Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 4), Boise National Forest: Volume I: Atlanta Area, Elmore County, Idaho

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Field Inspection conducted by Ted Erdman, John Kauffman, and Earl H. Bennett
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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 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 (Region 1) of the USFS administers National Forest lands in the northern part of Idaho, and the National Forest lands in the southern part of the state are administered by the Intermountain Region (Region 4) of the USFS. 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. A detailed inventory was conducted on the Northern Region forests between 1996 and 2000 using protocols and report design similar to those used by the Montana Bureau of Mines and Geology for similar studies in Montana. In the summer of 2001, work began on a detailed inventory of the area around Atlanta in the Boise National Forest. Earlier work in southern Idaho included a reconnaissance inventory of about 300 properties where serious environmental hazards were most likely to be present.

1.2 PROJECT OBJECTIVES

In 1992, the USFS and IGS entered into an agreement to inventory abandoned and inactive mines on or affecting Region 4 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. Field work conducted the following year provided the Forest Service with summary information and screening forms containing site information on approximately 300 sites determined to be most likely to have environmental hazards. Work started in the summer of 2001 included field examination of properties in the Atlanta mining area in Elmore County, an area that had been burned by the Trail Creek fire the preceding summer.

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 Intermountain 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 (FeS$_2$) and pyrrhotite (Fe$_{1-x}$S). Other sulfides play a minor role in acid generation. Oxidation of iron sulfides forms sulfuric acid (H$_2$SO$_4$), sulfate ions (SO$_4^{2-}$), and reduced iron (Fe$^{2+}$). 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 (FeS$_2$, 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, CuFeS$_2$; galena, PbS; tetrahedrite, (CuFe)$_{12}$Sb$_4$S$_{13}$; 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 \([KAl_3(SO_4)_2(0H)_6]\) and jarosite \([KFe_3(SO_4)_2(0H)_6]\) will precipitate at a pH of less than 4, depending on \(SO_4^{2-}\) 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 \([MnO_2]\) dissolves and manganite \([MnO(OH)]\) precipitates. Manganese is found in mineralized environments as rhodochrosite \([MnCO_3]\) and its weathering products.

**Aluminum** solubility is most often controlled by alunite \([KAl_3(SO_4)_2(0H)_6]\) or by gibbsite \([Al(0H)_3]\), 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, \(H_2AsO_4\). Arsenic is abundant in metallic mineral deposits as arsenopyrite \([FeAsS]\), enargite \([Cu_3AsS_4]\), tennantite \([Cu_{12}As_4S_{13}]\), 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 \([CdCO_3]\); when the pH of the soil is below 6, cadmium solubility is controlled by strengite \([Cd_3(PO_4)_2]\). Octavite is the dominant control on the solubility of cadmium in soils. In water, at low partial pressures of \(H_2S\), \(CdCO_3\) is easily reduced to \(CdS\).

**Copper** solubility in natural waters is controlled primarily by the amount of carbonate present; malachite \([Cu_2(OH)_2CO_3]\) and azurite \([Cu_3(OH)_2(CO_3)_2]\) form when \(CO_3^{2-}\) 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 \([Cu_3FeS_4]\), chalcocite \([Cu_2S]\), and tetrahedrite \([Cu_{12}Sb_4S_{13}]\).
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 most of the mine sites in the study area, paying careful attention to the properties with the potential to release hazardous substances and to 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.

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></td>
<td>1. Mill site or tailings present.</td>
</tr>
<tr>
<td></td>
<td>2. Adits with discharge or evidence of discharge.</td>
</tr>
<tr>
<td></td>
<td>3. 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></td>
<td>4. Mine waste in flood plain or shows signs of water erosion.</td>
</tr>
<tr>
<td></td>
<td>5. Residences, high public use area, or environmentally sensitive area (as listed in HRS) within 200 feet of the disturbance.</td>
</tr>
<tr>
<td></td>
<td>6. Hazardous wastes/materials (chemical containers, explosives, etc.)</td>
</tr>
<tr>
<td></td>
<td>7. Open aditsshafts, highwalls, or hazardous structures/debris.</td>
</tr>
</tbody>
</table>

If the answers to criteria 1 through 6 were all "NO," 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 examined in detail 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 (or their remains), 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 Global Positioning System (GPS) units, and each site was located by latitude and longitude and by Township, Range, and Section. If previously determined, these values were checked and corrected, as needed.

On public lands, sites with ground-water discharge, flowing surface water, or contaminated soils (as indicated by impacts on vegetation) were mapped. Sketch maps show locations of the workings, exposed geology, dumps, tailings, and surface water and geologic sample locations. 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 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. One 250-ml sample was collected, which was split in the laboratory, with one sample being left raw and the other acidified with 0.1N nitric
acid. Samples were stored in a secured ice box and 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 245.7)
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.

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 1.5-4). 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
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>

discussion; a complete listing of water quality, soil chemistry, and leach test results are presented in Appendix C. It should be noted that the sampling for this study was of a reconnaissance nature only, sufficient for outlining possible problem areas for future study. Sampling density was not sufficient to provide a statistically valid description of any specific site.

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

1.5.7 Sample and Site Identification Numbers

All water, tailings, and dump samples were assigned unique numbers. These were constructed according to the following system: 1) an initial letter code identifying the person who took the sample (usually the first letter of the last name); 2) one 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., “01” if the sample was taken in 2001); 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 or for which the database identification number was determined after the field work was completed were generated in the same manner. Because of this, most of the properties in this report had field site numbers assigned to them. Those properties that were not in the database were later assigned database numbers in addition to their field site numbers.
Table 1.5-4. 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>
2.0 ATLANTA AREA, ELMORE COUNTY, IDAHO

2.1 INTRODUCTION

This volume, Volume I of the Boise National Forest report, describes thirty-three properties in the Atlanta area of the Boise National Forest. Seven properties discussed in this volume reported lode production between 1902 and 1979, and five of these properties had over 1,000 tons of total lode output. Two of the seven properties also reprocessed over 1,000 tons of old tailings. In addition, many of the older properties produced ore, sometimes in significant quantities, before 1900. However, there are no accurate records of the production from that period.

The study area covers part of the Idaho City Ranger District, which is in Elmore County (Figure 2.1-1). The mineralized areas are mostly on Atlanta Hill, which is between the Middle Fork of the Boise River, Yuba River, Decker Creek, and Montezuma Creek. Decker Creek is a tributary of the Yuba River, while the Yuba River and Montezuma Creek are both tributaries of the Middle Fork of the Boise River. Outlying properties are on the west side of the Yuba River and in the headwaters of Decker Creek. Primary access to the area is via the unpaved road from Boise along the Middle Fork of the Boise River to Atlanta; by Forest Service roads throughout the study area; and by trails that connect to the Forest Service roads. Alternate access into the area is via several unpaved routes that run from State Highway 21 north of Idaho City southward to the Middle Fork of the Boise River or northeastward from Rocky Bar on USFS Road 126.

The thirty-three mines and prospects described in this volume are located on three 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 5,149 feet at the Atlanta Power Station near where the Yuba River enters the Middle Fork of the Boise River to over 9,000 feet on the ridges to the east of the headwaters of Decker Creek; the topography is generally steep. The highest part of Atlanta Hill is just over 7,200 feet in elevation. The area was burned by forest fire in August 2000.

2.1.1 Summary of the Atlanta Study Area

Thirty-three mining properties (Table 2.1-1) were examined in the Atlanta area. Of these properties, eleven have the potential to have an environmental impact on or near USFS lands. Six have water discharges that exceed one or more water quality standards, three have waste rock near active waterways, and two have both water quality concerns and mill tailings near an active waterway.

Of the thirty-three sites discussed in this volume, three have open adits and two sites have gated adits. Of the properties with open workings, one has multiple open workings. In addition, several properties have unfenced pits or caved shafts. Some of these openings pose significant safety hazards.
Figure 2.1. Location of properties in the Atlanta area in the Boise National Forest (U.S. Geological Survey Atlanta East and Atlanta West 7.5-minute topographic maps, scale 1:12,000).
Figure 2.1-1b. Location of properties in the upper drainage of Decker Creek in the Atlanta area of the Boise National Forest (U.S. Geological Survey Ross Peak 7.5-minute topographic map, scale 1:12,000).
Table 2.1-1. Summary of properties visited in the Atlanta mining area. The properties are arranged according to site number. All sites were visited in 2001.

**Explanation:**

- **Site Number:** Idaho Geological Survey file number, or field designation number.
- **Surface Owner:** FS = Forest Service; P = Private or Patented claims; ? where ownership is uncertain
- **Water/Solid Sample:** numbers indicate the number of samples collected.
- **Environmental Concerns:** W = water; 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; T - tailings samples that exceed background or environmental standards for one or more elements in the Element Screen, and/or tailings samples that show significant leaching of one or more metals in the TCLP for Metals Screen.
- **Physical Conditions:** AO = open adit; AC = caved or otherwise closed adit; AG = gated adit; SC = caved shaft; T = trench; C = cut; P = prospect 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>Database Site Number</th>
<th>Field 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>HA 55 HA 55</td>
<td>HA 55</td>
<td>Tahoma Mine</td>
<td>P</td>
<td>1</td>
<td>W</td>
<td>3 AC</td>
<td></td>
</tr>
<tr>
<td>HA 57 HA 57</td>
<td>B7260103</td>
<td>Big Lode Mine/Mill</td>
<td>FS</td>
<td>3</td>
<td>1</td>
<td>W, T</td>
<td>2 AC, Mill</td>
</tr>
<tr>
<td>HA 58 B7260107</td>
<td>Jessie Benton Adit</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 59 B7260105</td>
<td>Greenback Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 59 B7260106</td>
<td>Greenback Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 59 B7260107</td>
<td>Greenback Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1 AC, tram tower</td>
<td></td>
</tr>
<tr>
<td>HA 59 B7260108</td>
<td>Greenback Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 59 E7260107</td>
<td>Greenback Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2 AC</td>
<td></td>
</tr>
<tr>
<td>HA 62 HA 62</td>
<td>Boise-Rochester</td>
<td>P</td>
<td>2</td>
<td></td>
<td>W</td>
<td>2 AG, 1 AC</td>
<td></td>
</tr>
<tr>
<td>HA 65 K7250101</td>
<td>Polar Bear Group</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2 P, 3 AC</td>
<td></td>
</tr>
<tr>
<td>HA 66 K7260101</td>
<td>Flint Claim Group</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1 AC, 1 SC, 1 T</td>
<td></td>
</tr>
<tr>
<td>HA 66 K7260102</td>
<td>Flint Claim Group</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA 69 B7260104</td>
<td>Last Chance Adit</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
<td>1 SC(?)</td>
</tr>
<tr>
<td>HA 69 B7260109</td>
<td>Monarch Shaft</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database Site Number</td>
<td>Field Site Number</td>
<td>Mine Name</td>
<td>Surface Owner</td>
<td>Water Samples</td>
<td>Solid Samples</td>
<td>Environmental Concerns</td>
<td>Physical Conditions/Comments</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------</td>
<td>-----------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>HA 69</td>
<td>B7270101, E8040101</td>
<td>Monarch Millsite</td>
<td>P</td>
<td></td>
<td>1</td>
<td>T</td>
<td>Mill</td>
</tr>
<tr>
<td>HA 69</td>
<td>E8030101</td>
<td>Kirby Fraction Prospect (part of Monarch)</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA 69</td>
<td>B7260109A</td>
<td>Atlanta Claim or Kirby Fraction (part of Monarch)</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA 69</td>
<td>B7260110</td>
<td>Atlanta Claim or Kirby Fraction (part of Monarch)</td>
<td>P</td>
<td></td>
<td></td>
<td>1 AC, 1 AG</td>
<td></td>
</tr>
<tr>
<td>HA 70</td>
<td>B7250110</td>
<td>Buffalo Adit</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 70</td>
<td>B7250111</td>
<td>Buffalo Shaft</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1SC(?), possible hoist site for Buffalo Mine</td>
</tr>
<tr>
<td>HA 70(?)</td>
<td>B7250109</td>
<td>Buffalo Mine(?)</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 SC, 1 T</td>
</tr>
<tr>
<td>HA 73</td>
<td>B7250108</td>
<td>Hill and Davis Claim</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>P or T</td>
</tr>
<tr>
<td>HA 74</td>
<td>B7250101</td>
<td>Atlanta #2 Adits</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 74</td>
<td>B7250102</td>
<td>Atlanta #2 Adits</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 74</td>
<td>B7250103</td>
<td>Atlanta #2 Adits</td>
<td>P</td>
<td>1</td>
<td>W</td>
<td>1 AC</td>
<td></td>
</tr>
<tr>
<td>HA 74</td>
<td>B7250104</td>
<td>Atlanta #2 Adits</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC(?)</td>
</tr>
<tr>
<td>HA 75</td>
<td>B7250106</td>
<td>Minerva Mine, lower adit</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 75</td>
<td>B7250107</td>
<td>Minerva Mine, upper adit</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 75</td>
<td>HA 75</td>
<td>Minerva Millsite</td>
<td>FS</td>
<td>2</td>
<td>T</td>
<td>Mill</td>
<td></td>
</tr>
<tr>
<td>HA 83</td>
<td>K7260111</td>
<td>Gadsby Lead-Nickel Mine (Constant Hope Mine)</td>
<td>FS</td>
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<td></td>
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<td>4 AC</td>
</tr>
<tr>
<td>HA 84</td>
<td>HA 84</td>
<td>Yuba Group</td>
<td>FS, P</td>
<td>2</td>
<td>1</td>
<td>W, T</td>
<td>2 AC, Mill</td>
</tr>
</tbody>
</table>
Table 2.1-1 (continued). Summary of properties visited in the Atlanta area.

<table>
<thead>
<tr>
<th>Database Site Number</th>
<th>Field 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>HA 84</td>
<td>E8010101</td>
<td>Unnamed Property</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>Mill(?)</td>
</tr>
<tr>
<td>HA 87</td>
<td>HA 87</td>
<td>Unnamed Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1 AO</td>
</tr>
<tr>
<td>HA 1263</td>
<td>E7250101</td>
<td>Pettit Group(?)</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>AC, T, P</td>
</tr>
<tr>
<td>HA 1263</td>
<td>E7250102</td>
<td>Pettit Group(?)</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>4 AC</td>
</tr>
<tr>
<td>HA 1264</td>
<td>E7260101</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 1265</td>
<td>E7260102</td>
<td>Unnamed Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 1266</td>
<td>E7260104</td>
<td>John Bascom Lode</td>
<td>FS</td>
<td>1</td>
<td>W</td>
<td></td>
<td>3 AC, T, P</td>
</tr>
<tr>
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<td>E7260106</td>
<td>Chrysolite Prospect(?)</td>
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<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
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<td>HA 1268</td>
<td>E8020102</td>
<td>Bonanza Prospects</td>
<td>FS</td>
<td>1</td>
<td>W</td>
<td>2 AC</td>
<td></td>
</tr>
<tr>
<td>HA 1269</td>
<td>E8020104</td>
<td>Golden Bell Prospects</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1 AC</td>
</tr>
<tr>
<td>HA 1269</td>
<td>E8020105</td>
<td>Golden Bell Prospects</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>4 AC, P</td>
</tr>
<tr>
<td>HA 1270</td>
<td>B7250105</td>
<td>Idaho Group</td>
<td>FS</td>
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<td></td>
<td></td>
<td>1 AC, P</td>
</tr>
<tr>
<td>HA 1271</td>
<td>B7260100</td>
<td>Alaska No. 2 Adit</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td>1 AO</td>
</tr>
<tr>
<td>HA 1272</td>
<td>B7260102</td>
<td>Alaska No. 1 Adit</td>
<td>P</td>
<td></td>
<td></td>
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</tr>
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<td>FS?P?</td>
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</tr>
<tr>
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<td>Unnamed Mine</td>
<td>P</td>
<td></td>
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<td>1 AC</td>
</tr>
</tbody>
</table>
2.2 GEOLOGY

The most recent mapping in the Atlanta area is Worland and others (1991; Figure 2.2-1). Anderson (1939) shows the locations of many of the major veins in the Atlanta area (Figure 2.2-2). The geology and ore deposits of the area are discussed in Anderson (1939), Kiilsgaard and Hingley (1989), Kiilsgaard and Bacon (in preparation), Taylor (1986), and unpublished reports on individual deposits. Bennett (1980) analyzed Idaho batholith rocks similar to those that underlie much of the study area. A brief description of the geologic framework of the area, summarized from Mitchell (2000), follows.

The ore deposits in the Atlanta area are epithermal gold-silver lodes in a northeast-trending fault zone that cuts biotite granodiorite of the Idaho batholith. The lode strikes N. 50° to 70° E. and dips steeply. The biotite granodiorite on Atlanta Hill is conspicuously porphyritic with large flesh-colored or light gray microcline phenocrysts. This rock is similar to the main body of the Idaho batholith in the surrounding area.

Mineralization was associated with shearing along the fault zones, but the shear zones were not evenly mineralized. Shoots of high-grade ore were separated by equal or larger volumes of low-grade ore. Many of the larger orebodies were associated with zones where the strike of the lode became slightly more eastward than the average trend of the lode (Anderson, 1939).

2.3 ECONOMIC GEOLOGY

2.3.1 General Characteristics of the Ore

The ore deposits in the Atlanta area are epithermal gold-silver lodes in a northeast-trending fault zone that cuts biotite granodiorite of the Idaho batholith. The Atlanta lode is about 2 miles long and ranges in thickness from 40 to 120 feet. The lode strikes N. 50° to 70° E. and dips steeply. The rocks in and near the lode have been argillically altered and locally silicified, and the ore minerals were deposited concurrently with the silicification. Extensive gash veins intersect the lode obliquely and extend northwest and southeast away from the lode. The gash veins are in tensional fractures that formed from structural adjustments along the lode (Anderson, 1939; Kiilsgaard and Hingley, 1989). Anderson (1939) described the lode and the major orebodies in detail.

The dominant mineral in the Atlanta ore deposits was fine-grained quartz, accompanied by widespread, finely crystalline arsenopyrite and lesser amounts of pyrite. The ore minerals were gold, complex silver sulfosalts, and negligible amounts of lead, zinc, and copper sulfides. Most of the bonanza zones mined in the early days were characterized by silver minerals. These zones were found within 200 feet of the surface. By weight, silver was more abundant than gold, but the gold was more widely distributed both laterally and vertically. Most of the gold was in microscopic grains and, even in the richest ore, was not visible to the naked eye (Anderson, 1939). With current methods of processing large quantities of very low grade gold ore, much of the Atlanta lode is again of economic interest.
Figure 2.2-1. Geologic map of the Atlanta area (Worl and others, 1991). Kqd = Cretaceous quartz diorite; Kgdk = Cretaceous potassium-rich hornblende-biotite granodiorite; Klg = Cretaceous leucocratic granite; Tqm = Eocene quartz monzodiorite; Tg = Eocene granite; Ta = Eocene andesite dikes; Tr = Eocene rhyolite dikes; Tb = Miocene basaltic dikes; Qhg = Pleistocene high gravels; Qm = Pleistocene glacial deposits; Qt = Pleistocene terrace gravels; Qa = Holocene alluvium; labels in smaller letters are dike rocks. Heavy lines are high-angle normal faults, dashed where approximately located, dotted where concealed; ball and bar on downthrown side. Scale approximately 1:125,000.
Figure 2.2-2. Topographic and geologic map of a part of the Atlanta district, showing the Atlanta lode and other veins (Anderson, 1939, Figure 2). Contours and claim boundaries shown by dashed lines are approximate.
Production was recorded from seven lodes mines in the study area between 1902 and 1979, and five of these properties had over 1,000 tons of total lode output. Two of the seven properties also reprocessed over 1,000 tons of old tailings. All of these mines produced gold and silver, sometimes accompanied by base metals. In addition, many of the older properties produced ore, sometimes in significant quantities, before 1900. However, there are no accurate records of the production from that period.

2.3.1.1 Early History of the Atlanta Mining Area

The early history of the district is summarized as follows from Wells (1983):

Gold was discovered in the Atlanta area in 1863. Placer mining on a significant scale started the following September or October. The main Atlanta lode was discovered in November 1864. Initially, the ore was processed in arrastras, but the following summer, arrangements were made to bring two stamp mills into the district. These mills operated at a disadvantage, because they only recovered the gold, while the Atlanta ores were predominantly silver. The Washoe process, developed to process similar ores from the Comstock lode, was not tried until after 1869. Numerous properties were being explored by then, but the district suffered because the only access was by pack train over a 7,727-foot divide from Rocky Bar. A road was completed from Rocky Bar in 1878, and a river-level road from Boise up the Middle Fork of the Boise River was finally completed in 1936.

The Atlanta ores proved to be extremely refractory, and a number of the lesser prospects were sold to eastern or British investors for inflated prices. Many of the mills stockpiled their tailings, and when later reprocessed, these material yielded more metals the third time they were processed than they had the first two times. From 1878 to 1884, there was considerable activity in Atlanta, but only the highest grade ore could be processed profitably. However, when the Tahoma Mine failed to make its payroll in late 1884, most of the mines in the district also closed. Most of the mines were put up for sale, and attempts to solve the ore processing problem also continued. Sporadic operations resumed in Atlanta in 1894, but the solution to the recovery problem was not found until after the St. Joseph Lead Company installed an amalgamation-flotation mill at the Boise-Rochester Mine in 1932.

2.3.1.2 Recent History of the Atlanta Mining Area

The following information on recent activities in the Atlanta area is summarized from Mitchell (2000):

By the mid-1970s, the properties formerly owned by Talache Mines were controlled by the trustees for the estate of A. H. Burroughs, Jr., the former president of Talache Mines, Inc. The trustees were looking for a company to resume work on the property. Among the assets the trustees offered to prospective developers were 1 million tons of tailings from the St. Joseph Lead and Talache operations, six ore shoots accessible for underground mining, and an area for possible open-pit operations. J. R. Simplot Company evaluated the property from August to December 1976, but concluded there was little chance of establishing an economic operation at
the then-current prices for gold and silver. Simcor Co. of Osburn, Idaho, leased the property from 1977 to at least 1979, but did mostly assessment work.

The property was leased to Yanke Machine Shop in 1981. The following year, Yanke began exploration and development, including production of a small amount of ore. This work continued until 1975, when the property was subleased to Atlanta Gold Corporation. For the next several years, Atlanta Gold evaluated the property for its potential as an open-pit, heap-leach gold operation. Other work evaluated the most economic way to process the ore. Atlanta Gold spent most of 1989 in a legal battle with U.S. Gold Corporation over control of the company. The case was decided in favor of Atlanta Gold in December, but the start-up of the mine was postponed. The company began looking for a buyer or a joint-venture partner. Newmont Exploration signed an agreement with Atlanta Gold in late 1990, and substantial drilling was done the following year. However, this work failed to increase known reserves, and Newmont dropped its option.

In May 1991, the high water on the Middle Fork of the Boise River washed out the Kirby Dam, the site of Atlanta’s small hydroelectric power plant. The break in the dam released 40 percent of the millions of tons of old tailings that had accumulated over the years behind the dam; a rock-filled dam was later built to control the release of the rest of the tailings. Attempts in 1992 to reopen the 900-level adit of the Boise-Rochester Mine were delayed when the U.S. Environmental Protection Agency required a National Pollution Discharge Elimination System permit because water was draining from the adit.

In late 1993, Atlanta Gold entered into a joint venture agreement with Ramrod Gold USA, Inc. In 1994, the company purchased the Tahoma Mine. The following year, Ramrod attempted to gain 100 percent ownership of the Atlanta project, but the deal apparently was not completed. Ramrod Gold USA changed its name to Ramrod Gold, Ltd., and the following year, Ramrod’s parent company changed its name to Quest International Resources. Quest conducted a feasibility study on the Atlanta project in 1996.

