition of
  Containment |          |          |
| Contents      |          |          |
| Estimated Quantity of
  Waste          |          |          |

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, LD=drum/barrel/vat with lid, AR=drum/barrel/vat without lid, CAN=cans/jars, LNE=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>Type</th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Number</td>
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<tr>
<td>Condition</td>
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<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
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</tr>
</tbody>
</table>

**TABLE 8 - STRUCTURES**

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, well, 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)
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 numbers 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):


351
Appendix B
Database Fields
NEWLOC       WA   1
ORANGENUM    451
MAPLOC       1
DEPOSIT      Eagle Creek Mine

MRDSREC
MILSREF      0160790528
PERIODPROD

ORE
COMMOD       Au

LATITUDE     474325
LONGITUDE    1154916
HARDFILE     N

MLA
NAME         EAGLE CREEK MINE
SEC          33
SUBSEC       NESE
TWN          051 N
RNG          005 E
DDMMSS       474325
DDDMSS       1154904
OPTYP        SURFAC
STATUS       PAST PRO

COMM01       GOLD
COMM02
COMM03
COMM04
COMM05

MAPNAME      BURKE
QUAD         WALLACE
POP          1KM
TOE          M
YFC
MPF

SITENAME
DISTRICT
COUNTY
SECQUAD
SECQUADSCL
UTMNORTH
UTMEAST
UTMZONE

COMMODIT
LAT
LON
TOWN
SECTION
RANGE
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 3σ for a 99% confidence level, where σ 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 10σ and this imparts a quantitative measurement uncertainty of +/-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


2001 Reports


Appendix F
GPS Readings for Properties in the Elk City Area of the Nez Perce National Forest
Table A-1. Global Positioning System (GPS) readings for properties in the Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest. Properties shown in gray are discussed in sections A and B of this report.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Comments</th>
</tr>
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<tr>
<td>EC-563</td>
<td>Steckner Mine</td>
<td>45°44.745'</td>
<td>115°18.951'</td>
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<tr>
<td>E5179901</td>
<td>Unnamed mine</td>
<td>45°44.963'</td>
<td>115°19.602'</td>
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<tr>
<td>EC-562</td>
<td>Pasadena Mine</td>
<td>45°45.350'</td>
<td>115°18.468'</td>
<td>adit</td>
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<tr>
<td></td>
<td>Pasadena Mill</td>
<td>45°45.412'</td>
<td>115°18.389'</td>
<td>mill site</td>
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<tr>
<td>EC-561</td>
<td>Hercules Mine</td>
<td>---</td>
<td>---</td>
<td>not determined</td>
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<tr>
<td>EC-560</td>
<td>Alberta Mine</td>
<td>45°46.406'</td>
<td>115°16.793'</td>
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<tr>
<td>E5309901</td>
<td>Unnamed site</td>
<td>45°45.836'</td>
<td>115°17.717'</td>
<td>possible assay lab site for Hercules Mine</td>
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<tr>
<td>EC-58</td>
<td>Gold Point Mine</td>
<td>45°46.884'</td>
<td>115°23.631'</td>
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<tr>
<td>EC-57</td>
<td>Laurel Mine</td>
<td>45°47.450'</td>
<td>115°23.421'</td>
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<tr>
<td>EC-47</td>
<td>Mother Lode Mine</td>
<td>45°48.187'</td>
<td>115°24.700'</td>
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<tr>
<td>EC-51</td>
<td>Blue Ribbon Mine</td>
<td>45°48.416'</td>
<td>115°22.185'</td>
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<tr>
<td></td>
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<td>115°22.120'</td>
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<td>E5319907</td>
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<td>EC-52</td>
<td>Unnamed mine</td>
<td>45°47.668'</td>
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<tr>
<td>EC-53</td>
<td>American Eagle Mine</td>
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<td>115°21.425'</td>
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<td>Unnamed site</td>
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<td>115°21.594'</td>
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<td>EC-557</td>
<td>Ten Million Prospect</td>
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<td>EC-559</td>
<td>Union Mine</td>
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<td>shaft</td>
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<td>EC-60</td>
<td>Hornet Mine</td>
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<td>EC-3</td>
<td>Madre d'Oro</td>
<td>45°50.960'</td>
<td>115°24.805'</td>
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<tr>
<td>EC-15</td>
<td>Old Lemroe deposit</td>
<td>45°49.711'</td>
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<tr>
<td>EC-13</td>
<td>Hoffstetter Mine</td>
<td>45°50.044'</td>
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<td>115°22.923'</td>
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<tr>
<td></td>
<td>Unnamed Mine</td>
<td>45°49.700'</td>
<td>115°23.010'</td>
<td>Adit 2</td>
</tr>
<tr>
<td></td>
<td>Unnamed Mine</td>
<td>45°49.649'</td>
<td>115°23.067'</td>
<td>Adit 3</td>
</tr>
<tr>
<td>EC-36</td>
<td>Mascot Mine</td>
<td>45°49.263'</td>
<td>115°24.575'</td>
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</table>
Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest.