In February 1997, Atlanta Gold and Voisey Bay Resources formed Twin Gold Corporation by a stock exchange. Quest was given a 20 percent interest in the Atlanta property for its investment in the mine since 1993. In May, heavy flooding washed an estimated 30,000 cubic yards of tailings from the Talache millsite into Montezuma Creek and then into the Middle Fork of the Boise River. Dams and diversion channels were built to keep the tailings out of the active waterways. Twin Gold continued working toward putting the property into production, but this has not yet been accomplished. In June 1998, the Environmental Protection Agency ordered the property’s owner, Monarch Greenback, LLC, to begin immediate cleanup of the tailings area. A considerable amount of cleanup work was done later that summer.

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 this report on the
Atlanta mining area:

Boise-Rochester Mine—tailings
Monarch Mine—tailings
Minerva Mine—tailings
Yuba Tunnel—tailings
Unnamed Mine—tailings
Big Lode (Leonora) Mine—tailings
Buffalo Mine
Greenback Mine

Work began on what would later become the Pettit Group of the Boise-Rochester Mine around
1869. The mine had a twenty-stamp mill near the bottom of Montezuma Gulch. Ore from other
claims that later became part of the Boise-Rochester was milled in arrastras. Small operations and
assorted milling tests continued intermittently until the property was sold to the Bagdad-Chase
Gold Mining Company in 1906. The company began constructing a 50 tons-per-day (tpd) mill,
which took most of 1907 to complete. Equipment included twenty stamps, vanners, and Callow
screens. Milling tests were conducted, and by 1908, another twenty stamps and other equipment
were added, increasing the mill's capacity to 150 tpd. A 150-tpd cyanide plant was also added.
The mill produced both bullion by amalgamation and concentrate, which was treated by roasting
and cyanide. The mill continued to operate through the end of 1910, with most of the material
processed during that year being old tailings.

The mine and mill reopened in 1914 under the control of the Boise-Rochester Mining Company.
Only the amalgamation and concentration parts of the mill were operated for the next two years
as the company continued to search for an acceptable milling process. A 100-tpd flotation plant
was added in 1916. The mill operate from January through September of the following year. St.
Joseph Lead took over the property in October 1917 and explored it for the next two years.
Several hundred tons of ore was milled for test purposes in 1919, then the mine was put into
reserve for the next decade. In the fall of 1931, the old mill was torn down, and the usable lumber
and equipment recycled into a new 200-tpd mill. In 1932, the mine was the largest producer in
the state, shipping an amount of gold that exceeded the previous year’s total for the entire state.
The ore was treated by amalgamation and flotation. Mitchell (2000, p. 108-117) contains a
detailed description of this mill. The property was the largest producer of gold ore and old
tailings in the state for the next three years. The mine was closed in June 1936, and the mill was
dismantled and the equipment removed.

Talache Mines, Inc., took over the mine in 1937 and reequipped the mill in 1938. The 150-tpd
amalgamation and flotation mill treated gold ore and tailings for the next few years. The mill's
capacity was increased to 350 tpd in 1941. Tungsten was discovered in the Buffalo ores in 1941,
and in 1942, the company stated the mill's capacity was 450 tpd of gold ore and 200 tpd of
tungsten ore. Despite wartime restrictions, the property operated until November 1, 1944. The
mill ran intermittently in 1945 and resumed full operation the following year. Starting in June

24
1946, the company began leasing out parts of the mine, with most of the ore being processed through the mill. This arrangement continued until October 1953, when the company discontinued operations. Parts of the mine were leased to former employees, who milled their ore when sufficient quantities had been accumulated. In late 1949 or early 1950, the company milled about 500 tons of antimony ore for Hermada Mines. Lessees continued to operate the mine until the mid-1960s. Recent activities at the mine have included mill tests on the ore and tailings, but only minor production was recorded. The mill building was completely destroyed by forest fire in 2000.

The Monarch was one of the first mines located in the district, and by 1865, an arrastra was being used to process the ore. By 1869, the company was operating a ten-stamp mill near the mouth of Quartz Creek, and during that spring, the mill began using to Washoe process on the Monarch ores. However, operations were suspended by the end of the year. Lessees began working the mine in 1874. The richest ore was packed out; the second-class ore was processed for the gold and the tailings were impounded for later re-treatment. The mine began producing steadily around 1877, and improvements in the milling technique were reflected in minor increases in the mill’s recovery rate. A new twenty-stamp mill was completed in 1883, but when the neighboring Tahoma Mine failed to meet its payroll in late 1884, the Monarch also closed. The mine reopened in 1901, and a great deal of work was needed to refurbish the mine. Extensive milling tests were run prior to equipping the mill, but in spite of this, the mill could not treat the ore adequately. Mill tests were run from 1908 until 1910, producing small amounts of bullion. Lessees reworked the dumps from 1915 to 1917, while attempts continued to find a solution to the milling problem. Treatment at this time consisted of amalgamation, table concentration, and roasting and cyaniding the concentrates. The mine was closed until 1929, when the St. Joseph Lead Company acquired a lease and option, which lapsed the next year. Minor production was reported from the mine between 1931 and 1934. In 1934, St. Joseph Lead again leased the Monarch and mined the known orebodies between 1934 and 1936, processing the ore through its own mill. The Last Chance Mining Company worked the Monarch from 1936 through 1939. This company installed a 50-tpd mill in 1936. High-grade ore was shipped direct to the smelter, but the Monarch dumps and tailings were processed through the mill. In November 1939, Talache Mines, Inc., acquired the Monarch and combined it with the company’s other holdings. The Monarch was apparently leased separately during the 1970s, and minor production was reported from the mine in 1978.

The Minerva is one of the oldest mines in the district. Earlier production from the property was a byproduct of sampling the ore. By 1905, the property had a ten-stamp mill on Decker Creek, which reportedly lost half the values in the tailings. A cyanide plant was added to the mill in 1906. A two-bucket aerial tram was used to carry the ore to the mill. The mine was one of the largest producers in the district in 1909 and the largest producer in Elmore County in 1910. The mill was doubled to twenty stamps in 1910. The mine was closed in October 1911, but the mill processed a small amount of ore the following year. The mine was worked intermittently for the next quarter of a century. In 1938, Frank May, Bud Brown, and their associates constructed a 50-tpd concentration, amalgamation, and flotation mill. This mill was built at the old millsite. Work at the property continued until World War II. Around 1951, Little Queens Mines, Inc., leased the property and explored the property until 1956.
By 1880, the Buffalo and Atlanta Company had gained control of most of the claims along the western part of the Atlanta Lode and had driven a 1,400-foot crosscut, the Yuba tunnel, to intersect the lode at depth. However, despite reports of finding good ore, work on the Yuba tunnel was apparently discontinued in the early 1880s. Several years later, a twenty-stamp mill was built near the portal of the Yuba tunnel to treat ore from shallow workings in and near the outcrop of the lode. By 1909, the Yuba tunnel had been caved for a number of years. The St. Joseph Lead Company acquired the claims on the west end of the Atlanta Lode in 1917. It is not known when the flotation mill was built at this site.

An unnamed mill is at the confluence of the Yuba River and Trail Creek. The tailings at this site appear to be from a flotation mill, but it is not known which mine was associated with this mill.

The Leonora (Big Lode) was discovered in 1866 and was acquired along with a ten-stamp mill by one of the district's notorious promoters, W. R. DeFrees, in 1868. DeFrees's creditors attached the mine and mill in 1869, but the property was soon back in production. The mine was sold to the Big Lode Mining Company late in 1882. The new owners built a twenty-stamp mill the following year, but only sporadic activity was reported at the mine for the next three-and-one-half decades. The mine was reopened in 1919, and milling tests were conducted in 1919 and 1920. The mine was active again from 1938 to about 1940.

The Buffalo Mine was discovered in 1864, but little is known about the earliest work at the mine. High-grade gold ore was shipped direct to smelters in the late 1860s and early 1870s. A ten-stamp mill was packed into Atlanta in 1876 and started operation the following May, processing both Buffalo and custom ores. The mine closed in 1884 or 1885, along with most of the other mines in the Atlanta area. It was purchased in 1901 or 1902 by T. N. Barnsdall and combined with the Monarch and Last Chance.

The Greenback Mine had a ten-stamp mill that operated with mixed results during 1867 and 1868. The property was sold to the Monarch Company in 1869.

Other mills are mentioned in the early histories of the Atlanta area. However, the locations of these mills are uncertain, and some of them may never have gone into production.

2.4 HYDROLOGY AND HYDROGEOLOGY

The study area covers the Forest Service lands in parts of the drainage of the Middle Fork of the Boise River, the Yuba River, and Decker Creek (Figure 2.1-1). The Middle Fork of the Boise River eventually flows into Arrowrock Reservoir, which discharges into Lucky Peak Reservoir and the Boise River.

As noted, 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.
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:

- E7250104—Montezuma Creek
- E7260103—Tributary of Montezuma Creek
- K7250103—Decker River
- K7260110—Decker Creek at Trail Creek

Sample E7250104 exceeds the Secondary MCLs for iron and manganese in the total recoverable metals screen. All other samples are below all standards in both the dissolved metals and total recoverable metals screens.

2.5 SUMMARY OF THE ATLANTA STUDY AREA

2.5.1 Summary of Environmental Observations

Over half of the samples from properties with water discharges exceed EPA water standards for one or more elements (Tables 2.5-1 and 2.5-2). Water quality variances include significant amounts of arsenic, cadmium, iron, and manganese at the Boise-Rochester Mine; arsenic and lead at the Stanley Mine and the Atlanta No. 2 property; and arsenic at the John Bascom Lode, in Quartz Creek near the Big Lode Mine, and at the Yuba tunnel. Arsenic in excess of one or more water quality standards is the most prevalent water quality variance in the Atlanta study area. The elements detected in the water samples are also found in the rock units underlying the drainages.

2.5.2 Tailings and Mine Waste Samples

Samples were collected from the properties where tailings were present (Tables 2.5-3 and 2.5-4). As expected, many of these samples contain metal loadings, including arsenic, copper, cadmium, iron, and zinc, which exceed the Clark Fork Superfund Background Levels.
Table 2.4-1. Dissolved metals screen for reference water samples from the Atlanta mining area, Elmore County, Idaho. Numbers on bold-face type exceed one or more water quality standards.

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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>
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<th>Zn (ppm)</th>
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<td>---</td>
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<td>Tributary to Montezuma Creek, reference</td>
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<td>---</td>
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<td></td>
</tr>
<tr>
<td>K7250103</td>
<td>Decker Creek, reference</td>
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<td>---</td>
<td>---</td>
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<tr>
<td>K7260110</td>
<td>Decker Creek at Trail Creek, reference</td>
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**EXPLANATION:**
Blank space equals no analysis
Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<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>
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<td>0.050</td>
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<td>0.020</td>
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Table 2.4-2. Total recoverable metals screen for reference water samples in the Atlanta mining area, Elmore County, Idaho. Numbers on bold-face type exceed one or more water quality standards.

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<th>Sample No.</th>
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<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>
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<th>Ni (ppm)</th>
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<td>E7260110</td>
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<td>0.0067</td>
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EXPLANATION
Blank space equals no analysis
Below Detection Limit is ---

WATER QUALITY STANDARDS

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<th>Cr (mg/L)</th>
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<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<tr>
<td>Primary MCL</td>
<td>0.050</td>
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<td>0.005</td>
<td>0.100</td>
<td>1.000</td>
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<td>0.018-0.034</td>
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<td>0.3600</td>
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<td>0.012-0.021</td>
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<td>0.000012</td>
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Table 2.5-1. Dissolved metals screen for water samples from the Atlanta mining area, Elmore County, Idaho. Numbers in bold-face type exceed one or more water quality standards.

<table>
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<th>Sample No.</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>
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<tbody>
<tr>
<td>B7250103</td>
<td>Atlanta No. 2 (HA-74), Adit 3, adit water</td>
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<tr>
<td>E7250103</td>
<td>Boise-Rochester Mine (HA-62), 600 level, adit water</td>
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<td>0.046</td>
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<tr>
<td>E7260105</td>
<td>John Bascom Lode (HA-1266), Adit 1</td>
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<tr>
<td>E8020103</td>
<td>Site E8020102, Adit 2</td>
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<tr>
<td>E8030103</td>
<td>Big Lode Mine (HA-57), adit water</td>
<td>0.035</td>
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<tr>
<td>E8030104</td>
<td>Big Lode Mine (HA-57), upstream on Quartz Creek</td>
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<tr>
<td>E8030105</td>
<td>Big Lode Mine (HA-57), downstream on Quartz Creek</td>
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<td>E8030108</td>
<td>Stanley Mine (HA-1274), Adit 3</td>
<td>0.029</td>
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<tr>
<td>E8030109</td>
<td>Tahoma Mine (HA-57), Adit 3</td>
<td>0.024</td>
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<tr>
<td>K7260106</td>
<td>Yuba tunnel (HA-84), adit water</td>
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<tr>
<td>K7260106</td>
<td>Decker Creek, upstream from Minerva tailings</td>
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<td>K7260109</td>
<td>Decker Creek, downstream from Minerva tailings</td>
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<tr>
<td>K7260114</td>
<td>Trail Creek, downstream from unknown tailings</td>
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**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

<table>
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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>
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<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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</thead>
<tbody>
<tr>
<td>Primary MCL</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>
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<td>0.11-0.19</td>
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<td>Aquatic Life, Acute</td>
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<td>1.7-3.1</td>
<td>0.018-0.034</td>
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<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>
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<td>0.16-0.28</td>
<td>0.11-0.19</td>
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</table>

Estimated Detection Level (33% confidence)

|                      | 0.10      | 0.0007    | 0.020     | 0.020     | 0.020     | 0.020     | 0.0025    | 0.0050    | 0.050     | 0.020     |           |           |

mg/L = ppm
Table 2.5-2. Total recoverable metals screen for water samples in the Atlanta mining area, Elmore County, Idaho. Numbers in bold-face type exceed one or more water quality standards.

<table>
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<tr>
<th>Sample 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>B7250103</td>
<td>Atlanta No. 2 (HA-74), Adit 3, adit water</td>
<td>0.0620</td>
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<td>---</td>
<td>0.037</td>
<td>0.0031</td>
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<tr>
<td>E7250103</td>
<td>Boise-Rochester Mine (HA-62), 600 level, adit water</td>
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<td>Boise-Rochester Mine (HA-62), 900 level, adit water</td>
<td>2.3000</td>
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<td>14.000</td>
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<td>0.1800</td>
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<td>Site E8020102, Adit 2</td>
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<td>Yuba Tunnel (HA-84), adit water</td>
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<tr>
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<td>Decker Creek, upstream from Minerva tailings</td>
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</table>

**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<th>Component</th>
<th>Primary MCL</th>
<th>Secondary MCL</th>
<th>Aquatic Life, Acute</th>
<th>Aquatic Life, Chronic</th>
<th>Estimated Detection Level (33% confidence)</th>
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<td>0.0007</td>
</tr>
<tr>
<td>As (mg/L)</td>
<td>0.200</td>
<td>0.004-0.009</td>
<td>0.3600</td>
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<td>0.020</td>
</tr>
<tr>
<td>Ba (mg/L)</td>
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<td>0.004-0.009</td>
<td>0.004-0.009</td>
<td>0.020</td>
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<tr>
<td>Cd (mg/L)</td>
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<tr>
<td>Cr (mg/L)</td>
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<td>Cu (mg/L)</td>
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<td>1.000</td>
<td>1.000</td>
<td>0.0500</td>
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<td>Pb (mg/L)</td>
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<td>Mn (mg/L)</td>
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<td>Hg (mg/L)</td>
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<td>Ni (mg/L)</td>
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<td>0.11-0.28</td>
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Table 2.5-3. Element screen for tailings samples from mills in the Atlanta mining area, Elmore County, Idaho.

<table>
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<th>Sample 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>
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<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<tr>
<td>E8030106</td>
<td>Big Lode Mine (HA-57), mill tailings</td>
<td>9.3000</td>
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<td>40.00</td>
<td>5.9</td>
<td>4.50</td>
<td>13,000.0</td>
<td>0.1600</td>
<td>38.00</td>
<td>—</td>
<td>7.20</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>E8040102</td>
<td>Monarch Mine (HA-69), mill tailings</td>
<td>2.8000</td>
<td>17.00</td>
<td>12.00</td>
<td>3.0</td>
<td>9.90</td>
<td>5,100.0</td>
<td>0.0100</td>
<td>23.00</td>
<td>—</td>
<td>7.20</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>K7260104</td>
<td>Yuba Mine (HA-84), flotation tailings</td>
<td>3.2000</td>
<td>92.00</td>
<td>18.00</td>
<td>2.5</td>
<td>6.50</td>
<td>8,100.0</td>
<td>0.2600</td>
<td>13.00</td>
<td>—</td>
<td>33.00</td>
<td>—</td>
<td>—</td>
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<tr>
<td>K7260107</td>
<td>Minerva Mine (HA-75), jigm tailings</td>
<td>0.6700</td>
<td>52.00</td>
<td>3.40</td>
<td>2.4</td>
<td>3.10</td>
<td>10,000.0</td>
<td>0.0180</td>
<td>180.00</td>
<td>—</td>
<td>58.00</td>
<td>—</td>
<td>—</td>
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<tr>
<td>K7260108</td>
<td>Minerva Mine (HA-75), flotation tailings</td>
<td>5.9000</td>
<td>27.00</td>
<td>33.00</td>
<td>—</td>
<td>3.50</td>
<td>6,700.0</td>
<td>0.0810</td>
<td>3.30</td>
<td>—</td>
<td>13.00</td>
<td>—</td>
<td>—</td>
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<tr>
<td>K7260113</td>
<td>Unnamed mill on Trail Creek, flotation tailings</td>
<td>8.6000</td>
<td>81.00</td>
<td>49.00</td>
<td>3.8</td>
<td>57.00</td>
<td>19,000.0</td>
<td>0.1200</td>
<td>50.00</td>
<td>2.1</td>
<td>82.00</td>
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</tr>
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</table>

Clark Fork Superfund Background Levels (mg/Kg) = ppm:

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<tr>
<th></th>
<th>As</th>
<th>Cd</th>
<th>Pb</th>
</tr>
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<tbody>
<tr>
<td>U.S. Mean Soil</td>
<td>6.7</td>
<td>0.7</td>
<td>20.0</td>
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<tr>
<td>Helena Valley Mean Soil</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
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<tr>
<td>Missoula Lake Bed Sediments</td>
<td>NA</td>
<td>0.2</td>
<td>34.0</td>
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<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 tailings samples from the Atlanta mining area, Elmore County, Idaho.

<table>
<thead>
<tr>
<th>Sample 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>E8030106</td>
<td>Big Lode Mine (HA-57), mill tailings</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.00280</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>E8040102</td>
<td>Monarch Mine (HA-69), mill tailings</td>
<td>1.30000</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.00028</td>
<td>---</td>
<td>---</td>
<td>1.20000</td>
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<tr>
<td>K7260104</td>
<td>Yuba Mine (HA-84), flotation tailings</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.00320</td>
<td>---</td>
<td>---</td>
<td>0.92000</td>
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<tr>
<td>K7260107</td>
<td>Minerva Mine (HA-75), jig tailings</td>
<td>0.29000</td>
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<td>1.20000</td>
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<tr>
<td>K7260108</td>
<td>Minerva Mine (HA-75), flotation tailings</td>
<td>0.60000</td>
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<td>---</td>
<td>0.00044</td>
<td>---</td>
<td>---</td>
<td>0.36000</td>
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<tr>
<td>K7260113</td>
<td>Unnamed mill on Trail Creek, flotation tailings</td>
<td>2.30000</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.20000</td>
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</tbody>
</table>

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

**WATER QUALITY STANDARDS**

<table>
<thead>
<tr>
<th></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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<tr>
<td>Primary MCL</td>
<td>0.050</td>
<td>0.005</td>
<td>0.100</td>
<td>0.050</td>
<td>0.002</td>
<td>0.050</td>
<td>0.100</td>
<td>2.000</td>
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<td>Secondary MCL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.002</td>
<td>0.050</td>
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<td>0.0041-0.0134</td>
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<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></td>
<td>0.00012</td>
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<tr>
<td>Aquatic Life, Chronic</td>
<td>0.190</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.003-0.008</td>
<td>0.00012</td>
<td></td>
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</tr>
<tr>
<td>Estimated Detection Level (33% confidence)</td>
<td>0.250</td>
<td>0.020</td>
<td>0.250</td>
<td>0.250</td>
<td>0.00023</td>
<td>0.500</td>
<td>0.020</td>
<td>0.100</td>
</tr>
</tbody>
</table>
3.0 ATLANTA MINING AREA, ELMORE COUNTY, IDAHO — MINE DESCRIPTIONS

3.1 BOISE-ROCHESTER MINE (Site Nos. HA-62 and HA-67)
Alternate names—Talache Mine; General Pettit Mine; Pettit Mine; Bagdad-Chase; St. Joe; Old Chunk; Stedtman; Lombard.

Note: This site includes the Boise-Rochester 600 Level, the Boise-Rochester 900 Level, a third adit, the old millsite, and the Talache tailings impoundment. The older Boise-Rochester workings on the eastern end of the Atlanta lode are designated HA-62 in the Idaho Geological Survey’s database, and the more recent Talache Mine, which includes the Boise-Rochester workings as well as additional openings farther to the west along the lode, is designated HA-67.

3.1.1 Site Location and Access (Figure 2.1-1)

The Boise-Rochester Mine, more recently known as the Talache Mine, is on Montezuma Creek southeast of the town of Atlanta. The 900 Level of the mine is approximately 1 mile from town along FS Road 207, and the 600 Level is near the head of Montezuma Creek about 1.3 miles from town along Road 207. The 900 Level is in the NW¼ of the NE¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle, and the 600 Level is in the NE¼ of the SW¼ of the NE¼ of section 11 (Figure 3.1-1). The Talache tailings impoundment is almost 1 mile north of the mine on the east side of the Atlanta townsite near the center of the W½ of section 2, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle. The site is along Montezuma Creek on the east side of Road 207. Both the mine and tailings sites are on patented claims.

3.1.2 Geologic Features (Figure 2.2-1)

The Boise-Rochester Mine is on the northeast end of the Atlanta Lode near the intersection of the lode with a large northwest-trending fault that follows Montezuma Creek. A detailed description of the property is given in Anderson (1939, p. 47-52). The Atlanta Lode trends roughly N. 50° E. and dips 70° to 80° NW. The lode cuts biotite granodiorite of the Idaho batholith and varies from 40 feet to 80 feet in width.

3.1.3 Site History

The following history of the Boise-Rochester Mine is summarized from Mitchell (2000):

Work at the mine appears to have started around 1869, with considerable ore mined from the Pettit orebody in the 1870s. By 1895, the eastern 1,500 feet of the Atlanta lode was controlled by one company. The mine was sold to the Bagdad-Chase Gold Mining Company in 1906. This company operated the property until 1911. In 1914, the mine was reopened by the Boise-
Rochester Mining Company, a reorganization of Bagdad-Chase. Despite the remoteness of the district and difficulties in milling the refractory ore, the mine was the major producer in the district for the next few years.

St. Joseph Lead Company optioned the mine in 1917. The company developed the property for the next two years before putting the mine in reserve for a decade. In the latter part of 1929, St. Joseph Lead leased the adjacent Monarch Mine and began driving its workings westward toward the Monarch shaft. The lease on the Monarch lapsed in 1930. The Boise-Rochester Mine was the largest producer of gold in the state from 1932 to 1935. The lease on the Monarch was renewed in 1934. When St. Joseph Lead closed the mine in June 1936, all known orebodies in the Boise-Rochester and Monarch ground were exhausted. The equipment was removed from the mine and mill, and the property was sold to the Sawtooth Company.

In early 1937, the Boise-Rochester Mine was taken over by Talache Mines, Inc. After blocking out several months’ worth of ore, Talache reequipped the mill in 1938. Late in the following year, the company added the Monarch, Buffalo, and Last Chance properties to its holdings. Talache was the largest gold producer in the state in 1940 and 1941.

Tungsten was discovered on the property in 1940. The tungsten and arsenic in Talache’s ore apparently prevented the mine from being closed as “nonessential” by War Production Board Order L-208. The mine operated until government restrictions and labor shortages forced its closure in November 1944. The mill operated intermittently the following year, and little more than maintenance was done at the mine.

The mine reopened in 1946, but after June 1, most of the ore was mined by lessees. Talache was the largest producer in the district from 1947 to 1952. The company put the mine on standby in October 1953, but parts of the mine were leased to former employees, who continued production on a reduced scale. Lessees continued to operate the mine until 1964. The mine is now a major part of Twin Gold Corporation’s holdings on Atlanta Hill.

3.1.4 Environmental Conditions

3.1.4.1 Site Features

This site was visited by Ted Erdman on July 25, 2001. The Talache tailings impoundment site was visited by Earl H. Bennett on July 26, 2001. A video segment describing the property is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 0:11:10-0:32:53). Documenting photographs are Roll 01E1, frames 13-21 (mine), and Roll 01B3, frames 5 and 17-24 (tailings impoundment).

The site has three adits, one collapsed and two open but gated. The uppermost adit, the 600 Level (Figure 3.1-2), is open. It is gated and has a metal frame around the portal (Figure 3.1-3). A small stream of water is flowing out of the opening. The dump for this adit is 150 feet long,
200 feet wide, and 20 feet thick, with abundant scrap metal as well as piles of rotten sample bags containing drill cuttings.

The second adit is approximately 350 feet east of the 600 Level and is above the switchback in the road (Figure 3.1-2). This caved, dry adit has a moderate-sized dump (Figures 3.1-4 and 3.1-5). This adit is probably one of the original Pettit or Old Chunk workings.

The third adit, the 900 Level, is the main opening for the Boise-Rochester Mine (Figure 3.1-6). The opening has a wooden portal and a locked gate (Figure 3.1-7). A stream discharges from the adit at a rate of 10 gallons per minute and flows into a small containment pond before entering Montezuma Creek (Figure 3.1-8). The waste dump is 300 feet long, 200 feet wide, and 20 feet thick (Figure 3.1-9), and has been extensively modified by bulldozer work.

The Talache tailings impoundment covers an extensive area (Figure 3.1-10). A major washout of these tailings occurred in February 1998. Approximately 3,000-5,000 cubic yards of tailings were washed down Montezuma Creek and into the Middle Fork of the Boise River. Since then, a significant amount of restoration has been accomplished, mainly stabilization of the tailings impoundment (Figures 3.1-11, 3.1-12, and 3.1-13). Additional restoration and remediation work is planned.

3.1.4.2 Sample Locations

3.1.4.2.1 Solid Samples
No solid samples were collected.

3.1.4.2.2 Water Samples
Sample E7250103 was collected from the discharge at the 600 Level. Reference sample E7250104 was taken from Montezuma Creek upstream from the 600 Level at the switchback on the road. Sample E7250105 was collected from the discharge at the 900 Level.

<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>
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<td>E7250103</td>
<td>Boise-Rochester 600 Level</td>
<td>306</td>
<td>63</td>
<td>7.17</td>
<td>Seep</td>
<td>Yes</td>
</tr>
<tr>
<td>E7250104</td>
<td>reference, Montezuma Creek</td>
<td>116</td>
<td>48</td>
<td>7.51</td>
<td>---</td>
<td>Yes</td>
</tr>
<tr>
<td>E7250105</td>
<td>Boise-Rochester 900 Level</td>
<td>815+</td>
<td>50</td>
<td>7.01</td>
<td>10 +</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3.1.4.2.3 Analytical Results

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

Sample E7250103 from the Boise-Rochester 600 Level exceeds the Secondary MCL and the Aquatic Life Acute standard for iron, and the Secondary MCL for manganese in the total recoverable metals screen. It also exceeds the Primary MCL and Aquatic Life Chronic standard for arsenic in the EPA 200.8 test.

Reference sample E7250104 from Montezuma Creek exceeds the Secondary MCLs for iron and manganese in the total recoverable metals screen. Arsenic was detected in the EPA 200.8 test, but the amount present does not exceed any water quality standards.

Sample E7250105 from the Boise-Rochester 900 Level exceeds the Secondary MCL for manganese in the dissolved metals screen. In the total recoverable metals screen, the sample exceeds all standards for cadmium, the Secondary MCL and the Aquatic Life Acute standard for iron, and the Secondary MCL for manganese. The sample also exceeds all standards for arsenic in the EPA 200.8 test.

3.1.5 Structures

There are four buildings on the dump of the 600 Level (Figure 3.1-14). The mill building to the northwest of the 900 Level was completely destroyed by the forest fire of 2000 (Figures 3.1-15, 3.1-16, and 3.1-17).

3.1.6 Safety

There are no significant safety hazards associated with the Boise-Rochester Mine.
Figure 3.1-1. Location of the Boise-Rochester Mine (Site No. HA-62) and Talache (Site No. HA-67) tailings impoundment, Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.1-2. Sketch of Adit 1, the 600 Level, and Adit 2 at the Boise-Rochester Mine.
Figure 3.1-3. Portal of the 600 Level of the Boise-Rochester Mine, looking south (Roll 01E1, frame #13).

Figure 3.1-4. Caved Adit 2 at the Boise-Rochester Mine, looking south (Roll 01E1, frame #17).
Figure 3.1-5. Waste dump for Adit 2, looking east along the dump surface (Roll 01E1, frame #18).
Figure 3.1-6. Sketch of Adit 3, the 900 Level of the Boise-Rochester Mine.
Figure 3.1-7. Portal of the 900 Level of the Boise-Rochester Mine, looking southeast (Roll 01E1, frame #19).

Figure 3.1-8. Containment pond for the water flowing from the 900 Level. This pond is on the northeast edge of the dump (Roll 01E1, frame #21).
Figure 3.1-9. View to the northwest across the waste dump for the 900 Level. The containment pond is at the far right (Roll 01E1, frame #20).

Figure 3.1-10. Distant view of the tailings impoundment, looking northward from Atlanta Hill (Roll 01B3, frame #5).
Figure 3.1-11. Light-colored flotation tailings. The containment dam and hillside to the right have been recontoured and seeded (Roll 01B3, frame #20).

Figure 3.1-12. Looking north across the upper, recontoured and seeded part of the tailings impoundment. The light-colored tailings seen in the previous figure are at the left (Roll 01B3, frame #22).
Figure 3.1-13. North end of the recontoured impoundment dam. Rip-rapped overflow channels are at the left (Roll 01B3, frame #19).

Figure 3.1-14. Several of the buildings at the 600 Level. FS Road 207 is in the left foreground (Roll 01E1, frame #15).
Figure 3.1-15. Footings and burnt metal ruins of the Boise-Rochester mill (Roll 01E3, frame #12).

Figure 3.1-16. Another view of the burnt mill building (Roll 01E3, frame #13).
Figure 3.1-17. View to the east of some of the burnt debris at the mill building. FS Road 207 is in the background (Roll 01E3, frame #14).
3.2 PETTIT GROUP (Site No. HA-1263 [Field Site Nos. E7250101 and E7250102])

3.2.1 Site Location and Access (Figure 2.1-1)

Site No. E7250101 of the Pettit Group is in the SW¼ of the SW¼ of the NE¼ of section 11 and Site No. E7250102 is in the SE¼ of the SW¼ of the NE¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.2-1). The property is on Atlanta Hill. It can be reached from the town of Atlanta by traveling on FS Road 207 approximately 2 miles southeast up Montezuma Creek to FS Road 207B, ¼ mile west on Road 207B to an exploration road, then north another ¼ mile to the adits. The exploration road crosses the dump of Site No. E7250101. The adits at Site No. E7250102 are all below the exploration road. The property is on patented claims.

3.2.2 Geologic Features (Figure 2.2-1)

The Pettit ore shoot was the largest in the Atlanta lode. It was a composite of three orebodies— one on the hanging wall, one on the footwall, and an oblique ore shoot connecting the first two. The Pettit ore shoot was productive over a range of 800 feet horizontally and vertically (Anderson, 1939).

3.2.3 Site History

Considerable ore was mined from the Pettit orebody in the 1870s through a vertical shaft. Later, a tunnel was driven into the orebody from the slope facing Montezuma Gulch. (The General Pettit No. 2 and No. 3 claims were north of the Old Chunk claim.) Around 1895, an unnamed Boise company that was managed by General W. H. Pettit controlled the eastern 1,500 feet of the Atlanta lode. The Pettit Mine was active for the next few years. It was sold to the Bagdad-Chase Gold Mining Company in 1906 (Mitchell, 2000).

3.2.4 Environmental Conditions

3.2.4.1 Site Features

The Pettit Group was visited by Ted Erdman on July 25, 2001. A video segment describing the site is on Boise National Forest Atlanta Area Videotape (Tape 1, index 0:32:55-0:53:20). Documenting photos are Roll 01E1, frames 1-3 (Site No. E7250101), and Roll 01E1, frames 4-12 (Site No. E7250102).

Site No. E7250101 has one collapsed adit (Figures 3.2-2 and 3.2-3) and abundant trenches and prospect pits (Figure 3.2-4). As noted above, the exploration road crosses the waste dump of this adit. The trenches are mostly above the adit and continue nearly to the ridge top. There may have been other adits in the area that have been destroyed by the trenching.
Site No. E7250102 has four caved, dry adits (Figure 3.2-5). Adit 1 is directly below the adit at Site No. E7250101. The dump is the largest at this site and measures 150 feet long, 50 feet wide, and 20 feet thick (Figures 3.2-6 and 3.2-7). There are mine rails at the caved portal of the adit as well as minor scrap metal. The other three adits, in a small gully east of Adit 1, are small in comparison, with dumps averaging 50 feet to 60 feet long. These three adits are aligned along the trend of the Atlanta Lode down the gully below the exploration road. Adit 2, shown in Figures 3.2-8 and 3.2-9, is representative of these three adits.

The adits and trenching cover an area of several acres, although the disturbed area at each of the workings is rather small.

3.2.4.2 Sample Locations

3.2.4.2.1 Solid Samples
No solid samples were collected.

3.2.4.2.2 Water Samples
No water samples were collected.

3.2.5 Structures
There are no structures associated with this site.

3.2.6 Safety
There are no safety hazards associated with this site.
Figure 3.2-1. Location of the Pettit Group (Site No. HA-1263 [Field Site Nos. E7250101 and E7250102]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.2-2. Sketch of Site No. E7250101.
Figure 3.2-3. Caved adit at Site No. E7250101 of the Pettit Group, looking south (Roll 01E1, frame #2).

Figure 3.2-4. One of the prospect trenches at Site No. E7250101 of the Pettit Group (Roll 01E1, frame #1).
Figure 3.2-5. Sketch of the adits at Site No. E7250102.
Figure 3.2-6. Surface of the waste dump for Adit 1 at Site No. E7250102. Straw-filled tubes of erosion control material are piled on far end of the dump (Roll 01E1, frame #5).

Figure 3.2-7. Profile view of the waste dump for Adit 1 at Site No. E7250102 (Roll 01E1, frame #6).
Figure 3.2-8. Shallow trough of caved Adit 2 at Site No. E7250102, looking south (Roll 01E1, frame #7).

Figure 3.2-9. Small waste dump for Adit 2 at Site No. E7250102, looking west (Roll 01E1, frame #8).
3.3 UNNAMED PROSPECTS (Site Nos. HA-1264 [Field Site No. E7260101] and HA-1265 [Field Site No. E7260102])

3.3.1 Site Location and Access (Figure 2.1-1)

These unnamed prospects are in the NW¼ of the NE¼ (Site Nos. E7260101) and SW¼ of the NE¼ (Site Nos. E7260102) of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.3-1). Access is via FS Road 207 approximately 1.4 miles southeast of the town of Atlanta to the 600 Level of the Boise-Rochester Mine, then west 0.2 mile on FS Road 208. The adit at Site No. E7260101 is to the north of and just below the road, and the adit at Site No. E7260102 is approximately 200 feet in elevation above the road and about 500 feet southwest of Site No. E7260101. These adits appear to be on unpatented claims.

3.3.2 Geologic Features (Figure 2.2-1)

These small adits probably developed quartz veins related to the Atlanta Lode. They are in biotite granodiorite of the Idaho batholith.

3.3.3 Site History

These adits are shown on Anderson’s (1939) map, but they are not named and no specific information on their history is given.

3.3.4 Environmental Conditions

3.3.4.1 Site Features

This site was visited by Ted Erdman on July 26, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 1, index 0:53:24-0:58:28). Documenting photographs are Roll 01E2, frames 1-2 (Site No. E7260101), and Roll 01E2, frames 3-4 (Site No. E7260102).

Two small adits were found along Road 208 just west of the junction with Road 207 (Figure 3.3-2). Site No. E7260101 has one collapsed, dry adit with a small dump approximately 20 feet long, 10 feet wide, and 5 feet thick (Figures 3.3-3 and 3.3-4). Site No. E7260101 has one collapsed, dry adit (Figure 3.3-5) with a very small dump (Figure 3.3-6). The disturbed area at these sites is minimal.

3.3.4.2 Sample Locations

3.3.4.2.1 Solid Samples

No solid samples were collected.
3.3.4.2.2 Water Samples
   No water samples were collected.

3.3.5 Structures
   There are no structures at these sites.

3.3.6 Safety
   There are no safety concerns at these sites.
Figure 3.3-1. Location of Unnamed Prospects (Site Nos. HA-1264 [Field Site No. E7260101] and HA-1265 [Field Site No. E7260102]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.3-2. Sketch of Site Nos. E7260101 and E7260102.
Figure 3.3-3. Caved adit at Site No. E7260101, looking southeast (Roll 01E2, frame #1).
Figure 3.3-4. Small waste dump for the adit at Site No. E7260101, looking west (Roll 01E2, frame #2).

Figure 3.3-5. Trough of the caved adit at Site No. E7260102, looking south (Roll 01E2, frame #3).
Figure 3.3-6. Waste dump for the adit at Site No. E7260102, looking west (Roll 01E2, frame #4).
3.4 JOHN BASCOM LODE (Site No. HA-1266 [Field Site No. E7260104])

3.4.1 Site Location and Access (Figure 2.1-1)

The John Bascom Lode is in the NW¼ of the NE¼ of the NW¼ of section 11 (Adit 1), SW¼ of the NE¼ of the NW¼ of section 11 (Adit 2), and the NE¼ of the NW¼ of the NW¼ of section 11 (Adit 3), T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.4-1). Access is via FS Road 207 approximately 1.4 miles southeast of the town of Atlanta to the 600 Level of the Boise-Rochester Mine, then 0.6 mile northwest on FS Road 208. The adits, which are just above and below the road, are on Forest Service property.

3.4.2 Geologic Features (Figure 2.2-1)

This property developed quartz veins that fill tension fractures that intersect the Atlanta Lode at an oblique angle. The John Bascom Lode is in biotite granodiorite of the Idaho batholith.

3.4.3 Site History

The earliest reference to the John Bascom Lode is in 1868. However, little else is known of the history of the property. In 1976, Simplot explored the Atlanta and John Bascom lodes, but did not locate significant quantities of ore. Mineralization was detected in the Bascom Shear Zone during exploration in 1994 (Mitchell, 2000).

3.4.4 Environmental Conditions

3.4.4.1 Site Features

This site was visited by Ted Erdman on July 26, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 1, index 0:58:31-1:12:38). Documenting photographs are Roll O1E2, frames 5-9.

The John Bascom Lode has three collapsed adits and several trenches (Figure 3.4-2). Adit 1, just north of Road 208, is discharging 3-5 gallons per minute. The water forms a small pond near the portal (Figure 3.4-3). Plastic pipe and screen in the pond indicate this may have been a water source for drilling. The dump is 45 feet long, 20 feet wide, and 5 feet thick. Northwest of the adit is a large trench.

Adit 2 is south of Adit 1 and of Road 208. This adit appears to have been completely obliterated by trenching. Figure 3.4-4 shows an east-west trench that may be the location of the adit. The trench is about 200 feet long and 20 feet wide. Adit 3 is approximately 500 feet west of the other two adits and is just south of the Road 208. The only evidence for the adit is a very small dump and a seep (Figure 3.4-5).
3.4.4.2 Sample Locations

3.4.4.2.1 Solid Samples
   No solid samples were collected.

3.4.4.2.2 Water Samples

Reference sample E7260103 was taken from a small creek just east of the John Bascom workings. Sample E7260105 was taken near the portal of Adit 1. The seep at Adit 3 was too small to sample.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E7260103</td>
<td>reference sample, unnamed creek</td>
<td>104</td>
<td>50</td>
<td>8.07</td>
<td>---</td>
<td>Yes</td>
</tr>
<tr>
<td>E7260105</td>
<td>John Bascom Lode Adit 1</td>
<td>177</td>
<td>46</td>
<td>7.83</td>
<td>3-5</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.4.4.2.3 Analytical Results

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

Reference sample E7260103 does not exceed any water quality standards, although arsenic was detected in the EPA 200.8 test.

Sample E7260105 from Adit 1 exceeds the Primary MCL for arsenic in the EPA 200.8 test.

3.4.5 Structures
   There are no structures at this site.

3.4.6 Safety
   There are no safety concerns at this site.
Figure 3.4-1. Location of the John Bascom Lode (Site No. HA-1266 [Field Site No. E7260104]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.4-2. Sketch of the John Bascom Lode.
Figure 3.4-3. Pool formed by water flowing from caved Adit 1 at the John Bascom Lode, looking south (Roll 01E2, frame #5).

Figure 3.4-4. Long trench at the John Bascom Lode. The trench apparently obliterated Adit 2 (Roll 01E2, frame #7).
Figure 3.4-5. Caved Adit 3 with a minor seep (lower left) at the John Bascom Lode (Roll 01E2, frame #9).
3.5 CHRISOLITE(?) PROSPECT (Site No. HA-1267 [Field Site No. E7260106])

3.5.1 Site Location and Access (Figure 2.1-1)

This site is in the NW¼ of the SW¼ of the NW¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.5-1). Access from the town of Atlanta is via FS Road 209 up Quartz Gulch approximately 1½ miles south to the Monarch Mine. From the Monarch, the Chrisolite(?) Prospect is ½ mile north on an old road to FS Road 208 (which is the eastern and uppermost of the two roads), then about ¼ mile back to the south on Road 208 to the site. The adit is on the east side of the road and at road level.

3.5.2 Geologic Features (Figure 2.2-1)

This small adit developed a quartz vein that fills one of the tension fractures that intersect the Atlanta Lode at an oblique angle. It is in biotite granodiorite of the Idaho batholith.

3.5.3 Site History

This adit is shown on Anderson’s (1939) map at the eastern edge of the Tahoma claim block. If it is the Chrisolite Prospect, it was one of the early discoveries in the district (see Mitchell, 2000, Figure 11). It apparently later became part of the Tahoma group.

3.5.4 Environmental Conditions

3.5.4.1 Site Features

This site was visited by Ted Erdman on July 26, 2001. A video segment describing the property, which is identified as an unnamed prospect, is on Boise National Forest Atlanta Area Videotape (Tape 1, index 1:12:40-1:15:05). Documenting photographs are Roll 01E2, frames 10-12.

The property has one very small, collapsed adit (Figure 3.5-2). The location of the portal has been destroyed by the road, and the only evidence of an adit is a waste dump below the road (Figures 3.5-3 and 3.5-4). The dump is 25 feet long, 15 feet wide, and 10 feet thick. The disturbed area is minimal.

3.5.4.2 Sample Locations

3.5.4.2.1 Solid Samples

No solid samples were collected.

3.5.4.2.2 Water Samples

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

3.5.6 Safety
There are no safety concerns at this site.
Figure 3.5-1. Location of the Chrisolite(?) Prospect (Site No. HA-1267 [Field Site No. E7260106]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.5-2. Sketch of the Chrisolite(?) Prospect.
Figure 3.5-3. Very shallow trough for the adit along the edge of the road at the Chrisolite(?) Prospect (Roll 01E2, frame #10).

Figure 3.5-4. Looking southwest at the waste dump for the Chrisolite(?) Prospect. Note the large trees growing on the dump (Roll 01E2, frame #11).
3.6 GREENBACK MINE (Site No. HA-59 [Field Site Nos. B7260105-08 and E7260107])

3.6.1 Site Location and Access (Figure 2.1-1)

This property is in the S½ of the of the SW¼ of the NW ¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.6-1). Access is via FS Road 209 up Quartz Gulch to the Monarch Mine and then north about ¼ mile on the road that connects with FS Road 208; or via FS Road 207 up Montezuma Creek and then on Road 208 to the road connecting Road 208 to the Quartz Gulch road. Site No. B7260105 is the first adit above the connecting road that goes south from Road 208 to the Monarch Mine above Quartz Gulch; Site No. B7260106 is an adit just above Road 208 and just below one of the old Monarch tram towers; Site No. E7260107 is an adit just north of B7260106; Site No. B7260107 is an adit just below the connecting road to the Monarch Mine above Quartz Creek; and Site No. B7260108 is a minor prospect pit above the connecting road. All of these workings are on Forest Service land.

3.6.2 Geologic Features (Figure 2.2-1)

The Greenback Mine explored a quartz vein in one of the tension fractures that intersect the Atlanta Lode at an oblique angle. It is in biotite granodiorite of the Idaho batholith.

3.6.3 Site History

The Greenback Mine was discovered by W. R. DeFrees in November 1865. After some development work, the Greenback mill began operation in July 1867 with mixed results. The property was sold to the Monarch Gold and Silver Mining Company in 1869 (Mitchell, 2000).

3.6.4 Environmental Conditions

3.6.4.1 Site Features

Prospects at this site were visited by Earl H. Bennett and Ted Erdman on July 26, 2001. A video segment describing Sites B7260106, B7260107, and E7260107 (no video was taken at Sites B7260105 and B7260108) is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:15:07-1:22:23). Documenting photographs are Roll 01B2, frames 13-18, and Roll 01E2, frames 13-14.

There is one caved, dry adit and a small dump measuring 15 feet long, 6 feet wide, and 8 feet thick at Site No. B7260105 (Figures 3.6-2 and 3.6-3). At Site No. B7260106, there is a single caved, dry adit with a heavily overgrown dump measuring 25 feet long, 25 feet wide, and 60 feet thick (Figures 3.6-4 and 3.6-5). The caved, dry adit at Site No. E7260107 (Figure 3.6-6), which is just north of B7260106, has a dump approximately 40 feet long, 10 feet wide, and 5 feet thick (Figure 3.6-7). The adit at Site No. B7260107 is caved and dry (Figure 3.6-8) with a dump measuring 40 feet long, 35 feet wide, and 25 feet thick on the nose. On the dump are a section of
the old tram cable and a steel-pipe corner post with a sign saying "Corner 2 1500ft N62 43 32 E, 600 feet S382800 E from Corner #1" (Figure 3.6-9). Site No. B7260108 is a small pit in vuggy quartz in granite just above the main road and just north of Site No. B7260106.