<table>
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<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Comments</th>
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<td>EC-37</td>
<td>Rand Mine</td>
<td>45°49.406'</td>
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<tr>
<td>E6079901</td>
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<td>45°49.444'</td>
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<td>EC-12</td>
<td>Congress Mine</td>
<td>45°50.131'</td>
<td>115°24.810'</td>
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<tr>
<td>EC-8</td>
<td>Sultan Shaft</td>
<td>45°50.502'</td>
<td>115°25.502'</td>
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<td>EC-7</td>
<td>Alamance Mine</td>
<td>45°50.535'</td>
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<td>EC-554</td>
<td>Altemont Mine</td>
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<td>EC-115</td>
<td>Badger Shaft (of Homestake Mine)</td>
<td>45°39.788'</td>
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<td>EC-115</td>
<td>Homestake Mine</td>
<td>45°40.107'</td>
<td>115°31.627'</td>
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<tr>
<td>EC-116</td>
<td>Penman Mine</td>
<td>45°39.808'</td>
<td>115°31.544'</td>
<td>upper shaft</td>
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<td></td>
<td>Penman Mine</td>
<td>45°39.794'</td>
<td>115°31.653'</td>
<td>Adit 1 (easternmost uphill)</td>
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<tr>
<td></td>
<td>Penman Mine</td>
<td>45°39.830'</td>
<td>115°31.792'</td>
<td>Adit 2</td>
</tr>
<tr>
<td></td>
<td>Penman Mine</td>
<td>45°39.803'</td>
<td>115°31.767'</td>
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<tr>
<td></td>
<td>Penman Mine</td>
<td>45°39.835'</td>
<td>115°31.860'</td>
<td>Adit 4 (westernmost)</td>
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<tr>
<td>EC-110</td>
<td>Diamond Hitch Mine</td>
<td>45°41.195'</td>
<td>115°31.131'</td>
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<tr>
<td>EC-107</td>
<td>Circ Twins Mine</td>
<td>45°41.246'</td>
<td>115°31.865'</td>
<td>shaft and Adit 1</td>
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<td>Circ Twins Mine</td>
<td>45°41.343'</td>
<td>115°32.149'</td>
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<td>Circ Twins Mine</td>
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<tr>
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<td>Circ Twins Mine</td>
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<td>EC-114</td>
<td>Unnamed Prospect</td>
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<td>115°32.281'</td>
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<td>EC-111</td>
<td>Twin Butte Mine</td>
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<td>Twin Butte Mill</td>
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<td>EC-106</td>
<td>Vendetta Mine</td>
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<td>EC-105</td>
<td>Cosmopolitan Mine</td>
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<td>Unnamed Prospect</td>
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<tr>
<td>EC-548</td>
<td>Trout Group Mine</td>
<td>45°47.511'</td>
<td>115°33.224'</td>
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<td>EC-71</td>
<td>Idaho Champion Mine</td>
<td>45°45'13.5&quot;</td>
<td>115°31'00.2&quot;</td>
<td>Adit 1</td>
</tr>
<tr>
<td></td>
<td>Idaho Champion Mine</td>
<td>45°45'12.9&quot;</td>
<td>115°31'05.6&quot;</td>
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</tr>
<tr>
<td></td>
<td>Idaho Champion Mine</td>
<td>45°45'10.3&quot;</td>
<td>115°31'05.8&quot;</td>
<td>Adit 3</td>
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<tr>
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<td>Idaho Champion Mine</td>
<td>45°45'05.8&quot;</td>
<td>115°31'17.2&quot;</td>
<td>Adit 4</td>
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</table>
Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>EC-83</td>
<td>Gnome Mine</td>
<td>45°44'32.8&quot;</td>
<td>115°31'20.2&quot;</td>
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<tr>
<td>E7029907</td>
<td>Unnamed Prospect</td>
<td>45°44'31.0&quot;</td>
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<tr>
<td>EC-82</td>
<td>Unnamed Mine</td>
<td>45°44'27.5&quot;</td>
<td>115°31'19.5&quot;</td>
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<tr>
<td>E7029908</td>
<td>Unnamed Mine</td>
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</tr>
<tr>
<td>EC-89</td>
<td>Unnamed Mine</td>
<td>45°43'37.5&quot;</td>
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<td>EC-93</td>
<td>Unnamed Prospect</td>
<td>45°42'50.7&quot;</td>
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<td>EC-94</td>
<td>Unnamed Mine</td>
<td>45°42'46.0&quot;</td>
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<td>EC-96</td>
<td>Unnamed Prospect</td>
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<td>E7039901</td>
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<td>Unnamed Mine</td>
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<td>115°32'38.0&quot;</td>
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<tr>
<td>EC-101</td>
<td>Orogrande-Frisco Mine</td>
<td>45°42'30&quot;</td>
<td>115°32'30&quot;</td>
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<tr>
<td>EC-102</td>
<td>Iola Mine</td>
<td>45°42'22.8&quot;</td>
<td>115°32'02.8&quot;</td>
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<td>EC-104</td>
<td>Double Diamond Hitch Mine</td>
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<td>115°31'54.4&quot;</td>
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<tr>
<td>EC-103</td>
<td>Knob Hill Pit</td>
<td>45°42'09.2&quot;</td>
<td>115°32'30.5&quot;</td>
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<tr>
<td>EC-109</td>
<td>Snowshoe Lode</td>
<td>45°41'15.1&quot;</td>
<td>115°33'09.0&quot;</td>
<td>Pit 1</td>