3.6.4.2 Sample Locations

3.6.4.2.1 Solid Samples
   No solid samples were collected.

3.6.4.2.2 Water Samples
   No water samples were collected.

3.6.5 Structures

One of the towers for the Monarch tramway (Figure 3.8-16) is on the slope above Site No. B7260106, but no structures related to this property were found at any of the sites.

3.6.6 Safety
   There are no safety hazards at the sites.
Figure 3.6-1. Location of the Greenback Mine (Site No. HA-59 [Field Site Nos. B7260105-08 and E7260107]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.6-2. Shallow overgrown scarp of the caved adit at Site No. B7260105 of the Greenback Mine (Roll 01B2, frame #13).

Figure 3.6-3. Large blocks of rock on the small waste dump for the adit at Site No. B7260105 (Roll 01B2, frame #14).
Figure 3.6-4. Caved adit at Site No. B7260106 at the Greenback Mine (Roll 01B2, frame #15).
Figure 3.6-5. Small overgrown waste dump for the adit at Site No. B7260106 (Roll 01B2, frame #16).

Figure 3.6-6. Caved adit at Site No. E7260107 (Roll 01E2, frame #13).
Figure 3.6-7. Profile view of waste dump for Site No. E7260107 (Roll 01E2, frame #14).

Figure 3.6-8. Coarse rock fragments filling the trough of the caved adit at Site No. B7260107 at the Greenback Mine (Roll 01B2, frame #17).
Figure 3.6-9. Pipe claim corner on the waste dump for the adit at Site No. B7260107 (Roll 01B2, frame #18).
3.7 JESSIE BENTON MINE (Site No. HA-58 [Field Site No. B7260103])
Alternate name—Bixby Group.

Note: This site is described as the Silver Tide on the video segment, but it is probably the old Jessie Benton Mine.

3.7.1 Site Location and Access (Figure 2.1-1)

This mine is in the SE corner of the NE¼ of the NW¼ of the SW¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.7-1). Access is on FS Road 207 to the Boise-Rochester 600 Level adit, then around the ridge on FS Road 208 to the property, which is directly uphill to the northeast of the Monarch shaft (Figure 3.7-2). The adit is on a patented claim near the boundary with Forest Service land.

3.7.2 Geologic Features (Figure 2.2-1)

The Jessie Benton is on one of the lateral veins that intersect the main Atlanta lode. The ore remaining on the dumps in the 1930s contained considerable arsenopyrite and pyrite (Anderson, 1939).

3.7.3 Site History

The Jessie Benton, one of the original mines in the district, was located before 1868. Minor work and some production were reported until about 1882. A San Francisco company took over the mine in 1903 and operated the property until 1909. In that year, the Jessie Benton and adjacent properties were purchased by G. L. Bixby. St. Joseph Lead Company explored the group in conjunction with its work at the Boise-Rochester. The property was rehabilitated just before World War II, but no further activity was reported after the war (Mitchell, 2000).

3.7.4 Environmental Conditions

3.7.4.1 Site Features

This site was visited by Earl H. Bennett on July 26, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:22:27-1:27:22). Documenting photographs are Roll 01B2, frames 7-10.

At this site, there is a caved, dry adit with a long, timbered portal covered with sheet metal and a pair of connected sheds (Figure 3.7-3). The wooden structure that serves as the portal (Figures 3.7-4 and 3.7-5) is collapsing. The portal structure has drill cuttings stored inside, as do the connected sheds (Figure 3.7-6). There is a considerable amount of tin and scrap iron near the buildings. Across the large double dump from the portal is a loading platform. The upper dump measures about 110 feet long, 40 feet wide, and 15 feet thick. This dump sits on the lower dump,
which is 170 feet long, 45 feet wide, and 30 feet thick. The disturbed area covers less than 0.5 acre.

3.7.4.2 Sample Locations

3.7.4.2.1 Solid Samples
   No solid samples were collected.

3.7.4.2.2 Water Samples
   No water samples were collected.

3.7.5 Structures

Structures at the site include the long, collapsing wooden portal, the loading platform, and the drill-cuttings storage sheds.

3.7.6 Safety
   There are no significant safety hazards at the site.
Figure 3.7-1. Location of the Jessie Benton Mine (Site No. HA-58 [Field Site No. B7260103]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.7-2. View down the gully from the Jessie Benton Mine toward the Monarch shaft. The shaft is near the center of the picture (Roll 01B2, frame #10).
Figure 3.7-3. Sketch of the Jessie Benton Mine.
Figure 3.7-4. Timbered, metal-covered portal of the caved adit at the Jessie Benton Mine (Roll 01B2, frame #7).

Figure 3.7-5. Timbered section in front of the caved adit at the Jessie Benton Mine (Roll 01B2, frame #9).
Figure 3.7-6. Small, connected sheds used to store drill cuttings at the Jessie Benton Mine (Roll 01B2, frame #8).
3.8 MONARCH MINE (Site No. HA-69 [Field Site No. B7260109])

3.8.1 Site Location and Access (Figure 2.1-1)

The Monarch Mine is in the SE¼ of the NW¼ of the SW¼ of section 11, T. 5 N., R. 11 E, on the Atlanta East 7.5-minute quadrangle (Figure 3.8-1). The shaft is at an elevation of about 6,800 feet. Access is on FS Road 209 up Quartz Gulch. It can also be reached from FS Roads 207 and 208 via a connecting spur off Road 208. The road passes over the dump and continues to the west. The old Monarch mill is located at the west end of Atlanta in section 3, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.8-2). When traveling east, the first house on the south side of the road past the sign saying "Entering Atlanta" is one of the old mill buildings. Both the mine and the millsite are on private property.

3.8.2 Geologic Features (Figure 2.2-1)

The Monarch is on the main Atlanta lode. The main ore shoot was the Monarch, which has a stope length of 850 feet and a maximum height of 850 feet. The Monarch orebody was noted for the abundance of silver in the upper workings. The other main source of ore on the Monarch was the Foot Wall orebody of the Pettit ore shoot, which extended into the Monarch ground from the Boise-Rochester Mine to the east. In addition, a lateral vein called the Dump Raise orebody yielded high-grade ore (Anderson, 1939).

3.8.3 Site History

The following history of the Monarch is summarized from Mitchell (2000, p. 39-67):

The Monarch was one of the first mines located in the district, and by 1865, an arrastra was being used to process the ore. In 1866, the mine was purchased by the Monarch Gold and Silver Mining Company. This company built a ten-stamp mill, which began operating in January 1869. However, operations were suspended by the end of the year, and the company tried for several years to sell the mine to English investors. Lessees began working the mine in 1874, and their operation was so successful that the company resumed operation of the mine in 1878. By 1882, the mine had three tunnels and a 250-foot shaft. A new twenty-stamp mill was completed the following year, but when the neighboring Tahoma Mine failed to meet its payroll in late 1884, the Monarch was also forced to close.

The mine reopened in 1901, and a great deal of work was needed to refurbish the mine. In 1905, an aerial tram was ordered. Extensive milling tests were run prior to equipping the mill, but in spite of this, the mill could not treat the ore adequately. Mill tests were run from 1908 until 1910, producing small amounts of bullion. Lessees reworked the dumps from 1915 to 1917, while attempts continued to find a solution to the milling problem. The mine was closed until 1929, when the St. Joseph Lead Company acquired a lease and option on the Monarch. The company did 1,292 feet of tunnel work in the next year, then allowed its lease to lapse.
Minor production was reported from the mine between 1931 and 1934. In 1934, St. Joseph Lead again leased the Monarch. The company transferred most of its operations to the Monarch ground and mined the known orebodies between 1934 and 1936. After extending the No. 6 drift 3,045 feet beyond the Monarch shaft, St. Joseph Lead discontinued operations in the Atlanta area in 1936. The Last Chance Mining Company worked the Monarch from 1936 through 1939. In November 1939, Talache Mines, Inc., owner of the adjacent Boise-Rochester Mine, acquired the Monarch and combined it with the company's other holdings. The Monarch was apparently leased separately during the 1970s, and minor production was reported from the mine in 1978.

3.8.4 Environmental Conditions

3.8.4.1 Site Features

The mine and millsite were visited by Earl H. Bennett on July 26 and 27, 2001; the millsite was also visited by Ted Erdman on August 4, 2001. A video segment describing the sites is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:27:27-1:41:43). Documenting photographs are Roll 01B2, frames 19-23 (mine); and Rolls 01B3, frames 6-16, and 01E5, frames 15-16 (millsite).

The mine site consists of a shaft, a caved adit with a timbered portal located just above the shaft, and a large, combined waste dump for the two workings (Figure 3.8-3). The shaft appears to be caved and is surrounded by orange safety netting (Figure 3.8-4). Concrete footings on the south side of the shaft mark the location of the old headframe, and a loading ramp is above the shaft. Loggers working in the area indicated the shaft will soon be backfilled.

The adit is caved and dry behind a wood grate that is open and looks relatively new (Figure 3.8-5). The dump from the adit and the shaft measures about 150 feet long, 80 feet wide, and 50 feet thick (Figure 3.8-6). The main road to the shaft passes over the dump, which is being used as a landing for loggers working in the area (Figure 3.8-7).

The Monarch mill was at the west edge of the town of Atlanta. Several buildings, now residences, served as houses for the mill employees. The old mill foundations and footings (granite blocks and concrete) are across the road about 200 feet north of the buildings. North of the mill foundation is an extensive tailings impoundment (Figures 3.8-8 and 3.8-9). The Middle Fork of the Boise River is north of the tailings.

3.8.4.2 Sample Locations

3.8.4.2.1 Solid Samples

Sample E8040102 was collected from the Monarch tailings.
### 3.8.4.2.2 Water Samples
No water samples were collected.

### 3.8.4.2.3 Analytical Results

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

Tailings sample E8040102 contains elevated levels of copper and cadmium in the element screen. In the TCLP for metals test, significant quantities of arsenic and mercury are leaching from the sample.

### 3.8.5 Structures

The loading ramp above the shaft is the only structure at the mine. Concrete footings for the headframe are on the south side of the shaft. Entering Atlanta from the west, three buildings are south of the main road (Figures 3.8-10 and 3.8-11), and an old garage is north of the road. At least one of the buildings served as housing for the mill employees. The other buildings may also be related to the mill, but only the footings of the mill still exist (Figures 3.8-12, 3.8-13 and 3.8-14). There are also parts of what look like an old electrical generator, an old flume, and milling equipment near the millsite north of the road (Figure 3.8-15). Remnants of the tramway that brought ore from the mine are found on the hill between the mine and mill (Figure 3.8-16).

### 3.8.6 Safety

The portal of the adit is open, but the tunnel is caved beyond the portal. The shaft appears to be caved, although there is a conical depression surrounded by orange safety netting. It is possible that the shaft is open below some bridged material. Loggers working in the area indicated the shaft is going to be backfilled.
Figure 3.8-1. Location of the Monarch Mine (Site No. HA-69 [Field Site No. B7260109]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.8-2. Location of the Monarch mill, Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.8-3. Sketch of the Monarch Mine site.
Figure 3.8-4. Pit of the caved(?) Monarch shaft surrounded by orange safety netting (Roll 01B2, frame #19).

Figure 3.8-5. Timbered portal of the Monarch adit. Although the portal is open, the adit is caved beyond the timbers (Roll 01B2, frame #21).
Figure 3.8-6. View from below of the waste dump for both the Monarch shaft and adit (Roll 01B2, frame #23).

Figure 3.8-7. Surface of the Monarch waste dump being used as a log deck. The orange safety netting around the shaft is at the lower right of the picture (Roll 01B2, frame #20).
Figure 3.8-8. Left part of a panorama of the mill tailings impoundment for the Monarch mill. The lowest level of the mill was at the lower left corner of the picture. The Middle Fork of the Boise River is beyond the tailings at the base of the hill (Roll 01B3, frame #13).

Figure 3.8-9. Right part of a panorama of the Monarch mill tailings impoundment (Roll 01B3, frame #11).
Figure 3.8-10. One of the houses south of the road that enters Atlanta at the Monarch millsite. This house reportedly served as the mill manager’s home (Roll 01B3, frame #6).

Figure 3.8-11. One of the other buildings south of the road at the Monarch millsite. The corner of the house at the right edge of the picture is the one shown in Figure 3.8-10 (Roll 01B3, frame #8).
Figure 3.8-12. Foundation of the Monarch mill, looking south (Roll 01E5, frame #15).

Figure 3.8-13. Newer concrete footings for the Monarch mill. The millsite is north of the road (Roll 01B3, frame #9).
Figure 3.8-14. Older granite-block footings for the Monarch mill, along with some of the old timbers and scrap metal (Roll 01B3, frame #10).

Figure 3.8-15. Some of the metal equipment from the mills site. The two houses at the center of the picture are those seen in Figures 3.8-10 and 3.8-11 (Roll 01B3, frame #14).
Figure 3.8-16. One of the remaining towers for the Monarch tramway. This tower is near the mine above Site No. B7260106 of the Greenback Mine (Roll 01B2, frame #12).
3.9 BUFFALO SHAFT (Site No. HA-70 [Field Site No. B7250111])

3.9.1 Site Location and Access (Figure 2.1-1)

This site is in the SE¼ of the NW¼ of the SW¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.9-1). Access is the same as for the Monarch Mine. The shaft is just below the road and several hundred feet west of the Monarch shaft. The Buffalo shaft is on patented claims.

3.9.2 Geologic Features (Figure 2.2-1)

The Buffalo claim contained some of the richest ore in the Atlanta lode, even though the Buffalo orebody was the smallest of the five major orebodies on the east end of the Atlanta lode. The main orebody was along the hanging wall and averaged 2½ feet in thickness. A smaller orebody was along the footwall of the lode, and scattered seams and streaks of ore occupied the zone between the hanging wall and footwall. Silver minerals made up two-thirds of the gross value of the production from the upper levels of the Buffalo orebody (Anderson, 1939).

3.9.3 Site History

The Buffalo Mine was the site where precious metals were first located in the Atlanta area. It was discovered in 1864, but little is known about the earliest work at the mine. High-grade gold ore was shipped in the late 1860s and early 1870s. The property was purchased by the Buffalo and Idaho Gold and Silver Mining Company in 1875. A ten-stamp mill was packed into Atlanta in 1876 and it started operation the following May. The mine closed in 1884 or 1885, along with most of the other mines in the Atlanta area. It was purchased in 1901 or 1902 by T. N. Barnsdall and combined with the Monarch and Last Chance. From then on, the three properties were operated as a unit (Mitchell, 2000).

3.9.4 Environmental Conditions

3.9.4.1 Site Features

This site was visited by Earl H. Bennett on July 25, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:41:47-1:45:02). Documenting photographs are Roll 01B1, frames 15, 17, and 18.

A large pit with bushes growing in it is probably the caved Buffalo shaft (Figure 3.9-2). The pit is approximately 12-15 feet in diameter and 8 feet deep. There is a coil of flat-wire hoist cable at this site (Figure 3.9-3), which could be from the Buffalo shaft or possibly the nearby Monarch Mine. A wooden structure, probably a loading platform or chute (Figure 3.9-4), is near the coil of cable. The area has been severely disturbed by exploration activity, and the road to the
Monarch shaft just above this site serves as a landing for local loggers. The grusy weathering of the granite makes it difficult to see the old workings in this area.

3.9.4.2 Sample Locations

3.9.4.2.1 Solid Samples
   No solid samples were collected.

3.9.4.2.2 Water Samples
   No water samples were collected.

3.9.5 Structures

The wooden loading chute or platform is the only structure at the site.

3.9.6 Safety
   There are no safety hazards at the site.
Figure 3.9-1. Location of the Buffalo shaft (Site No. HA-70 [Field Site No. B7250111]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.9-2. Pit of the possible Buffalo shaft (Roll 01B1, frame #15).

Figure 3.9-3. Roll of flat-wire hoist cable at the Buffalo shaft (Roll 01B1, frame #17).
Figure 3.9-4. Possible loading platform at the Buffalo shaft (Roll 01B1, frame #18).
3.10 BUFFALO TUNNEL (Site No. HA-70 [Field Site No. B7250110])

3.10.1 Site Location and Access (Figure 2.1-1)

This old adit (?) is in the NW corner of the NE¼ of the SW¼ of the SW¼ of section 11, T. 5 N., R.11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.10-1). Access is via FS Road 209 up Quartz Gulch to the Monarch Mine and then a short distance west to the site; or via FS Road 207 to FS Road 208 at the Boise-Rochester 600 Level adit, then around the ridge on Road 208 to the unnumbered road that leads to the Monarch Mine. The adit is on patented claims along the road west of the Monarch shaft.

3.10.2 Geologic Features (Figure 2.2-1)

See section 3.9.2 for the geology of the Buffalo Mine.

3.10.3 Site History

See section 3.9.3 for the history of the Buffalo Mine.

3.10.4 Environmental Conditions

3.10.4.1 Site Features

This site was visited by Earl H. Bennett on July 25, 2001. A video segment describing the site, which is identified as an unnamed prospect, is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:45:07-1:46:12). Documenting photograph is Roll 01B1, frame 16.

The caved adit is heavily overgrown with vegetation (Figure 3.10-2) and is very close to the old Buffalo shaft. There is a minor trickle of water coming from the adit, but not enough to sample. The area has been disturbed by exploration, and the configuration of any dump that may have been associated with this adit has been destroyed.

3.10.4.2 Sample Locations

3.10.4.2.1 Solid Samples

No solid samples were collected.

3.10.4.2.2 Water Samples

No water samples were collected.

3.10.5 Structures

There are no structures at the site.
3.10.6 Safety

There are no safety hazards at the site.
Figure 3.10-1. Location of the Buffalo tunnel (HA-70 [Field Site No. B7250110]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.10-2. Thick vegetation at the caved Buffalo tunnel. A minor seep supports the lush growth (Roll 01B1, frame #16).
3.11 LAST CHANCE MINE (Site No. HA-68 [Field Site No. B7260104])

3.11.1 Site Location and Access (Figure 2.1-1)

This adit is in the NE1/4 of the SE1/4 of the SW1/4 of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.11-1). Access is on FS Road 207 to the head of Montezuma Creek, then west on FS Road 207B about ½ mile to the junction with FS Road 208. The adit is on Forest Service land about 100 feet downhill and south from the junction.

3.11.2 Geologic Features (Figure 2.2-1)

The Last Chance is on a lateral vein that branches from the south side of the Atlanta lode about 130 feet southwest of the Monarch shaft (Anderson, 1939). The major workings of the Last Chance were on the north side of the ridge, but this adit is believed to be a minor adit associated with that property.

3.11.3 Site History

It is not known when the Last Chance was discovered, but it was being worked by 1874. Some lots of ore mined from the property ran as high as $220 per ton at the mill. Around 1881 the mine was sold to the Atlanta Hill Mining Company of New York for a reported $225,000. The mine was opened by a tunnel and a shaft, but most of the workings were caved. The new owners worked the mine aggressively for the next three years, but like most of the mines in the district, the Last Chance closed in late 1884 or early 1885. The property was purchased by T. N. Barnsdall in 1901 or 1902 (Mitchell, 2000).

3.11.4 Environmental Conditions

3.11.4.1 Site Features

This mine was visited by Earl H. Bennett on July 26, 2001. No video was made at the site, as is noted on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:46:15-1:46:30). Documenting photograph is Roll 01B2, frame 11.

The property has one caved, dry adit (Figure 3.11-2) with a dump measuring 30 feet long, 15 feet wide, and 6 feet thick on the nose. The forest fire of 2000 burned the site. Old hand steel left at the mine was found entangled in the roots of a tree that was burned in the fire.

3.11.4.2 Sample Locations

3.11.4.2.1 Solid Samples

No solid samples were collected.
3.11.4.2.2 Water Samples
   No water samples were collected.

3.11.5 Structures
   There are no structures at the site.

3.11.6 Safety
   There are no safety hazards at the site.
Figure 3.11-1. Location of the Last Chance Mine (Site No. HA-68 [Field Site No. B7260104]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.11-2. Caved, dry adit at the Last Chance Mine (Roll 01B2, frame #11).
3.12 ATLANTA No. 2 ADITS (Site No. HA-74 [Field Site Nos. B7250101-B7250104])
Alternate names—Idaho Gold Mine; Idaho Atlanta Gold Mine.

3.12.1 Site Location and Access (Figure 2.1-1)

The Atlanta No. 2 adits are in the N¼ of the NE¼ of the NE¼ of section 15, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.12-1). Access is on the jeep road that follows the ridge of Atlanta Hill west from FS Road 207 at the head of Montezuma Creek. This road follows FS Road 207B, part of FS Road 208, and an unnumbered road. The adits are about 1¼ miles west of Road 207 and roughly ¾ mile north of Decker Creek. This entire area has been disturbed by drilling and trenching. The Atlanta No. 2 claim is patented.

3.12.2 Geologic Features (Figure 2.2-1)

The Atlanta No. 2 adits are on the west end of the Atlanta Hill ridge near the intersection of the Atlanta lode with the lateral veins on the Minerva property. The lode is as much as 70 feet wide on the surface and 40-50 feet wide on the 600 Level nearly 600 feet below the surface. No commercial ore was found on the lower levels of the property (Anderson, 1939).

3.12.3 Site History

Some of the earliest workings were on the western end of the Atlanta lode, but this area never produced much ore and records of its history are limited. Idaho Gold Mines began extensive development on a rich ore shoot around 1895. Four tunnels were driven into the ore, and by 1899, all the ore above the lowest level was stoped out. Some of the tunnels were retimbered in 1909. In 1917, the property was acquired by St. Joseph Lead, but it remained idle until late 1935, when the No. 6 Level was extended into the property in hopes of finding a continuation of the ore that had been found in the upper levels. This work was discontinued in early 1936 (Mitchell, 2000).

3.12.4 Environmental Conditions

3.12.4.1 Site Features

This property was visited by Earl H. Bennett on July 25, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 1, index 1:46:34-1:59:11). Documenting photographs are Roll 01B1, frames 1-7 and 10.

There are four adits at this location (Figures 3.12-2 and 3.12-3). Adit 1 is farthest up the hill (approximate elevation: 7,000 feet) between two drill roads. It is caved and dry. The small, light-colored granite dump measures 10 feet long by 10 feet wide and is 50 feet thick on the nose on a steep hillside (Figure 3.12-4). Numerous trenches and drill pads are in this area.
Adit 2, on the old access road to the site, is caved, but has timbers in the portal and a very minor seep of water that forms a small pool (Figures 3.12-5 and 3.12-6). The dump, composed of granite, is 80 feet long, 50 feet wide, and 70 feet thick on the nose (Figure 3.12-7). A minor amount of scrap metal is on the dump.

Adit 3 (elevation: 6,650 feet), located 200 feet west of Adit 2 on the old access road, is caved and has a moderate seep that flows down the road (Figures 3.12-8 and 3.12-9). A rail extends out of the adit through the caved debris. The granite dump measures 30 feet long by 6 feet wide, but the thickness is unknown as the dump has been partially destroyed by road building.

A possible fourth adit, below both the access road and Adit 2 at an elevation of 6,600 feet, is caved. It has a light-colored granitic dump measuring 40 feet long, 25 feet wide, and 50 feet thick on the nose.

All of the waste dumps have been modified by construction of drill roads or other relatively recent exploration activity.

### 3.12.4.2 Sample Locations

#### 3.12.4.2.1 Solid Samples

No solid samples were collected.

#### 3.12.4.2.2 Water Samples

Sample B7250103 was collected from the seep at Adit 3.

<table>
<thead>
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<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>B7250103</td>
<td>Atlanta No. 2, Adit 3</td>
<td>230</td>
<td>52</td>
<td>7.7</td>
<td>0.5</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### 3.12.4.2.3 Analytical Results

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

In the EPA 200.8 tests, sample B7250103 exceeds the Primary MCL for arsenic and is within the range of the Aquatic Life Chronic standard for lead.

### 3.12.5 Structures

There are no structures at this site.
3.12.6 Safety
   There are no safety hazards at the site.
Figure 3.12-1. Location of the Atlanta No. 2 Adits (Site No. HA-74 [Field Site Nos. B7250101-B7250104]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.12-2. Sketch of the Atlanta No. 2 Adits.
Figure 3.12-3. Looking eastward toward the Atlanta No. 2 Adits. Several of the dumps are near the top of the ridge at the center of the picture (Roll 01B1, frame #10).

Figure 3.12-4. Profile view of the waste dump for Adit 1 at the Atlanta No. 2 Adits (Roll 01B1, frame #2).

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Figure 3.12-5. Timbers at the portal of caved Adit 2 at the Atlanta No. 2 Adits. The vegetation in the foreground is growing on the seep from the adit (Roll 01B1, frame #3).

Figure 3.12-6. Small pool on the dump for Adit 2 at the Atlanta No. 2 Adits, looking southwest (Roll 01B1, frame #4).
Figure 3.12-7. Looking down the face of the dump for Adit 2. The dump for the possible fourth adit is below the Adit 2 dump (Roll 01B1, frame #5).

Figure 3.12-8. Caved Adit 3 at the Atlanta No. 2 Adits. The vegetation is growing on a seep from the adit (Roll 01B1, frame #6).
Figure 3.12-9. Water from Adit 3 flowing down the road (Roll 01B1, frame #7).
3.13 HILL AND DAVIS CLAIM (Site No. HA-73 [Field Site No. B7250108]) and
BUFFALO MINE (?) (Site No. HA-70 [Field Site No. B7250109])

Note: These properties are described as the Hill and Davis claims on the videotape. Site No. B7250108 appears to be on the Hill and Davis claim, but Site No. B7250109 is probably associated with the Buffalo Mine.

3.13.1 Site Location and Access (Figure 2.1-1)

Site No. B7250108 is in the SW¼ of the SE¼ of the SE¼ of section 10, T. 5 N, R. 11 E., and Site No. B7250109 is in the NW¼ of the SW¼ of the SW¼ of section 11, T. 5 N, R. 11 E. Both sites are on the Atlanta East 7.5-minute quadrangle and very close to the border with the Atlanta West quadrangle (Figure 3.13-1). Access is via FS Road 207 to the head of Montezuma Creek, then west on FS Roads 207B and 208 to the unnumbered jeep road along the ridge top, a distance of about 1¼ miles. The sites are at approximate elevations of 7,040 feet and 6,860 feet, respectively, on a spur road that connects the ridge top with the Monarch Mine road. The pits and trenches represent recent exploration activity. These sites are on patented claims.

3.13.2 Geologic Features (Figure 2.2-1)

The Hill and Davis claim is adjacent to the Atlanta Nos. 1 and 2 claims, and it appears to cover a branch of the Atlanta lode that is nearly parallel to the main lode. The lode is nearly 60 feet wide on the surface, but the zone of shearing narrows to half that width 600 feet below the surface (Anderson, 1939). The geology of the Buffalo Mine is discussed in section 3.9.2.

3.13.3 Site History

The Hill and Davis claim is one of the oldest in the Atlanta district. Anderson (1936) noted a number of shallow cuts and tunnels on the property all of which were caved in 1936. In addition, the claim was explored at depth by a crosscut from the St. Joseph Lead Company's No. 6 West drift (Mitchell, 2000). The history of the Buffalo Mine is discussed in section 3.9.3.

3.13.4 Environmental Conditions

3.13.4.1 Site Features

These sites were visited by Earl H. Bennett on July 25, 2001. A video segment describing the sites is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:00:34-0:05:14). Documenting photograph is Roll 01B1, frame 14.

Site No. B7250108 may contain an old shaft or adits. What appear to be two partial dumps are in the area, and there is a significant amount of surface disturbance from recent exploration (Figure 3.13-2). Site No. B7250109 is probably part of the Buffalo Mine. The workings include pits and
trenches, which are just north of the main access road to the Monarch Shaft. A water-filled hole about 12 inches deep is on the south side of what looks like a large, shallow pit. A significant dump is on the north side of this depression. The dump measures 30 feet wide and 10 feet thick. A prong on the west side of the main dump is 30 feet long. A trench is north and east of the main dump, and a drill hole was noted on the dump.

3.13.4.2 Sample Locations

3.13.4.2.1 Solid Samples
   No solid samples were collected.

3.13.4.2.2 Water Samples
   No water samples were collected.

3.13.5 Structures
   There are no structures at the site.

3.13.6 Safety
   There are no safety hazards at the site.
Figure 3.13-1. Location of the Hill and Davis Claim (Site No. HA-73 [Field Site No. B7250108]) and Buffalo Mine (?) (Site No. HA-70 [Field Site No. B7250109]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.13-2. Some of the surface disturbance at the Hill and Davis claim (Roll 01B1, frame #14).
3.14 BONANZA PROSPECT (Site No. HA-1268 [Field Site No. E8020102]) and GOLDEN BELL PROSPECT (Site No. HA-1269 [Field Site Nos. E8020104 and E8020105])

3.14.1 Site Location and Access (Figure 2.1-1)

These prospects are in the S½ of section 10, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.14-1). Access is via FS Road 207 approximately 2 miles southeast up Montezuma Creek to the junction with FS Road 207B. Road 207B goes west approximately 0.7 mile to FS Road 208. Road 208 and an unnumbered jeep road go approximately 0.7 mile southwest to the edge of the Atlanta East quadrangle. The jeep road continues along the ridge west-northwest onto the Atlanta West quadrangle. The adits are between 0.3 and 0.8 mile west on this jeep road from the edge of the quadrangles and are on both the north and south sides of the ridge. The sites are on Forest Service land.

3.14.2 Geologic Features (Figure 2.2-1)

The workings explored quartz veins in biotite granodiorite of the Idaho batholith.

3.14.3 Site History

There is no information on the history of these prospects.

3.14.4 Environmental Conditions

3.14.4.1 Site Features

These prospects were visited by Ted Erdman on August 2, 2001. A video segment describing the sites is on Boise National Forest Atlanta Area Videotape (Tape 2, index 0:05:18-0:19:18). Documenting photographs are Roll 01E3, frames 18-22 (Site No. E8020102); Roll 01E4, frames 1-3 (Site No. E8020104); and Roll 01E4, frames 4-7 (Site No. E8020105).

Site No. E8020102 is on the jeep road 0.3 mile west of the quadrangle boundary and on the north side of the ridge. This site has two collapsed adits (Figure 3.14-2). Adit 1 is the southern adit. It is dry and has a dump measuring 25 feet long, 25 feet wide, and 10 feet thick (Figures 3.14-3 and 3.14-4). Adit 2, the northern adit, is discharging 2-3 gallons per minute (Figure 3.14-5). This adit has a dump 20 feet long, 15 feet wide, and 5 feet thick.

Site No. E8020104, which is also on the north side of the ridge, is on the jeep road 0.5 mile west of the quadrangle boundary. This site has one collapsed adit (Figures 3.14-6 and 3.14-7). The dump is 35 feet long, 15 feet wide, and 5 feet thick (Figure 3.14-8).

Site No. E8020105, which is on the south side of the ridge and on the jeep road 0.8 mile west of the quadrangle boundary, has four workings (Figure 3.14-9). These may be very small, collapsed adits, but they look more like shallow trenches (Figure 3.14-10).
The disturbed area at these sites is minimal.

Several adits shown farther to the northwest along the ridge on Anderson’s (1939) map of the area were not found.

3.14.4.2 Sample Locations

3.14.4.2.1 Solid Samples
   No solid samples were collected.

3.14.4.2.2 Water Samples

Sample E8020103 was taken from Adit 2 at Site No. E8020102.

<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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<tr>
<td>E8020103</td>
<td>Site No. E8020102, Adit 2</td>
<td>68</td>
<td>50</td>
<td>7.8</td>
<td>2-3</td>
<td>Yes</td>
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</table>

3.14.4.2.3 Analytical Results

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

Sample E8020103 does not exceed any water quality standards, although arsenic was detected in the EPA 200.8 test.

3.14.5 Structures

There are no structures at any of the sites.

3.14.6 Safety

There are no safety concerns at any of the sites.
Figure 3.14-1. Location of the Bonanza Prospect (Site No. HA-1268 [Field Site No. E8020102]) and the Golden Bell Prospect (Site No. HA-1269 [Field Site Nos. E8020104 and E8020105]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.14-2. Sketch of the Bonanza Prospect (Site No. E8020102).
Figure 3.14-3. Trough of caved Adit 1 at the Bonanza Prospect, looking southeast (Roll 01E3, frame #18).

Figure 3.14-4. Waste dump for Adit 1 at the Bonanza Prospect, looking northwest (Roll 01E3, frame #19).
Figure 3.14-5. Collapsed Adit 2 at the Bonanza Prospect, looking south. A minor seep is flowing out of the adit (Roll 01E3, frame #22).
area of abundant trenches and pits north of adit

caved adit

jeep trail on ridge top

Figure 3.14-6. Sketch of the Golden Bell Prospect (Site No. E8020104).
Figure 3.14-7. Caved adit at Site No. E8020104, looking northwest (Roll 01E4, frame #1).

Figure 3.14-8. Profile view of the waste dump at Site No. E8020104, looking south (Roll 01E4, frame #3).
Figure 3.14-9. Sketch of the Golden Bell Prospect (Site No. E8020105).
Figure 3.14-10. One of the trenches at Site No. E8020105 (Roll 01E4, frame #6).
3.15 IDAHO GROUP (Site No. HA-1270 [Field Site No. B7250105])

3.15.1 Site Location and Access (Figure 2.1-1)

This site is west of Adits 2 and 3 on the Atlanta No. 2 claim. It is in the SE\(\frac{1}{4}\) of the NW\(\frac{1}{4}\) of the NW\(\frac{1}{4}\) of section 15, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.15-1). The adit is at the end of the access road that heads west from the Atlanta No. 2 claim. It is above the confluence of Decker Creek and the Yuba River at an elevation of about 6,250 feet. This site is on Forest Service land.

3.15.2 Geologic Features (Figure 2.2-1)

The original Idaho Group covered what was described as the northern branch of a split in the Atlanta lode that occurred on the Atlanta No. 2 claim (Mitchell, 2000). More likely, this was a lateral vein that intersected the main Atlanta lode at a very low angle.

3.15.3 Site History

From the probable location of these claims (near or coinciding with the Idaho claims now held by Twin Gold Corporation and its partners), it is likely that one or more of the early operations in the Atlanta area included some of this ground. However, restaking has obscured the exact locations of the original claims. Around 1900 or 1910, the Idaho Group was owned by a Mrs. Browne. The Jerico (Jericho) tunnel opened the Idaho No. 2 claim. A few years later, the Idaho Group was reported to consist of at least five claims on which were a number of workings, some of them caved. The Idaho Mine Inspector’s reports from 1922 to 1933 listed the “Jericho Group” (probably the same as the Idaho Group) as being owned by Fritz Scholl of Atlanta (Mitchell, 2000).

3.15.4 Environmental Conditions

3.15.4.1 Site Features

This site was visited by Earl H. Bennett on July 25, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:19:21-0:22:38). Documenting photographs are Roll 01B1, frames 8-9.

The property consists of a possible, very small, dry adit (Figure 3.15-2) and some pits and cuts. A waste dump, probably for an adit, measures about 20 feet long, 10 feet wide, and 50 feet thick on the nose (Figure 3.15-3). The disturbed area is minimal.

3.15.4.2 Sample Locations

3.15.4.2.1 Solid Samples

No solid samples were collected.
3.15.4.2.2 Water Samples
   No water samples were collected.

3.15.5 Structures
   There are no structures at the site.

3.15.6 Safety
   There are no safety hazards at this site.
Figure 3.15-1. Location of the Idaho Group (Site No. HA-1270 [Field Site No. B7250105]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.15-2. Shallow scarp on the slope, possibly a caved adit, at the Idaho Group (Roll 01B1, frame #8).
Figure 3.15-3. Thin waste dump on the slope below the possible caved adit at the Idaho Group. The dump extends at least 50 feet down the slope (Roll 01B1, frame #9).
3.16 MINERVA MINE (Site No. HA-75 [Field Site Nos. B7250106 and B7250107])

3.16.1 Site Location and Access (Figure 2.1-1)

This mine is above Decker Creek in the SE¼ of the NE¼ of the NE¼ of section 15, T. 5 N., R. 11 E, on the Atlanta East 7.5-minute quadrangle (Figure 3.16-1). Access is via FS Road 207 to the head of Montezuma Creek, then west on FS Road 207B to FS Road 208, then westerly on Road 208 and an unnumbered continuation of Road 208 to the mine. The main access road crosses the dump of the upper adit (Site No. B7250107). This dump goes down a steep hill and has been disturbed by road building. The lower adit, Site No. B7250106, was not actually visited but is described as seen from above on the access road. Both of these adits are believed to be part of the Minerva Mine and are on patented claims. The mill tailings are along Decker Creek in the center of the NE¼ of the SE¼ of section 15, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.16-1). [Note: this location for the Minerva Mine is not the one shown on the topographic map. That site is actually on the Alaska No. 2 claim.] The Minerva claims were patented (Anderson, 1939), but the tailings are on Forest Service land.

3.16.2 Geologic Features (Figure 2.2-1)

The Minerva property had four west-northwest-striking gash veins that intersect the main Atlanta lode near the Atlanta No. 2 claim. The Minerva lode was the only one of these veins that was extensively developed. The ore was very similar to that of the main Atlanta lode, and the commercial ore was confined to an ore shoot about 600 feet long and 4 to 5 sets wide (Anderson, 1939).

3.16.3 Site History

The following history is summarized from Mitchell (2000, p. 161-168):

The Minerva is one of the oldest mines in the district. After exploring the property through the end of 1866, William Clemens made plans to bring in a mill the following spring. The next summer, a quarter of a ton of ore obtained while sampling the property yielded $250. Cyrus Jacobs reported good assay results in 1868, but the property was not put into production.

In 1905, the Minerva Mining Company shipped bullion produced during development work. The property had a ten-stamp mill, which reportedly lost half the values in the tailings. A cyanide plant was added to the mill in 1906. A two-bucket aerial tram was used to carry the ore to the mill. The mine was one of the largest producers in the district in 1909 and the largest producer in Elmore County in 1910. The mill was doubled to twenty stamps in 1910. The mine was closed in October 1911, but the mill processed a small amount of ore the following year.

Work resumed on the property in 1918 and continued for a year or so. By 1925, the mine was again idle and the workings were inaccessible (Ballard, 1928). The mine was sold under
attachment in 1930, and mining resumed on a small scale in 1936. In 1938, Frank May, Bud Brown, and their associates constructed a 50-tpd concentration, amalgamation, and flotation mill. This mill was built at the old millsite. Work at the property continued until World War II.

Around 1951, Little Queens Mines, Inc., leased the property and resumed development. This company explored the property until 1956. Atlanta Gold Corporation acquired the property in early 1988.

3.16.4 Environmental Conditions

3.16.4.1 Site Features

This mine was visited by Earl Bennett on July 25, 2001, and the millsite was visited by John Kauffman on July 26, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:22:42-0:31:06). Documenting photographs are Roll 01B1, frames 11-12, and Roll 01K1, frames 20-21.

The lower adit looks like a single caved adit with a fairly large light-colored granitic dump (Figure 3.16-2). A lot of metal and a few timbers are on the dump. All of the metal is rusted, and the effects of the 2000 forest fire on the structures are obvious. There are also what look like sheave wheels on the dump. These are probably parts of a tram system that ran from this site to the mill, which was downhill along Decker Creek near the confluence with Grouse Creek (on the double switchback on the jeep road).

The upper adit, if present, is sloughed and not obvious. The disturbance from road building makes estimating the size of the dump difficult (Figure 3.16-3).

The tailings site along Decker Creek is estimated to be 150 feet long, 60 feet wide, and 2-6 feet thick (Figures 3.16-4 and 3.16-5). Except for the west end, most of this area appears to be jig tailings with small patches of overlying flotation tailings (Figure 3.16-6). An area along the west end, measuring 50 feet long, 10 feet wide, and about 5-6 feet thick, appears to be entirely flotation tailings. The ruins of several burnt buildings, possibly parts of the mill, are in the area.

3.16.4.2 Sample Locations

3.16.4.2.1 Solid Samples

Samples were collected from both jig (K7260107) and flotation (K7260108) tailings.

<table>
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<th>Location</th>
<th>Analyzed (Yes/No)</th>
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<tbody>
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<td>Minerva jig tailings</td>
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</tr>
<tr>
<td>K7260108</td>
<td>Minerva flotation tailings</td>
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3.16.4.2.2 Water Samples

An upstream sample (K7260106) was collected from Decker Creek above its confluence with Grouse Creek. A downstream sample (K7260109) was collected below the bridge across Decker Creek, about 100 feet west of the tailings.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µs)</th>
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<th>pH</th>
<th>Flow (gpm)</th>
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<td>K7260106</td>
<td>upstream, Decker Creek</td>
<td>56</td>
<td>60</td>
<td>7.5</td>
<td>10 ft. wide, ~1 ft. deep</td>
<td>Yes</td>
</tr>
<tr>
<td>K7260109</td>
<td>downstream, Decker Creek</td>
<td>57</td>
<td>60</td>
<td>7.6</td>
<td>12-ft. wide, ~1 ft. deep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.16.4.2.3 Analytical Results

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

Sample K7260107 from the jig tailings has elevated levels of cadmium, iron, manganese, and zinc in the element screen. In the TCLP for metals test, arsenic is leaching from the sample.

Sample K7260108 from the flotation tailings has elevated levels of arsenic and cadmium in the element screen. In the TCLP for metals test, arsenic and mercury are leaching from the sample.

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

In upstream sample K7260106 and downstream sample K7260109, no water quality standards are exceeded, although arsenic was detected in the EPA 200.8 test for both samples.

3.16.5 Structures

The burnt ruins of several structures are at the millsite, and metal parts of the tram system are on the dump for the lower adit. Other metal parts are on the slope between the lower dump and the mill.

3.16.6 Safety

Sharp edges on the scrap metal pose only a minor hazard.
Figure 3.16-1. Location of the Minerva Mine (Site No. HA-75), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.16-2. Looking down on the waste dump for the lower adit at the Minerva Mine (Roll 01B1, frame #11).

Figure 3.16-3. Waste dump disturbed by road building at the upper adit of the Minerva Mine. Grouse Creek is the drainage in the distance near the left edge of the picture (Roll 01B1, frame #12).
Figure 3.16-4. Sketch of the Minerva tailings site.
Figure 3.16-5. Looking northeast at the tailings area for the Minerva Mine. The grass-covered area behind the light-colored tailings contains thin patches of flotation tailings and probably some jig tailings. The waste dump for the lower Minerva adit is at the center top of the picture (Roll 01K1, frame #21).

Figure 3.16-6. Pile of light-colored flotation tailings at the west end of the tailings area. FS Road 207 passes behind the pile and connects with the timber salvage road at the left (Roll 01K1, frame #20).
3.17 ALASKA No. 2 ADIT (Site No. HA-1271 [Field Site No. B7260100])

3.17.1 Site Location and Access (Figure 2.1-1)

This adit and large dump are in the SW¼ of the NW¼ of the NW¼ of section 14, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.17-1). The property is at an elevation of about 6,510 feet at the end of a short spur road west of a sharp switchback on FS Road 207. This is the site shown as the Minerva Mine on the Atlanta East 7.5-minute quadrangle and it was identified as such in the 1994 site inspection report of the Atlanta area (Mitchell and Bennett, 1994), but the Minerva is believed to be the next set of workings to the west. This adit appears to be on the Alaska No. 2 patented claim, which is now part of the Minerva Group.

3.17.2 Geologic Features (Figure 2.2-1)

According to Anderson (1939), the Alaska was one of four west-northwest-striking gash veins that cut across the Minerva Group. The Alaska vein was a short distance south of the Minerva vein.

3.17.3 Site History

Little is known of the history of the Alaska workings separate from the Minerva Group as a whole. See section 3.16.3 for the history of the Minerva Group.

3.17.4 Environmental Conditions

3.17.4.1 Site Features

This adit was visited by Earl H. Bennett on July 26, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:31:10-0:35:40). Documenting photographs are Roll 01B1, frames 19-25.

The site has an open adit with a large granitic dump (Figure 3.17-2). The adit has new timbers at the portal (Figure 3.17-3) and what is left of a “No Trespassing” sign. Metal from the burned ruins of several buildings, destroyed during the forest fire of 2000, is on the dump (Figures 3.17-4 and 3.17-5). A piece of rail is sticking out of the dump beside the adit. A short access road goes from the main road to the dump, which measures 200 feet east-west, 85 feet from the adit to the road, and 20 feet thick on the nose. There is a building pad on this access road (Figure 3.17-6), and a spring flows from near the pad down the short road. The main access road crosses the dump in an east-west direction and below this main road is another part of the dump, which parallels the road for about 230 feet (Figures 3.17-7 and 3.17-8). A significant amount of corrugated sheet metal and other scrap is along this road.
3.17.4.2 Sample Locations

3.17.4.2.1 Solid Samples
   No solid samples were collected.

3.17.4.2.2 Water Samples
   No water samples were collected.

3.17.5 Structures

The burned ruins of several buildings are at the site, but no standing structures remain.

3.17.6 Safety

The adit is open and can be entered. Sharp edges on the metal debris pose a minor hazard.
Figure 3.17-1. Location of the Alaska No. 2 adit (Site No. HA-1271 [Field Site No. B7260100]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.17-2. Sketch of the Alaska No. 2 adit site.
Figure 3.17-3. Timbered portal and opening into the Alaska No. 2 adit (Roll 01B1, frame #21).

Figure 3.17-4. Surface of the waste dump for the Alaska No. 2 adit with scrap metal from the burnt buildings. The adit is the dark area near the center left edge of the picture (Roll 01B1, frame #24).
Figure 3.17-5. Close-up of the remains of the burnt buildings near the Alaska No. 2 adit (Roll 01B1, frame #19).

Figure 3.17-6. Collapsed metal building on the approach road to the Alaska No. 2 adit (Roll 01B1, frame #22).
Figure 3.17-7. Main access road crossing the waste dump for the Alaska No. 2 adit. The upper part of the dump is at the right, and the lower part (to the left) parallels the road (Roll 01B1, frame #23).

Figure 3.17-8. Some of the scrap metal along the main access road at the Alaska No. 2 adit (Roll 01B1, frame #25).
3.18 ALASKA No. 1 ADIT (Site No. HA-1272 [Field Site No. B7260102])

3.18.1 Site Location and Access (Figure 2.1-1)

This adit is in the NW¼ of the NW¼ of the NE¼ of section 14, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.18-1). Access is on FS Road 207 approximately 1 mile southwest of the Montezuma Creek-Flint Creek divide. The site is at an elevation of 6,520 and is below the main access road and up the dry gully from Site No. B7260101 (see section 3.19). The adit is on patented claims but near Forest Service land.