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<td>Snowshoe Lode</td>
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<td>115°33'13.2&quot;</td>
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<td>EC-108</td>
<td>Belevedore Mine</td>
<td>45°41'23.0&quot;</td>
<td>115°33'21.3&quot;</td>
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<td>Belevedore Mine</td>
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<td>115°33'24.6&quot;</td>
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<td>Belevedore Mine</td>
<td>45°41'26.9&quot;</td>
<td>115°33'25.2&quot;</td>
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<td>Umatilla Mine</td>
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<td>EC-63</td>
<td>Zenith Mine</td>
<td>45°46'30.0&quot;</td>
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<td>EC-550</td>
<td>Black Lady Mine</td>
<td>45°47'11.7&quot;</td>
<td>115°30'34.7&quot;</td>
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</tr>
<tr>
<td>EC-62</td>
<td>Lucky Strike Mine</td>
<td>45°46'39.0&quot;</td>
<td>115°30'44.1&quot;</td>
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<tr>
<td>EC-66</td>
<td>Baner Mine</td>
<td>45°45'57.5&quot;</td>
<td>115°31'14.5&quot;</td>
<td>Adits 1 and 2</td>
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<td>Baner Mine</td>
<td>45°45'57.4&quot;</td>
<td>115°30'55.1&quot;</td>
<td>Adit 3</td>
</tr>
<tr>
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<td>Baner Mine</td>
<td>45°45'55.5&quot;</td>
<td>115°30'54.8&quot;</td>
<td>Adits 4 and 5</td>
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<td>Baner Mine</td>
<td>45°46'02.4&quot;</td>
<td>115°30'51.1&quot;</td>
<td>shaft</td>
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Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Site Name</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Comments</th>
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<td>EC-68</td>
<td>Grangeville Mine</td>
<td>45°45'51.0&quot;</td>
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<td>EC-585</td>
<td>Old Portland Mine</td>
<td>45°44'55.1&quot;</td>
<td>115°28'16.3&quot;</td>
<td>Adit 1 (upper adit)</td>
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<td>EC-79</td>
<td>Sungold Mine</td>
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<td>Sungold Mine</td>
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<td>115°34'57.0&quot;</td>
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<td>EC-77</td>
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<td>shaft</td>
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<tr>
<td>E7269901</td>
<td>Unnamed Prospects</td>
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<td>Six Mile Mine</td>
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<td>North Hill Mine</td>
<td>45°44'47.5&quot;</td>
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<td>EC-521</td>
<td>Haystack Mine</td>
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<td>EC-522</td>
<td>Four Mile Mine</td>
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<td>115°36'56.7&quot;</td>
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<td>Four Mile Mine</td>
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<td>115°37'04.7&quot;</td>
<td>upper shaft</td>
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<td>EC-520</td>
<td>Blue Eagle Mine</td>
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<td>Coeur d’Alene Mine</td>
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<td>Unnamed Mine</td>
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<td>EC-514</td>
<td>Wonder Mine</td>
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<td>Buckhorn Mine</td>
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<td>115°39'06.9&quot;</td>
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<td>EC-517</td>
<td>Wild Hope Mine</td>
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<td>115°38'26.1&quot;</td>
<td>caved shaft</td>
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<td>EC-544</td>
<td>Center Star Mine</td>
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<td>EC-536</td>
<td>South Fork Mine</td>
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<td>115°32'19.2&quot;</td>
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<td>South Fork Mine</td>
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<td>115°32'26.6&quot;</td>
<td>Adit 2</td>
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<td>South Fork Mine</td>
<td>45°49'47.5&quot;</td>
<td>115°32'29.2&quot;</td>
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<td>E8149901</td>
<td>Red River Quarry</td>
<td>45°42'57.0&quot;</td>
<td>115°20'02&quot;</td>
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<td>EC-148</td>
<td>Jumbo Mine</td>
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<td>115°40'49.8&quot;</td>
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<td>Jumbo Mine</td>
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<td>Adit 2</td>
</tr>
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<td>Jumbo Mine</td>
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<td>Adit 3 - not determined</td>
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<td>Jumbo Mill</td>
<td>45°33'31.2&quot;</td>
<td>115°41'49.0&quot;</td>
<td>mill site</td>
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</table>
Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Elk City, Orogrande, Buffalo Hump, and surrounding areas of the Nez Perce National Forest.

<table>
<thead>
<tr>
<th>Site No</th>
<th>Site Name</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Comments</th>
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<td>115°40'59.1&quot;</td>
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<td>Blackbird Mine</td>
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<td>Adit 2 (upper adit)</td>
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