3.18.2 Geologic Features (Figure 2.2-1)

According to Anderson (1939), the Alaska was one of four west-northwest-striking gash veins that cut across the Minerva Group. The Alaska vein was a short distance south of the Minerva vein.

3.18.3 Site History

Little is known of the history of the Alaska workings separate from the Minerva Group as a whole. See section 3.16.3 for the history of the Minerva Group.

3.18.4 Environmental Conditions

3.18.4.1 Site Features

This site was visited by Earl H. Bennett on July 26, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:35:44-0:37:50). Documenting photographs are Roll 01B2, frames 3-4.

This site has one caved, dry adit with a dump measuring 20 feet long, 25 feet wide, and 8 feet thick on the nose (Figures 3.18-2 and 3.18-3). The entire area burned in the forest fire of 2000. The disturbed area is less than 0.1 acre

3.18.4.2 Sample Locations

3.18.4.2.1 Solid Samples

No solid samples were collected.

3.18.4.2.2 Water Samples

No water samples were collected.

3.18.5 Structures

There are no structures at the site.
3.18.6 Safety
There are no safety hazards at the site.
Figure 3.18-1. Location of the Alaska No. 1 adit (Site No. HA-1272 [Field Site No. B7260102]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.18-2. Shallow trough of the caved adit on the Alaska No. 1 claim (Roll 01B2, frame #3).

Figure 3.18-3. Small waste dump for the caved adit on the Alaska No. 1 claim (Roll 01B2, frame #4).
3.19 UNNAMED SITE (Field Site No. B7260101)

3.19.1 Site Location and Access (Figure 2.1-1)

This is an odd site and may not be related to mining; therefore it has not been assigned a number in the IGS Mines and Prospects Database. It is in the SW¼ of the NW¼ of the NE¼ of section 14, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.19-1). The site is along FS Road 207C on a portion marked “jeep trail” on the topographic map. Easiest access is via FS Road 207 to the head of Montezuma Creek and the junction with Road 207C, then southeast on Road 207C to Flint Creek where the road turns southwest and continues down to Decker Creek. The site is less than ¼ mile east of where Road 207C reconnects with FS Road 207. The site is on Forest Service land near the boundary of a small patented claim block.

3.19.2 Geologic Features (Figure 2.2-1)

This site is in Cretaceous granodiorite of the Idaho batholith (Worl and others, 1991).

3.19.3 Site History

Nothing is known about the history of this site.

3.19.4 Environmental Conditions

3.19.4.1 Site Features

This site was visited by Earl H. Bennett on July 26, 2001. A video segment describing the site is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:37:53-0:41:30). Documenting photographs are Roll O1B2, frames 1-2.

The signature object at this site (Figure 3.19-2) is an old, white garbage-truck body that is above the access spur road or trail. Below the road is a flat area that is vegetated, but that looks like it was man made. There is an empty 55-gallon barrel lying on this flat area (Figure 3.19-3), and a burned structure at the south end of the flat. Below this flat area is what looks like two shallow, dry ponds separated by a dirt berm (Figure 3.19-4). The ponds are parallel to the flat area. Just east of the ponds are Flint Creek and the Flint Creek trail. As noted, the area may not be related to mining, but it is a man-impacted site that covers about 2.0 acres.

3.19.4.2 Sample Locations

3.19.4.2.1 Solid Samples

No solid samples were collected.

3.19.4.2.2 Water Samples

No water samples were collected.
3.19.5 Structures

A small, burned building on the south end of the flat area is the only structure at the site.

3.19.6 Safety

There are no safety hazards at the site.
Figure 3.19-1. Location of Unnamed Site (Field Site No. B7260101), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.19-2. Sketch of Site No. B7260101.
Figure 3.19-3. Flat area at Site No. B7260101 with old 55-gallon barrel (Roll 01B2, frame #1).

Figure 3.19-4. Two shallow, dry ponds separated by a dirt berm below the flat area at Site No. B7260101 (Roll 01B2, frame #2).
3.20 ATLANTA or KIRBY FRACTION CLAIMS – Part of the MONARCH MINE (Site No. HA-69 [Field Site Nos. B7260109A and B7260110])

3.20.1 Site Location and Access (Figure 2.1-1)

Site B7260109A is a small prospect pit about 50 feet downhill from the road connecting FS Road 208 to the Monarch shaft and less than ¼ mile northwest of the shaft. Site No. B7260110 is just below and just northwest of the Monarch shaft in the SW¼ of the NW¼ of the SW¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.20-1). It is also just west of the jeep road (FS Road 209) that goes down Quartz Gulch. A spur road from the Quartz Gulch road goes west across the bottom of the dump at this property and ends in about ½ mile. The caved adit is at an elevation of about 6,720 feet. These sites appear to be on patented claims.

3.20.2 Geologic Features (Figure 2.2-1)

These sites are in Cretaceous granodiorite of the Idaho batholith (Worl and others, 1991).

3.20.3 Site History

These sites appear to be on either the Kirby Fraction or the Atlanta patented claims. They were possibly developed in conjunction with work at the Monarch between about 1902 and 1916, when Mr. Daniel Kirby was in charge of work at the Monarch Mine (Mitchell, 2000).

3.20.4 Environmental Conditions

3.20.4.1 Site Features

This site was visited by Earl H. Bennett on July 26, 2001. A video segment describing Site No. B7260110, identified as an unnamed prospect, is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 0:41:34-0:49:44); no video was taken at Site No. B7260109A. Documenting photographs for Site No. B7260110 are Roll 01B2, frames 24-25, and Roll 01B3, frames 1-4; no photographs were taken at Site No. B7260109A.

Site No. B7260109A is a small pit and a waste dump of minor significance. Site No. B7260110 contains a caved, dry adit with a broken wooden gate; an open, timbered adit with a seep on the same level as the first adit; a large dump for the two adits; a loading platform; a wellhead on the dump; and two collapsed buildings (Figure 3.20-2). The caved adit (Figure 3.20-3) is near the center south edge of the dump, and the open adit (Figure 3.20-4) is at the southeast edge of the dump next to the Quartz Gulch jeep road. Cold air coming out of the open adit indicates a connection to other workings. The combined dump for the adits is 285 feet long, 60 feet wide, and 20 feet thick. The dump parallels the spur road (Figure 3.20-5). The capped well
casing on the dump is probably a monitoring well. Beyond the well on the edge of the dump is a loading platform. About 25 feet west of the caved adit is a collapsed building (Figure 3.20-6). A smaller collapsed building with metal sides and roof is just east of the caved adit.

3.20.4.2 Sample Locations

3.20.4.2.1 Solid Samples
No solid samples were collected.

3.20.4.2.2 Water Samples
No water samples were collected.

3.20.5 Structures

The site contains one collapsed building, a smaller collapsed building with metal sides and roof, and a loading ramp.

3.20.6 Safety

The open, timbered adit can be entered.
Figure 3.20-1. Location of workings on the Atlanta or Kirby Fraction Claims (Site No. HA-69 [Field Site Nos. B7260109A and B7260110]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.20-2. Sketch of Sites B7260109A and B7260110 on the Atlanta or Kirby Fraction Claims.
Figure 3.20-3. Framed portal of the caved adit at Site No. B7260110 (Roll 01B2, frame #24).

Figure 3.20-4. Framed portal of the open adit at Site No. B7260110. This adit is beside the Quartz Gulch jeep road (Roll 01B3, frame #3).
Figure 3.20-5. View to the northwest across the waste dump for the adits at Site No. B7260110. Casing at the center of the picture is probably a monitoring well. The loading platform is at the edge of the dump, just above the well casing (Roll 01B3, frame #1).

Figure 3.20-6. Completely collapsed building along the edge of the waste dump at Site No. B7260110 (Roll 01B3, frame #2).
Figure 3.20-7. Small collapsed building on the waste dump at Site No. B7260110. The well casing and loading ramp are to the right of the collapsed building (Roll 01B3, frame #4).
3.21 KIRBY FRACTION ADIT – Part of the MONARCH MINE (Site No. HA-69 [Field Site No. E8030101])

3.21.1 Site Location and Access (Figure 2.1-1)

This site is in the SW¼ of the NW¼ of the SW¼ of section 11, T. 5 N., R. 11 E., on the Atlanta East quadrangle (Figure 3.21-1). Access is via FS Road 209 approximately 1.5 miles up Quartz Gulch from the town of Atlanta. The adit is on patented claims just south of the road in the gulch.

3.21.2 Geologic Features (Figure 2.2-1)

The adit developed quartz veins in granodiorite. These veins are related to the Atlanta Lode, which is 500 feet south of the portal.

3.21.3 Site History

This site appears to be on the Kirby Fraction patented claim. It was possibly developed in conjunction with work at the Monarch between about 1902 and 1916, when Mr. Daniel Kirby was in charge of work at the Monarch Mine (Mitchell, 2000).

3.21.4 Environmental Conditions

3.21.4.1 Site Features

This property was visited by Ted Erdman on August 3, 2001. A video segment describing the site, which is identified as an unnamed prospect, is on Boise National Forest Atlanta Area Videotape (Tape 2, index 0:49:48-0:54:15). Documenting photographs are Roll 01E4, frames 8-10.

This site has one collapsed adit (Figures 3.21-2 and 3.21-3) in Quartz Gulch with a waste dump parallel to the dry gulch. The dump is 150 feet long, 40 feet wide, and 15 feet thick (Figure 3.21-4). The disturbed area covers less than 0.5 acre.

3.21.4.2 Sample Locations

3.21.4.2.1 Solid Samples

No solid samples were collected.

3.21.4.2.2 Water Samples

No water samples were collected.
3.21.5 Structures

There are no structures at this site.

3.21.6 Safety

There are no safety concerns at this site.
Figure 3.21-1. Location of the Kirby Fraction adit (Site No. HA-69 [Field Site No. E8030101]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.21-2. Sketch of the Kirby Fraction adit (Site No. E8030101).
Figure 3.21-3. Trough and collapsed portal timber of the caved adit on the Kirby Fraction claim at Site No. E8030101, looking southeast (Roll 01E4, frame #8).

Figure 3.21-4. Northwest end of the waste dump for the adit on the Kirby Fraction claim at Site No. E8030101, just above Quartz Gulch. View is to the southwest (Roll 01E4, frame #10).
3.22 UNNAMED PROSPECT (Site No. HA-1273 [Field Site No. E8030102])

3.22.1 Site Location and Access (Figure 2.1-1)

This site is in the SE¼ of the SE¼ of the NE¼ of section 10, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.22-1). Access is via FS Road 209, approximately 1.2 miles up Quartz Gulch from the town of Atlanta. The adits are on Forest Service land between the gulch and Road 209.

3.22.2 Geologic Features (Figure 2.2-1)

These adits developed lateral quartz veins related to the Atlanta Lode and are in biotite granodiorite of the Idaho batholith.

3.22.3 Site History

These adits are shown on Anderson’s (1939) map of the area. From their position relative to the Big Lode Mine, they may have been on the Moultrie Lode, which was one of the veins discovered before 1880. In 1903, the Moultrie and the nearby Jessie Benton were being worked by a San Francisco corporation (Mitchell, 2000). Anderson (1939) noted that the Jessie Benton, Moultrie, and several other prospects had been combined to form the Bixby Group.

3.22.4 Environmental Conditions

3.22.4.1 Site Features

This site was visited by Ted Erdman on August 3, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 2, index 0:54:19-1:00:32). Documenting photographs are Roll 01E4, frames 11-14.

This property has two collapsed adits (Figure 3.22-2). The waste dump for Adit 1 (the southern adit) is 100 feet long, 20 feet wide, and 10 feet thick (Figure 3.22-3). This dump nearly reaches that for Adit 2, which is to the northwest. There are several flat mine rails on the dump. Adit 2 has a very small seep discharging from the collapsed portal. The dump for Adit 2 is 30 feet long, 20 feet wide, and 10 feet thick (Figure 3.22-4). Both dumps approach Quartz Gulch, but the drainage is dry.

3.22.4.2 Sample Locations

3.22.4.2.1 Solid Samples

   No solid samples were collected.

3.22.4.2.2 Water Samples

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

3.22.6 Safety
   There are no safety concerns at this site.
Figure 3.22–1. Location of Unnamed Prospect (Site No. HA-1273 [Field Site No. E8030102]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
caved Adit 2
to Atlanta

Figure 3.22-2. Sketch of Site No. E8030102.

to Monarch Mine

caved Adit 1

Quartz Gulch (dry)

seep

flat rails
Figure 3.22-3. Waste dump for Adit 1 at Site No. E8030102, looking southwest (Roll 01E4, frame #12).

Figure 3.22-4. Waste dump for Adit 2 at Site No. E8030102, looking southwest (Roll 01E4, frame #14).
3.23 BIG LODE MINE (Site No. HA-57)
Alternate names—Leonora Mine; Hazel Queen; Anna Lode.

3.23.1 Site Location and Access (Figure 2.1-1)

The Big Lode Mine is in the NE¼ of the SW¼ of the NE¼ of section 10, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.23-1). The mine is approximately 1.1 miles up Quartz Gulch via FS Road 209 from the town of Atlanta and is on Forest Service land.

3.23.2 Geologic Features (Figure 2.2-1)

The Big Lode Mine developed lateral quartz veins related to the Atlanta Lode. The main vein strikes N. 65° W. and dips steeply northeast (Anderson, 1939). The vein cuts biotite granodiorite of the Idaho batholith.

3.23.3 Site History

The Leonora (Big Lode) was discovered in 1866 and was acquired along with a ten-stamp mill by one of the district’s notorious promoters, W. R. DeFrees, in 1868. DeFrees’s creditors attached the mine and mill in 1869, but the property was soon back in production. The mine was sold to the Big Lode Mining Company late in 1882. The new owners built a twenty-stamp mill the following year, but only sporadic activity was reported at the mine for the next three-and-one-half decades. The mine was reopened in 1919, and milling tests were conducted in 1919 and 1920. The mine was active again from 1938 to at least 1940; there is no further mention of the property after that time.

3.23.4 Environmental Conditions

3.23.4.1 Site Features

The Big Lode Mine was visited by Ted Erdman on August 3, 2001. A video segment describing the mine is on Boise National Forest Atlanta Area Videotape (Tape 2, index 1:00:36-1:11:45). Documenting photographs are Roll 01E4, frames 15-20.

This site has two collapsed adits and the burned remains of a gravity mill (Figure 3.23-2). Adit 1 is just west of the mill and is discharging water at a rate of 2-3 gallons per minute (Figure 3.23-3). The dump is 130 feet long, 40 feet wide, and 15 feet thick. Adit 2 is just south of the mill and nearly in Quartz Gulch (Figure 3.23-4). The dump for Adit 2 is 150 feet long, 20 feet wide, and 10 feet thick (Figure 3.23-5).

The Big Lode mill is just west of Quartz Gulch and is completely burned (Figure 3.23-6). The remains of the mill include a stone retaining wall or foundation and abundant scrap metal (Figure 3.26-7). There is a pile of what appears to be mill tailings on the northeast side of the mill area.
3.23.4.2 Sample Locations

3.23.4.2.1 Solid Samples

Sample E8030106 was collected from the mill tailings.

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<td>Big Lode mill tailings</td>
<td>Yes</td>
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3.23.4.2.2 Water Samples

Sample E8030103 was collected from Adit 1. Samples E8030104 and E8030105 were collected upstream and downstream, respectively, from Quartz Gulch.

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<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<td>48</td>
<td>7.75</td>
<td>2-3</td>
<td>Yes</td>
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<td>E8030104</td>
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<td>178</td>
<td>55</td>
<td>8.22</td>
<td>10</td>
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<td>E8030105</td>
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<td>204</td>
<td>53</td>
<td>8.41</td>
<td>10</td>
<td>Yes</td>
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</table>

3.23.4.2.3 Analytical Results

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

Tailings sample E8030106 contains elevated levels of arsenic, cadmium, chromium, iron, zinc, and lead in the element screen. In the TCLP for metals test, mercury is leaching from the sample.

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

Sample E8030103 from Adit 1 does not exceed any water quality standards, although trace amounts of arsenic were detected in the EPA 200.8 test. Samples E8030104 and E8030105 both exceed the Primary MCL for arsenic in the EPA 200.8 test.

3.23.5 Structures

The footings of the burned mill building are the only structures at this site.
3.23.6 Safety

There are no significant safety concerns at this site.
Figure 3.23-1. Location of the Big Lode Mine (Site No. HA-57), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.23-2. Sketch of the Big Lode Mine.
Figure 3.23-3. Caved Adit 1 at the Big Lode Mine, looking west. A small stream of water from the adit is at the lower center of the picture (Roll 01E4, frame #15).
Figure 3.23-4. Caved Adit 2 at the Big Lode Mine, looking southwest (Roll 01E4, frame #19).

Figure 3.23-5. Waste dump for Adit 2 at the Big Lode Mine, looking southwest (Roll 01E4, frame #20).
Figure 3.23-6. Foundation of the burnt Big Lode mill, looking south from the waste dump for Adit 1 (Roll 01E4, frame #17).

Figure 3.23-7. Foundation of the Big Lode mill, looking west (Roll 01E4, frame #18).
3.24 STANLEY MINE (Site No. HA-1274 [Field Site No. E8030107])

3.24.1 Site Location and Access (Figure 2.1-1)

The Stanley Mine is in the SW¼ of the NE¼ of the NE¼ and the SE¼ of the NW¼ of the NE¼ of section 10, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.24-1). Access via FS Road 209 is approximately 0.9 mile south up Quartz Gulch from the town of Atlanta. One adit is along Road 209, and two others are approximately 500 feet east of Road 209 at the end of an old spur road that joins Road 209 near the Big Lode Mine. These three adits are on patented claims.

3.24.2 Geologic Features (Figure 2.2-1)

The Stanley Mine developed lateral quartz veins in biotite granodiorite of the Idaho batholith. This mine is on an extension of the Tahoma vein (Mitchell, 2000).

3.24.3 Site History

In 1872, the Stanley Mine was owned largely by “English capitalists.” The mine was actively developed by lessees for the next few years. Around 1875, the property was leased in conjunction with the Leonora, and no further mention is made of the mine.

3.24.4 Environmental Conditions

3.24.4.1 Site Features

The Stanley Mine was visited by Ted Erdman on August 3, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 2, index 1:11:50-1:18:57). Documenting photographs are Roll 01E4, frames 21-24 and E5, frames 1-4.

Three adits were found. One is caved, one is nearly caved, and one is gated (Figure 3.24-2). Adit 1 is caved, and the collapsed portal was covered with corrugated sheet metal (Figure 3.24-3). Adit 2 is approximately 200 feet north of Adit 1 and has an intact wood-frame portal (Figure 3.24-4). The adit appears to be caved, although there is a small opening at the top of the caved material that may provide access into the tunnel (Figure 3.24-5). The waste dumps for both these adits have been extensively disturbed by logging and road building. The disturbed area for Adits 1 and 2 is less than 1 acre.

Adit 3, along the east side of Road 209, has crisscrossing boards over the portal, although gaps in the boards are large enough to permit entry (Figure 3.24-6). A small stream of water is discharging from the adit. The waste dump, which measures 40 feet long, 25 feet wide, and 10 feet thick, is on the west side of the road. It approaches Quartz Gulch, but does not quite reach the creek (Figure 3.24-7). The disturbed area covers less than 0.25 acre.
3.24.4.2 Sample Locations

3.24.4.2.1 Solid Samples
   No solid samples were collected.

3.24.4.2.2 Water Samples

Sample E8030108 was taken from Adit 3.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity ($\mu S$)</th>
<th>Temperature ($^\circ F$)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<td>E8030108</td>
<td>Stanley Mine, Adit 3</td>
<td>260</td>
<td>55</td>
<td>8.12</td>
<td>&lt; 1</td>
<td>Yes</td>
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</table>

3.24.4.2.3 Analytical Results

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

Sample E8030108 from Adit 3 exceeds the Primary MCL and equals the Aquatic Life Chronic standard for arsenic and is within the range of the Aquatic Life Chronic standard for lead in the EPA 200.8 tests.

3.24.5 Structures

There are no structures at this site.

3.24.6 Safety

The only safety concern at this site is possible access into Adits 2 and 3. The apparent opening into Adit 2 is small, and the tunnel may actually be caved. The portal of Adit 3 is boarded over, but gaps between the boards are large enough to allow access to the adit.
Figure 3.24-1. Location of Stanley Mine (Site No. HA-1274 [Field Site No. E8030107]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.24-2. Sketch of the Stanley Mine.
Figure 3.24-3. Caved Adit 1 at the Stanley Mine, looking east. The corrugated metal sheets are at the collapsed portal (Roll 01E4, frame #21).

Figure 3.24-4. Framed portal of Adit 2 at the Stanley Mine, looking southeast (Roll 01E4, frame #23).
Figure 3.24-5. Small opening into Adit 2 at the top of the caved debris (Roll 01E4, frame #24).

Figure 3.24-6. Boards over the portal of Adit 3 at the Stanley Mine. Gaps in the boards are large enough to allow entry (Roll 01E5, frame #3).
Figure 3.24-7. Waste dump for Adit 3 at the Stanley Mine, looking north (Roll 01E5, frame #4).
3.25 TAHOMA MINE (Site No. HA-55)

3.25.1 Site Location and Access (Figure 2.1-1)

The Tahoma Mine is in the NW¼ of the NW¼ of the NE¼ of section 10 and the SW¼ of the SW¼ of the SE¼ of section 3, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.25-1). Access via FS Road 209 is approximately 0.8 mile up Quartz Gulch from the town of Atlanta. The adits are along a spur road on the west side of Quartz Gulch on patented claims.

3.25.2 Geologic Features (Figure 2.2-1)

The Tahoma Mine is on several northwest-striking lateral veins. Of these, only the Tahoma vein was extensively developed. It was one of the largest of the west-northwest set of veins and was prospected for over 4,000 feet. In the upper workings, it averaged 35 feet thick, and in the lower workings, it was between 10 and 40 feet thick (Anderson, 1939).

3.25.3 Site History

The following history is summarized from Mitchell (2000, p. 183-191):

The Tahoma is one of the oldest mines in the Atlanta district and was already known in 1866. The property was actively developed during the 1870s and early 1880s, producing some rich ore. However, in late 1884, the mine defaulted on its payroll, and a general economic collapse ensued in the Atlanta area.

Around 1901, the Tahoma was bonded to an eastern syndicate and work on the property resumed. However, by 1906, the mine was again in legal trouble and was idle for the next two years while these difficulties were being straightened out. Some development work followed, but the mine was soon idle again. In 1933, the mine was reopened by Coronado Gold Mines, which spent the next three years rehabilitating the property before forfeiting its corporate charter. Small shipments were made from the property in 1950 and in the early 1970s. The Tahoma was purchased by Atlanta Gold Corporation in 1994.

3.25.4 Environmental Conditions

3.25.4.1 Site Features

The Tahoma Mine was visited by Ted Erdman on August 3, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 2, index 1:19:01-1:30:45). Documenting photographs are Roll 01E5, frames 5-14.
This site has three collapsed adits (Figure 3.25-2). Adit 1 consists of a large scarp on the slope (Figure 3.25-3) and a waste dump measuring 50 feet long, 40 feet wide, and 15 feet thick. Mine rails extend from the caved debris at the portal onto the dump (Figure 3.25-4).

Adit 2 (Figure 3.25-5) is approximately 100 feet north of Adit 1, with a waste dump 40 feet long, 30 feet wide, and 10 feet thick (Figures 3.25-6 and 3.25-7).

Adit 3 is approximately 200 feet northeast of Adit 2 and has a wooden frame around the portal (Figure 3.25-8). A small stream discharges from Adit 3 and forms a swampy area and pond on the dump (Figure 3.25-9). The dump is 130 feet long, 80 feet wide, and 15 feet thick (Figure 3.25-10).

The total disturbed area at this site covers 1-2 acres.

3.25.4.2 Sample Locations

3.25.4.2.1 Solid Samples
No solid samples were collected.

3.25.4.2.2 Water Samples

Sample E8030109 was taken from Adit 3.

<table>
<thead>
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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>Tahoma Mine, Adit 3</td>
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<td>51</td>
<td>7.28</td>
<td>1-2</td>
<td>Yes</td>
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</table>

3.25.4.2.3 Analytical Results

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

Sample E8030109 from Adit 3 does not exceed any water quality standards, although arsenic was detected in the EPA 200.8 test.

3.25.5 Structures
There are no structures at this site.

3.25.6 Safety
There are no safety concerns at this site.

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Figure 3.25-1. Location of the Tahoma Mine (Site No. HA-55), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.25-2. Sketch of the Tahoma Mine.
Figure 3.25-3. Scarp and trough of caved Adit 1 at the Tahoma Mine, looking west (Roll 01E5, frame #5).
Figure 3.25-4. Toe of the waste dump for Adit 1 at the Tahoma Mine, looking southwest. Mine rails extend to the face of the dump. The access road is in the lower left of the photograph (Roll 01E5, frame #7).
Figure 3.25-5. Scarp and trough of caved Adit 2 at the Tahoma Mine, looking west (Roll 01E5, frame #8).
Figure 3.25-6. Looking east across the waste dump for Adit 2 at the Tahoma Mine (Roll 01E5, frame #9).

Figure 3.25-7. Profile view of the waste dump for Adit 2 at the Tahoma Mine, looking south (Roll 01E5, frame #10).
Figure 3.25-8. Portal timbers of caved Adit 3 at the Tahoma Mine, looking southwest (Roll 01E5, frame #12).

Figure 3.25-9. Pond and swampy area on the northwest end of the dump for Adit 3, looking east (Roll 01E5, frame #13).
Figure 3.25-10. View to the northwest of the waste dump for Adit 3 at the Tahoma Mine. This picture was taken from the access road (Roll 01E5, frame #14).
3.26 POLAR BEAR CLAIM GROUP (Site No. HA-65 [Field Site No. K7250101])

3.26.1 Site Location and Access (Figure 2.1-1)

Several minor prospects are near the head of Flint Creek in the S½ of the NE¼ of section 12, T. 5 N., R 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.26-1). Access from Atlanta is on the jeep trail up Montezuma Creek (FS Road 207) to the Montezuma Creek-Flint Creek divide, then eastward on the all-terrain-vehicle Trail 087 ("jeep trail" on the topographic map) to Flint Creek, and then overland up the drainage to the prospects. The workings are on Forest Service land at elevations from 7,600-8,000 feet.

3.26.2 Geologic Features (Figure 2.2-1)

The prospects are in silicified fracture and shear zones in granodiorite. Some of the silicified zones contain pyrite and are iron stained.

3.26.3 Site History

The Polar Bear claims were staked in the early 1980s by Atlanta Gold Corporation (Seraphim, 1986). However, large trees growing on the waste dump of one of the caved adits indicate earlier work on these prospects. Possibly that work dates back to the early 1900s when the major Atlanta mines were active and represents attempts to locate an eastward continuation of the Atlanta Lode.

3.26.4 Environmental Conditions

3.26.4.1 Site Features

The Polar Bear Group prospects were visited by John Kauffman on July 25, 2001. A video segment describing the site, identified as the Flint Creek Prospects, is on the Boise National Forest Atlanta Area Videotape (Tape 2, index 1:30:49-1:43:07). Documenting photographs are Roll O1K1, frames 1-8.

Five workings were found at this site (Figure 3.26-2). "Adits" 1 and 2, about 30 feet apart and open, are very minor prospects cut into the base of the cliffs high on the slope north of Flint Creek (Figure 3.26-3). The western prospect, Adit 1, is about 8 feet long (Figure 3.26-4); and the eastern prospect (Adit 2) is only 5 feet long. The insignificant amount of waste rock from these excavations is spread out on the steep slope below the prospects.

Southeast of these two minor prospects and lower in elevation are three caved, dry adits. The uppermost, Adit 3, is at the base of a large, iron-stained, silicified outcrop. Talus from the outcrop nearly obscures the trough of the caved adit (Figure 3.26-5). The waste dump is small, measuring about 6 feet long, 6 feet wide, and only 15 feet down the face; thickness on the slope is only 3-4 feet (Figure 3.26-6).
Adit 4, the middle and largest of the three, has several of the old portal timbers exposed in the caved rubble (Figure 3.26-7). The waste dump is 18 feet long, 10 feet wide, and 20 feet down the face; thickness on the slope is about 5-8 feet (Figure 3.26-8).

Adit 5 is the lowermost and was another minor prospect tunnel. The small waste dump is about 8 feet long, 5 feet wide, and 10 feet down the face; thickness on the slope is only 3-4 feet (Figure 3.26-9).

Although no other prospects were found, it is likely that other small pits or short adits may be in the vicinity. The total disturbed area at this site is less than 0.25 acre.

3.26.4.2 Sample Locations

3.26.4.2.1 Solid Samples
No solid samples were collected.

3.26.4.2.2 Water Samples
No water samples were collected.

3.26.5 Structures
There are no structures at this site.

3.26.6 Safety
The two open “adits” are short and pose no more of a hazard than the cliffs above them.
Figure 3.26-1. Location of five prospects on the Polar Bear Claim Group (Site No. HA-65 [Field Site No. K7250101]), Elmore County, Idaho (U.S. Geological Survey Atlanta East 7.5-minute topographic map).
Figure 3.26-2. Sketch of the prospects on the Polar Bear Group.
Figure 3.26-3. Looking north at open “adits” 1 and 2 at the Polar Bear Group. Adit 1 is at the right lower edge of the cliff in the left part of the picture, and Adit 2 is at the base of the outcrop in the shade, just right of center of the picture (Roll 01K1, frame #1).

Figure 3.26-4. Short opening of Adit 1, the western of the two short workings, at the Polar Bear Group (Roll 01K1, frame #3).
Figure 3.26-5. Talus-covered trough of caved Adit 3 at the Polar Bear Group, looking north. An outcrop of iron-stained, silicified granodiorite is above the adit (Roll 01K1, frame #5).
Figure 3.26-6. Small waste dump for Adit 3 at the Polar Bear Group, looking east (Roll 01K1, frame #4).

Figure 3.26-7. Looking north at the shallow trough of caved Adit 4 at the Polar Bear Group. Several of the collapsed portal timbers are in the rubble (just below and left of center of the picture) (Roll 01K1, frame #7).
Figure 3.26-8. Profile view of the waste dump for Adit 4 at the Polar Bear Group, looking west (Roll 01K1, frame #6).

Figure 3.26-9. Small waste dump for Adit 5 at the Polar Bear Group, looking west. Note the large trees growing on the dump (Roll 01K1, frame #8).
3.27 FLINT CLAIM GROUP (Site No. HA-66 [Field Site Nos. K7260101 and K7260102])

3.27.1 Site Location and Access (Figure 2.1-1)

These two minor prospects are on the north side of Flint Creek in the SE corner of the NE¼ of the SE¼ of section 11 and the NE¼ of the SW¼ of section 12, respectively, T. 5 N., R. 11 E., on the Atlanta East 7.5-minute quadrangle (Figure 3.27-1). Access is via FS Road 207 up Montezuma Creek southeast from Atlanta about 2 miles to the Flint Creek divide. The prospects are on Forest Service land along Road 207C that continues southeast from the divide to Flint Creek (Figure 3.27-2).

3.27.2 Geologic Features (Figure 2.2-1)

The prospects are in granite. No mineralization was noted on the waste dumps.

3.27.3 Site History

The Flint Claims were staked by Atlanta Gold Corporation in the early 1980s (Seraphim, 1986). However, the workings described here probably resulted from earlier attempts to discover an eastern extension of the Atlanta Lode.

3.27.4 Environmental Conditions

3.27.4.1 Site Features

The prospects were visited by John Kauffman on July 26, 2001. A video segment describing the sites is on Boise National Forest Atlanta Area Videotape (Tape 2, index 1:43:11-1:48:04). Documenting photographs are Roll 01K1, frames 13-14 (Site No. K7260101) and frame 15 (Site No. K7260102).

Site No. K7260101, in the dry gully below the jeep trail, has two small waste dumps, one for a caved adit and the other for a caved shaft. In addition, the site also has a shallow trench. The dump for the adit measures 12 feet long, 10 feet wide, and about 10 feet thick (Figure 3.27-3). The dump for the shaft is directly above the caved adit. This dump measures only 8 feet long, 6 feet wide, and 8 feet thick (Figure 3.27-4). The trench was cut across the nose of the ridge west of the shaft. The total disturbed area covers less than 0.25 acre.

Site No. K7260102, along the north side of the jeep trail, was probably a short prospect adit and a trench. The site has a scarp on the slope and what appears to be a small waste dump measuring 12 feet long, 6 feet wide, and 30 feet down the nose (Figure 3.27-5). About 50-75 feet to the southeast is a second scarp on the slope that is either a natural slump or a scarp above an old trench. The disturbed area is insignificant.
3.27.4.2 Sample Locations

3.27.4.2.1 Solid Samples
   No solid samples were collected.

3.27.4.2.2 Water Samples
   No water samples were collected.

3.27.5 Structures
   There are no structures at these sites.

3.27.6 Safety
   There are no safety hazards at either site.
Figure 3.27-1. Location of two prospects on the Flint Claim Group (Site No. HA-66 [Field Site Nos. K7260101 and K7260102]) Atlanta East, Elmore County, Idaho (U.S. Geological Survey 7.5-minute topographic map).
Figure 3.27-2. Sketch of the Flint Claim Group prospects (Sites K7260101 and K7260102).
Figure 3.27-3. Looking west at the small waste dump for the caved adit at Site No. K7260101 (Roll 01K1, frame #14).

Figure 3.27-4. Looking north at the small waste dump for the caved shaft at Site No. K7260101 (Roll 01K1, frame #13).
Figure 3.27-5. Looking north at the probable waste dump for a caved adit at Site No. K7260102 (Roll 01K1, frame #15).
3.28 UNNAMED PROSPECT (Site No. HA-1275 [Field Site No. K7250102])

3.28.1 Site Location and Access (Figure 2.1-1)

This prospect is near the head of Decker Creek in the NW¼ of the NW¼ of section 33, T. 5 N., R. 12 E., on the Ross Peak 7.5-minute quadrangle (Figure 3.28-1). Access from the town of Atlanta is via the jeep road up Montezuma Creek (FS Road 207) to the Montezuma Creek-Flint Creek divide, then on Trail 087 (Flint Creek Trail) to Decker Creek, and then on Trails 081 and 181 up Decker Creek a distance of approximately 5 miles. Two prospect symbols are shown on the topographic map. The workings are on Forest Service land.

3.28.2 Geologic Features (Figure 2.2-1)

The prospects are in silicified zones in granodiorite. Minor pyrite and associated iron staining are present on one of the waste dumps.

3.28.3 Site History

No information is available on the history of this site.

3.28.4 Environmental Conditions

3.28.4.1 Site Features

This site was visited by John Kauffman on July 25, 2001. A video segment describing the site is on Boise National Forest Atlanta Area Videotape (Tape 2, index 1:48:08-1:54:09). Documenting photographs are Roll 01K1, frames 9-12.

Two caved, dry adits and several minor prospect pits were found near the Decker Creek trail (Figure 3.28-2). Adit 1 corresponds to the southern of the two prospect symbols on the topographic map; nothing was noted at the site of the northern symbol on the map. A shallow trough on the slope marks the caved adit (Figure 3.28-3). The white, granitic waste dump is an obvious feature just east of the trail. This dump measures 15 feet long, 10 feet wide, and 12 feet down the face; the thickness on the slope is a maximum of 8 feet (Figure 3.28-4).

Adit 2, about 200 feet south of Adit 1, is also caved. Its shallow trough is obscured by brush and trees (Figure 3.28-5). The small, iron-stained waste dump, measuring 10 feet long, 8 feet wide, and 15 feet down the face, reaches the trail (Figure 3.28-6).

In addition, several minor prospect pits were found on the slope above the adits. None of these are significant. The total disturbed area at the site covers less than 0.25 acre.
3.28.4.2 Sample Locations

3.28.4.2.1 Solid Samples
No solid samples were collected.

3.28.4.2.2 Water Samples
No water samples were collected from the prospect site. However a reference water sample was collected from a branch of Decker Creek where the Decker Creek trail joins the Senator Creek-Grouse Creek trail, approximately ¼ mile west of the prospect.

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<th>Sample No.</th>
<th>Location</th>
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<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<tbody>
<tr>
<td>K7250103</td>
<td>branch of Decker Creek</td>
<td>32</td>
<td>52</td>
<td>7.6</td>
<td>6 ft. wide, 0.5 ft. deep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.28.4.2.3 Analytical Results

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

Sample K7250103 does not exceed any water quality standards, although arsenic was detected in the EPA 200.8 test.

3.28.5 Structures
No structures were found at the site.

3.28.6 Safety
There are no safety hazards at the site.
Figure 3.28-1. Location of Unnamed Prospect (Site No. HA-1275 [Field Site No. K7250102]), Elmore County, Idaho (U.S. Geological Survey Ross Peak 7.5-minute topographic map).
Figure 3.28-2. Sketch of Site No. K7250102.
Figure 3.28-3. Caved Adit 1 at Site No. K7250102, looking east (Roll 01K1, frame #10).

Figure 3.28-4. Waste dump for Adit 1 at Site No. K7250102, looking east. The picture was taken from the Decker Creek trail (Roll 01K1, frame #9).
Figure 3.28-5. Brushy trough of caved Adit 2 at Site No. K7250102, looking east (Roll 01K1, frame #11).

Figure 3.28-6. Small, iron-stained waste dump of Adit 2 at Site No. K7250102, looking south. Decker Creek trail is at the toe of the dump (Roll 01K1, frame #12).
3.29 YUBA TUNNEL AND RELATED SITES (Site No. HA-84)

Note: The description below includes the Yuba tunnel, a nearby millsite, a minor prospect that is probably part of the Yuba claim group (Site No. K7260115), and a site at the mouth of Decker Creek that contains a rock foundation (Site No. E8010101). Video segments for the sites have been combined.

3.29.1 Site Location and Access (Figure 2.1-1)

These sites are near the confluence of Decker Creek and the Yuba River. The Yuba tunnel is near the center of the W½ of section 15, and Site No. K7260115 is near the center of the east edge of the SE¼ of section 16, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.29-1). Both sites are accessible from the Yuba River road, FS Road 289 (labeled “789” on the Forest Service topographic map). The Yuba tunnel is accessible by vehicle on FS Road 207 that turns east up Decker Creek. The bridge across Decker Creek on the Yuba River road has been washed out, so Site No. K7260115 is accessible only by all-terrain vehicle or on foot on Road 289 that continues up the Yuba River to Trail Creek. National Forest boundary markers are on the waste dump and millsite at the Yuba tunnel, indicating the site is at least partially on Forest Service land. Site No. K7260115 is on Forest Service land.

Site No. E8010101 is in the SE¼ of the SE¼ of the NE¼ of section 16, T. 5 N., R. 11 E., on the Atlanta West quadrangle. The site is against the hillside just north of Road 207 that follows Decker Creek east.

3.29.2 Geologic Features (Figure 2.2-1)

The western end of the Atlanta Lode ends at the Yuba River. The lode is up to 70 feet wide on the crest of the hill (above the Atlanta No. 2 adits) and narrows toward the southwest. Where intersected by the Yuba tunnel, the Atlanta Lode was still 40 to 50 feet wide (Anderson, 1939).

3.29.3 Site History

Most of the claims on the western extension were consolidated as the Idaho Gold Mine, which was also known as the Atlanta Mine or the Buffalo and Atlanta property (see section 3.12). Among the early claims in this area were the Lucy Phillips, the William Tell, and the North Star; exact locations for these claims have not been found. By 1880, the Buffalo and Atlanta Company had gained control of most of the claims along the western part of the Atlanta Lode and had driven a 1,400-foot crosscut, the Yuba tunnel, to intersect the lode at depth. The Yuba tunnel was reported to have intersected the lode beneath the North Star claim, with the Lucy Phillips claim being the next in line for development. However, despite reports of finding good ore, work on the Yuba tunnel was apparently discontinued in the early 1880s. Several years later, a twenty-stamp mill was built near the portal of the Yuba tunnel to treat ore from shallow workings in and near the outcrop of the lode. By 1909, the Yuba tunnel had been caved for a number of years.
The St. Joseph Lead Company acquired the claims on the west end of the Atlanta Lode in 1917. Apparently, no further work was done on the Yuba tunnel (Mitchell, 2000).

3.29.4 Environmental Conditions

3.29.4.1 Site Features

The Yuba tunnel and related sites were visited by John Kauffman on July 26, 2001, and Site No. E8010101 was visited by Ted Erdman on August 1, 2001. A video segment describing the sites is on Boise National Forest Atlanta Area Videotape (Tape 3, index 0:00:35-0:14:25). Documenting photographs are Roll 01K1, frames 16-19 (Yuba Tunnel), and Roll 01K2, frame 7 (Site No. K7260115), and Roll E3, frames 5-8 (Site No. E8010101).

The Yuba tunnel and the ruins of an adjacent mill are along the Decker Creek jeep road about ¼ mile from the Yuba River (Figure 3.29-2). The adit is caved and discharges water at about 1-2 gallons per minute (Figure 3.29-3). The water flows across the road and down the west flank of the dump, where it seeps into the slope debris. The waste dump measures 95 feet long parallel to the road, 45 feet wide, and 50-60 feet down the face (Figure 3.29-4). Although some of the larger dump fragments have rolled down to Decker Creek, most of the material is well above the high-water mark of the creek. About 150 feet west of the dump are the mill ruins. Four levels of well-constructed granite-block walls are just below the road (Figure 3.29-5). A constructed pad at the base of the lowest wall contains a thin cover of flotation tailings, possibly over thin jig tailings (Figure 3.29-6). The tailings area is approximately 25 feet square and 1 foot thick. The ruins contain an abundance of scrap metal; most of the lumber has been burned, possibly in the forest fire of August 2000. The disturbed area at the Yuba tunnel covers less than 1 acre.

Site No. K7260115, about ¼ mile up the Yuba River from the confluence with Decker Creek, is a minor caved adit with a small waste dump (Figure 3.29-7). One mine rail is protruding from the caved debris at the mouth of the adit. The dump is 12 feet long, 8 feet wide, and 15 feet down the face, but is no more than 5 feet thick on the slope (Figure 3.29-8). The small trees on the dump were burned during the August 2000 forest fire. A small flat area north of the base of the dump contains burnt metal that may be the ruins of a small shed. The disturbed area is insignificant.

Site No. E8010101 consists of a large flat with a stone retaining wall on the east side (Figure 3.29-9). Just west of the wall are two or three terraces (Figure 3.29-10). There are several pits along the western edge. The purpose of this site is unknown.

3.29.4.2 Sample Locations

3.29.4.2.1 Solid Samples

Sample K7260104 was collected from the flotation tailings at the mill.
3.29.4.2.2 Water Samples

Sample K7260103 was collected from the water flowing from the caved Yuba tunnel. A downstream reference sample (K7260110) was collected from Decker Creek near the confluence with the Yuba River.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
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<tbody>
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<td>K7260103</td>
<td>Yuba tunnel, mill flotation tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.29.4.2.3 Analytical Results

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

Sample K7260104 from the mill flotation tailings has elevated levels of barium, cadmium, zinc, and lead in the element screen. In the TCLP for metals test, mercury is leaching from the sample.

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

Sample K7260103 from the Yuba tunnel exceeds the Primary MCL and the Aquatic Life Chronic standard for arsenic in the EPA 200.8 test.

Reference sample K7260110 from Decker Creek does not exceed any water quality standards, although arsenic was detected in the EPA 200.8 test.

3.29.5 Structures

The granite-block foundation of the mill is just west of the Yuba tunnel. Rock footings were also found at the junction of the Yuba River and Decker Creek roads (Figure 3.29-9), but it is not known if these are related to the Yuba tunnel and millsite.
3.29.6 Safety

Sharp edges on the scrap metal at the mill site may be a minor hazard, but no significant hazards were found.
Figure 3.29-1. Location of the Yuba tunnel and related sites (Site No. HA-84, and Field Site Nos. K7260115 and E8010101), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.29-2. Sketch of the Yuba tunnel site.
Figure 3.29-3. Caved Yuba tunnel, looking north. Water is flowing from the adit at about 1-2 gallons per minute (Roll 01K1, frame #16).

Figure 3.29-4. Looking west at the waste dump for the Yuba tunnel. The Decker Creek jeep road crosses the top of the dump (Roll 01K1, frame #17).
Figure 3.29-5. Granite-block footings for the mill west of the Yuba tunnel, looking north. The light-colored material in the lower foreground is flotation tailings (Roll 01K1, frame #18).

Figure 3.29-6. Looking west at the flotation tailings. The granite-block wall is to the right. The orange stake just right of center is a National Forest boundary marker (Roll 01K1, frame #19).
Figure 3.29-7. Sketch of the prospect at Site No. K7260115.
Figure 3.29-8. Looking southeast at the thin waste dump for Site No. K7260115 (Roll 01K2, frame #7).

Figure 3.29-9. Rock retaining wall at the junction of the Yuba River and Decker Creek roads at Site No. E8010101 (Roll 01E3, frame #7).
Figure 3.29-10. Several terraces adjacent to the rock retaining wall at Site No. E8010101 (Roll 01E3, frame #6).
3.30 GADSBY LEAD-NICKEL MINE (Site No. HA-83 [Field Site No. K7260111])

Note: A sign along the trail to this property identified it as the Gadsby Lead-Nickel Mine, but it is probably the same as the Constant Hope Mine (Site No. HA-83).

3.30.1 Site Location and Access (Figure 2.1-1)

The Gadsby Lead-Nickel Mine is along the east side of Trail Creek near the southern border of the NW¼ of the NW¼ of section 22, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.30-1). Access is via FS Road 289 (labeled “789” on the Forest Service topographic map) up the Yuba River to Decker Creek where the bridge has been washed out, then by all-terrain vehicle or foot south up Road 289 to Trail Creek. The road turns southeast and continues along Trail Creek for about ½ mile to the mine, where the old road ends and becomes a trail that continues southeast along Trail Creek. The mine is on Forest Service land.

3.30.2 Geologic Features (Figure 2.2-1)

From rock on the waste dumps, the prospect appears to be related to silicified zones in granite. No significant mineralization was noted on the dumps.

3.30.3 Site History

In 1936, a tunnel, then about 30 feet long, was being driven at the Constant Hope property. Half a dozen caved tunnels and cuts were also reported (Anderson, 1939).

3.30.4 Environmental Conditions

3.30.4.1 Site Features

The Gadsby Lead-Nickel Mine was visited by John Kauffman on July 26, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 3, index 0:14:29-0:25:26). Documenting photographs are Roll 01K1, frames 22-26, and Roll 01K2, frames 1-2.

Four caved adits, three of which are minor, and two burnt buildings were found at the site (Figure 3.30-2). Adits 1 and 2, about 30 feet apart, have small waste dumps. The largest of the two, at Adit 2, measures 12 feet long, 6 feet wide, and 15 feet down the face (Figure 3.30-3). Adits 3 and 4 are up a small gully east of the previous adits. The burnt buildings are at the mouth of gully. Adit 3, on the west side of the gully, has a waste dump measuring 12 feet long, 6 feet wide, and 10 feet down the face; thickness on the slope is no more than 6 feet (Figure 3.30-4). This was probably a short prospect adit. Of the workings found, Adit 4, on the east side of the gully and slightly higher than Adit 3, is the only one of any significance (Figure 3.30-5). The waste dump for this adit measures 45 feet long, 18 feet wide, and 15 feet down the face (Figure 3.30-6).
A wheelbarrow, a pick, and a shovel are on the dump at the mouth of the caved adit (Figure 3.30-7). The total disturbed area, including the building sites, covers about 1-2 acres. The disturbed area of the workings is less than 0.5 acre.

3.30.4.2 Sample Locations

3.30.4.2.1 Solid Samples
No solid samples were collected.

3.30.4.2.2 Water Samples
No water samples were collected.

3.30.5 Structures

Two burnt buildings are at the end of the road up Trail Creek. One appears to have been a cabin or living quarters, and the other apparently was a shop (Figures 3.30-8 and 3.30-9). The ruins of the structures contain an abundance of scrap metal, including pots, pans, propane tanks, metal siding, picks, shovels, axes, a barbeque, metal tubs, buckets of metal parts, gears, an engine, and a variety of other material and equipment, all of which have been through the forest fire.

3.30.6 Safety

There is a significant amount of metal debris, nails, and other metal objects, many with sharp edges, that pose a minor physical hazard. However, no significant hazards were found. Although several propane tanks are at the site, they appear to have been through the fire and should no longer contain any propane. Likewise, several oil buckets and other barrels appear to have had their contents burned, if indeed they had any contents prior to the fire.
Figure 3.30-1. Location of the Gadsby Lead-Nickel Mine/Constant Hope Mine (Site No. HA-83 [Field Site No. K7260111]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.30-2. Sketch of the Gadsby Lead-Nickel Mine.
Figure 3.30-3. Looking northwest at the small waste dump for Adit 2 at the Gadsby Lead-Nickel Mine (Roll 01K1, frame #22).

Figure 3.30-4. Small waste dump for Adit 3 at the Gadsby Lead-Nickel Mine, looking northeast (Roll 01K1, frame #24).
Figure 3.30-5. Distant view of the waste dump for Adit 4 at the Gadsby Lead-Nickel Mine (near center of picture), looking northeast. Adit 3 is left of the green trees just left of center (Roll 01K1, frame #23).

Figure 3.30-6. Looking south at the waste dump for Adit 4 at the Gadsby Lead-Nickel Mine (Roll 01K1, frame #26).
Figure 3.30-7. Wheelbarrow, pick, and shovel on the dump for Adit 4. The trough of the caved adit is above the wheelbarrow (Roll 01K1, frame #25).

Figure 3.30-8. Scrap metal at the lower of the two burnt buildings. This building was probably a shop. The road along Trail Creek crosses the lower part of the picture. The vertical red wash across the picture is a defect from light entering the camera (Roll 01K2, frame #1).
Figure 3.30-9. Upper of the two burnt buildings. This was probably a cabin. The trail that continues southeast from the end of the road is visible in the upper left (Roll 01K2, frame #2).
3.31 UNNAMED MILL (Field Site No. K7260112)

Note: It has not been determined what mine is associated with this mill. It may be related to the Gadsby Lead-Nickel Mine farther up Trail Creek. The local residents of Atlanta probably are the best source for information on this site.

3.31.1 Site Location and Access (Figure 2.1-1)

This site is at the confluence of the Yuba River and Trail Creek in the SW¼ of the SE¼ of section 16, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.31-1). Access is the same as for the Gadsby Lead-Nickel Mine. The burnt mill and another building, probably a cabin, are on Forest Service land where the road turns from southwest along the Yuba River to southeast up Trail Creek.

3.31.2 Geologic Features (Figure 2.2-1)

This area is underlain by Cretaceous granodiorite of the Idaho batholith (Worl and others, 1991).

3.31.3 Site History

Nothing is known about the history of this site.

3.31.4 Environmental Conditions

3.31.4.1 Site Features

This millsite was visited by John Kauffman on July 26, 2001. A video segment describing the site is on Boise National Forest Atlanta Area Videotape (Tape 3, index 0:25:30-0:32:02). Documenting photographs are Roll 01K2, frames 3-6.

Two burnt buildings and an area of probable flotation mill tailings were found at this site. One of the buildings appears to have been a small mill and the other a cabin. Both apparently burned in the forest fire of August 2000. The mill building ruins contain several pieces of equipment, including a small crusher and possible flotation cells, as well as an abundance of corrugated metal sheets and miscellaneous scrap metal (Figure 3.31-2). A metal pipe, probably a flume, goes up the slope behind the mill (Figure 3.31-3) and terminates at a dry ditch that contours around the slope toward Trail Creek. The pipe most likely supplied water for operation of the mill. Little but scrap metal remains in the ruins of the cabin, seen in the background of Figure 3.31-2.

An area that appears to contain tailings is on the west side of the access road several hundred feet west of the mill. A flat, grass-covered area, measuring 150 feet long and 60 feet wide, borders the Yuba River (Figure 3.31-4). It was not be determined if the entire area contains tailings. Only an area about 25 feet in diameter has exposed fines that look like flotation tailings. The thickness is at least 1 foot and probably no more than 3 feet. Some sediment from the river has been deposited over the west edge of the flat. Some jig tailings may also be present.
The total disturbed area covers about 2 acres.

3.31.4.2 Sample Locations

3.31.4.2.1 Solid Samples

Sample K7260113 was collected from the probable flotation tailings.

<table>
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<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
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</thead>
<tbody>
<tr>
<td>K7260113</td>
<td>unnamed mill, flotation tailings</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.31.4.2.2 Water Samples

A reference sample (K7260114) was collected from the Yuba River about 1,000 feet downstream from the tailings.

<table>
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<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>K7260114</td>
<td>downstream from tailings, Yuba River</td>
<td>61</td>
<td>65</td>
<td>7.7</td>
<td>---</td>
<td>Yes</td>
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</tbody>
</table>

3.31.4.2.3 Analytical Results

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

Sample K7260113 from the flotation tailings has elevated levels of arsenic, barium, cadmium, copper, iron, manganese, zinc, and lead in the element screen. In the TCLP for metals test, arsenic is leaching from the sample in amounts that exceed all water quality standards.

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

Downstream sample K7260114 from the Yuba River does not exceed any water quality standards, although arsenic was detected in the EPA 200.8 test.

3.31.5 Structures

The two buildings at the site have burned and are in ruins. On the southeast edge of the tailings area is an old garbage dump with hundreds of old cans and bottles (Figure 3.31-5).
3.31.6 Safety

The only potential hazards at the site are the numerous sharp pieces of scrap metal, nails, and other refuse. No significant hazards were found.
Figure 3.31-1. Location of Unnamed Mill (Field Site No. K7260112), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.31-2. View from above of the burnt mill building at Site No. K7260112. The ruins of the burnt cabin are in the background at the left (Roll 01K2, frame #3).

Figure 3.31-3. Looking east at the burnt mill building at Site No. K7260112. A flume pipe on the slope behind the building terminates at a dry ditch (Roll 01K2, frame #4).
Figure 3.31-4. Grass-covered tailings area along the Yuba River at Site No. K7260112, looking northwest (Roll 01K2, frame #5).

Figure 3.31-5. Old garbage dump containing numerous cans and bottles at Site No. K7260112 (Roll 01K2, frame #6).
3.32 UNNAMED MINE (Site No. HA-87)

3.32.1 Site Location and Access (Figure 2.1-1)

This mine is in the SE¼ of the SW¼ of the NE¼ of section 20, T. 5 N., R. 11 E., on the Atlanta West 7.5-minute quadrangle (Figure 3.32-1). Access is via FS Road 289 (labeled “789” on the Forest Service topographic map) approximately 2.4 miles southeast up the Yuba River from FS Road 268 (Atlanta Road) to the mouth of Decker Creek. Road 268 continues south across Decker Creek, although the bridge is washed out and travel from there is on foot or all-terrain vehicle. A short distance south of Decker Creek, a trail (marked “jeep trail” on the topographic map) continues 1.0 miles southwest up the nose of a ridge, then another 0.5 mile along the north slope of the ridge to the mine. The mine, marked on the topographic map, is at the end of the road on Forest Service land.

3.32.2 Geologic Features (Figure 2.2-1)

This mine explored a quartz vein in the biotite granodiorite of the Idaho batholith.

3.32.3 Site History

There is no information on the history of this mine.

3.32.4 Environmental Conditions

3.32.4.1 Site Features

This mine was visited by Ted Erdman on August 1, 2001. A video segment describing the property is on Boise National Forest Atlanta Area Videotape (Tape 3, index 0:32:06-0:36:53). Documenting photographs are Roll 01E3, frames 1-4.

This site has one adit with a small opening and an old boiler standing upright near the portal (Figures 3.32-2, 3.32-3 and 3.32-4). The waste dump measures 40 feet long, 40 feet wide, and 10 feet thick. The disturbed area covers less than 0.25 acre.

3.32.4.2 Sample Locations

3.32.4.2.1 Solid Samples

No solid samples were collected.

3.32.4.2.2 Water Samples

No water samples were collected.
3.32.5 Structures

A small log cabin that may be related to the mining activity is located 2,000 feet east of the mine along the access trail on the crest of the ridge (Figure 3.32-5).

3.32.6 Safety

The adit can be entered through the small opening.
Figure 3.32-1. Location of Unnamed Mine (Site No. HA-87), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.32-2. Sketch of Site No. HA-87.
Figure 3.32-3. Opening into the adit at Site No. HA-87 (Roll 01E3, frame #2).

Figure 3.32-4. Upright old boiler near the adit at Site No. HA-87, looking southeast. The opening into the adit is to the right of the boiler behind collapsed rock rubble (Roll 01E3, frame #1).
Figure 3.32-5. Old log cabin along the access trail about 2,000 feet east of the mine (Roll 01E3, frame #4).
3.33 UNNAMED PROSPECT (Site No. HA-1276 [Field Site No. E8010102])

3.33.1 Site Location and Access (Figure 2.1-1)

This site is in the SE1/4 of the SE1/4 of the SE1/4 of section 5, T. 5 N., R. 11 E., on the Atlanta West quadrangle (Figure 3.33-1). Access is via FS Road 289 (labeled “789” on the Forest Service topographic map) approximately 0.6 mile up the Yuba River from FS Road 268 (Atlanta Road). The collapsed adit is on Forest Service land about 500 feet west of the road and is between Basque Creek and a small ephemeral stream.

3.33.2 Geologic Features (Figure 2.2-1)

This property explored quartz veins in the biotite granodiorite of the Idaho batholith.

3.33.3 Site History

There is no information on the history of this site.

3.33.4 Environmental Conditions

3.33.4.1 Site Features

This property was visited by Ted Erdman on August 1, 2001. A video segment describing the site is on Boise National Forest Atlanta Area Videotape (Tape 3, index 0:36:57-0:40:12). Documenting photographs are Roll 01E3, frames 9-11.

This site has one collapsed adit and a moderate waste dump (Figure 3.33-2). A shallow scarp in the side of the hill marks the location of the adit (Figure 3.33-3). The dump is spread out on the gently sloping terrain and is 60 feet long, 45 feet wide, and 10 feet thick (Figure 3.33-4).

3.33.4.2 Sample Locations

3.33.4.2.1 Solid Samples

No solid samples were collected.

3.33.4.2.2 Water Samples

No water samples were collected.

3.33.5 Structures

There are no structures at this site.

3.33.6 Safety

There are no safety concerns at this site.
Figure 3.33-1. Location of Unnamed Prospect (Site No. HA-1276 [Field Site No. E8010102]), Elmore County, Idaho (U.S. Geological Survey Atlanta West 7.5-minute topographic map).
Figure 3.33-2. Sketch of Site No. E8010102.
Figure 3.33-3. Scarp of the caved adit at Site No. E8010102, looking southwest (Roll 01E3, frame #9).
Figure 3.33-4. Waste dump for the adit at Site No. E8010102, looking south (Roll 01E3, frame #11).
BIBLIOGRAPHY


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

LOCATION AND IDENTIFICATION

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

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

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

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

SCREENING CRITERIA

Yes No

_____ 1. Mill site or Tailings present
_____ 2. Adits with discharge or evidence of a discharge
_____ 3. Evidence of or strong likelihood for metal leaching, or AMD (water stains, stressed or lack of vegetation, waste below water table, etc.)
_____ 4. Mine waste in floodplain or shows signs of water erosion
_____ 5. Residences, high public use area, or environmentally sensitive area (as listed in HRS) within 200 feet of disturbance
_____ 6. Hazardous wastes/materials (chemical containers, explosives, etc)
_____ 7. Open adits/shafts, highwalls, or hazardous structures/debris
_____ 8. Site visit (If yes, take picture of site), Film number(s)

If yes, provide name of person who visited site and date of visit
Name: __________________ Date: __________

If no, list source(s) of information (If based on personal knowledge, provide name of person interviewed and date):

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

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

Investigator ____________________________ Date ____________
Weather ________________________________

1. GENERAL SITE INFORMATION

Take panoramic picture(s) of site, Film Number(s) __________
Size of disturbed area(s) _____ acres Average Elevation _____ feet
Access: _____ No trail _____ Trail _____ 4wd only _____ Improved road
_____ Paved road
Name of nearest town (by road): _______________________
Site/Local Terrain: _____ Rolling or flat _____ Foothills _____ Mesa _____ Mountains
_____ Steep/narrow canyon
Local undisturbed vegetation (Check all that apply): ____ Barren or sparsely vegetated
_____ weeds/grasses _____ Brush _____ 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, ____ Pyrrhotite,
____ Sphalerite, ____ Other Sulfide
Neutralizing Host Rock: ____ Dolomite, ____ Limestone, ____ Marble, ____ Other Carbonate

2. OPERATIONAL HISTORY

Dates of significant mining activity ______________________

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<th>MINE PRODUCTION</th>
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<tbody>
<tr>
<td>Commodity(s)</td>
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<th>MILL PRODUCTION</th>
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<tbody>
<tr>
<td>Commodity(s)</td>
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</tbody>
</table>
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-1 mile, 1-2miles, if possible)
________________________________________________________________________

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

5. SAFETY RISKS

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

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

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

| Opening Number | Type of Opening | Ownership | Opening Length (ft) | Opening Width (ft) | Latitude (GPS) | Longitude (GPS) | Condition | Ground water | Water Sample # | Photo Number | Comments (When commenting on a specific mine opening, reference opening number used in Table 1):

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Type of opening: ADIT=Adit, SHAFT=Shaft, Pit=Open Pit/Trench' HOLE=Prospect Hole, WELL=Well
Ownership: NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private
Condition (Enter all that apply): INTACT=Intact, PART=Partially collapsed or filled, COLP=Filled or collapsed, SEAL=Adit plug, GATE=Gated barrier,
Ground water (Water or evidence of water discharging from opening): NO= No water or indicators of water, FLOW=Water flowing, INTER=Indicators of intermittent flow, STAND= Standing water only (In this case, enter an estimate of depth below grade)

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7. MINE/MILL WASTE

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

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

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

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

- **Waste Type:** WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, ORE=Ore Stockpile, HEAP=Heap Leach
- **Ownership:** NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private
- **Size of material (if composed of different size fractions, enter the sizes that are present in significant amounts):** FINE=Finer than sand, SAND=sand, GRAVEL=>sand and <2", COBBLE=2"-6", BOULD=>6"  
- **Wind Erosion:** Potential for: HIGH=Fine, dry material that could easily become airborne, airborne dust, or windblown deposits, MOD=Moderate, Some fine material, or fine material that is usually wet or partially cemented; LOW=Little it any fines, or fines that are wet year-round or well cemented.
- **Vegetation** (density on waste): DENSE=Ground cover > 75%, MOD=Ground cover 25% - 75%, SPARSE=Ground cover < 25%, BARREN=Barren
- **Surface Drainage** (Include all that apply): RILL-Surface flow channels mostly < 1' deep, GULLY=Flow channels >1' deep, SEEP=Intermittent or continuous discharge from waste deposit, POND=Seasonal or permanent ponds on feature, BREACH=Breached, NO=No indicators of surface flow observe.  
- **Indicators of Metals** (Enter as many as exist): NO=No, VEG=Absence of or stressed vegetation, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present
- **Stability:** 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 3 - WATER SAMPLES FROM MINE SITE DISCHARGES

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Date sample taken</th>
<th>Sampler (Initials)</th>
<th>Discharging From</th>
<th>Feature Number</th>
<th>Indicators of Metal Release</th>
<th>Indicators of Sedimentation</th>
<th>Distance to stream (ft)</th>
<th>Sample Latitude</th>
<th>Sample Longitude</th>
<th>Field pH</th>
<th>Field SC</th>
<th>Flow (gpm)</th>
<th>Method of measurement</th>
<th>Photo Number</th>
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</table>

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

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

Discharging From: ADIT=Adit, SHAFT=Shaft, PIT=Pit/Trench, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, WELL=Well

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

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

Indicators of Sedimentation (enter as many as exist): NO=None, SLIGHT=Some sedimentation in channel, banks and channel largely intact, MOD=Sediment deposits in channel, affecting flow patterns, banks largely intact, SIGN=Sediment deposits in channel and/or along stream banks extending to nearest stream

Method of Measurement: EST=Estimate, BUCK=Bucket and time, METER=Flow meter
<table>
<thead>
<tr>
<th>Location relative to mine site/features</th>
<th>Sample Number</th>
<th>Date sample taken</th>
<th>Sampler (Initials)</th>
<th>Stream Name</th>
<th>Indicators of Metal Release</th>
<th>Indicators of Sedimentation</th>
<th>Sample Latitude</th>
<th>Sample Longitude</th>
<th>Field pH</th>
<th>Field SC</th>
<th>Flow (gpm) Method of measurement</th>
<th>Method of measurement</th>
<th>Photo Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream (Background)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Downstream</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>Date of sample</th>
<th>Sampler (Initials)</th>
<th>Sample Type</th>
<th>Waste Type</th>
<th>Feature Number</th>
<th>Sample Latitude</th>
<th>Sample Longitude</th>
<th>Photo Number</th>
<th>Comments: (When commenting on a specific waste or soil sample, reference sample number used in Table 5):</th>
</tr>
</thead>
</table>

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

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

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

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

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Date of sample</th>
<th>Sampler (Initials)</th>
<th>Sample Type</th>
<th>Sample Latitude</th>
<th>Sample Longitude</th>
<th>Likely Source of Contamination</th>
<th>Feature Number</th>
<th>Indicators of Contamination</th>
<th>Photo Number</th>
</tr>
</thead>
</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
## TABLE 7 - HAZARDOUS WASTES/MATERIALS

<table>
<thead>
<tr>
<th>Waste Number</th>
<th>Type of Containment</th>
<th>Condition of Containment</th>
<th>Contents</th>
<th>Estimated Quantity of Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

For structures on or partially on National forest lands.

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Condition</th>
<th>Photo Number</th>
</tr>
</thead>
</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, wall, etc) of structure has collapsed or is on the verge of collapsing, BAD=more than half of the structure has collapsed

11. MISCELLANEOUS

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

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

__________________________

General Comments/Observations (not otherwise covered)

__________________________
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):
   ________________________________________________________________
Appendix B
Database Fields

(See attachment 'Atlanta-database.xls')
NEWLOC     WA  1
ORANGENUM  451
MAPLOC     1
DEPOSIT     Eagle Creek Mine
MRDSREC    0160790528
MILSREF
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
DDDMMSS    1154904
OPTYP      SURFAC
STATUS     PAST PRO
COMMO1     GOLD
COMMO2
COMMO3
COMMO4
COMMO5
MAPNAME    BURKE
QUAD       WALLACE
POP        1KM
TOE        M
YFC
MPF
SITENAME
DISTRICT
COUNTY
SECUAD
SECUADSCL
UTMNORTH
UTMEAST
UTMZONE
COMMODIT
LAT
LON
TOWN
SECTION
RANGE
Appendix C
Geochemical Data

(See attachment 'Atlanta-Geochem.xls)
GEOCHEMICAL DATA

ACCURACY OF GEOCHEMICAL DATA

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

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

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

Good Luck
Kim,

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

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

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

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

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

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

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

ACS recommends an LOQ of $10\sigma$ and this imparts a quantitative measurement uncertainty of +/-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)."
Appendix D
GPS Readings for Properties in the Atlanta Area of the Boise National Forest
Table A-1. Global Positioning System (GPS) readings for properties in the Atlanta area of the Boise National Forest.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Field Site No.</th>
<th>Site Name</th>
<th>Adit/Shaft No.</th>
<th>Latitude (North)</th>
<th>Longitude (West)</th>
<th>UTM Northing</th>
<th>UTM Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA-55</td>
<td>HA-55</td>
<td>Tahoma Mine</td>
<td>Adit 1</td>
<td>43°-47'-15&quot;</td>
<td>115°-07'-47&quot;</td>
<td>4850001</td>
<td>0650482</td>
</tr>
<tr>
<td>HA-55</td>
<td>HA-55</td>
<td>Tahoma Mine</td>
<td>Adit 2</td>
<td>43°-47'-15&quot;</td>
<td>115°-07'-48&quot;</td>
<td>4850063</td>
<td>0650458</td>
</tr>
<tr>
<td>HA-55</td>
<td>HA-55</td>
<td>Tahoma Mine</td>
<td>Adit 3</td>
<td>43°-47'-19&quot;</td>
<td>115°-07'-45&quot;</td>
<td>4850126</td>
<td>0650524</td>
</tr>
<tr>
<td>HA-57</td>
<td>HA-57</td>
<td>Big Lode Mine</td>
<td>Adit 1</td>
<td>43°-47'-01&quot;</td>
<td>115°-07'-43&quot;</td>
<td>4849572</td>
<td>0650581</td>
</tr>
<tr>
<td>HA-58</td>
<td>B7260103</td>
<td>Jessie Benton Adit</td>
<td>caved adit</td>
<td>43°-46'-48&quot;</td>
<td>115°-07'-00&quot;</td>
<td>4849168</td>
<td>0651530</td>
</tr>
<tr>
<td>HA-59</td>
<td>B7260105</td>
<td>Greenback Mine</td>
<td>adit</td>
<td>43°-46'-57&quot;</td>
<td>115°-07'-11&quot;</td>
<td>4849462</td>
<td>0651292</td>
</tr>
<tr>
<td>HA-59</td>
<td>B7260106</td>
<td>Greenback Mine</td>
<td>adit</td>
<td>43°-46'-54&quot;</td>
<td>115°-07'-07&quot;</td>
<td>4849535</td>
<td>0651380</td>
</tr>
<tr>
<td>HA-59</td>
<td>B7260107</td>
<td>Greenback Mine</td>
<td>adit</td>
<td>43°-46'-55&quot;</td>
<td>115°-07'-13&quot;</td>
<td>4849393</td>
<td>0651247</td>
</tr>
<tr>
<td>HA-59</td>
<td>E7260107</td>
<td>Greenback Mine</td>
<td>Adit 1</td>
<td>43°-46'-57&quot;</td>
<td>115°-07'-13&quot;</td>
<td>4849464</td>
<td>0651277</td>
</tr>
<tr>
<td>HA-59</td>
<td>E7260107</td>
<td>Greenback Mine</td>
<td>Adit 2</td>
<td>43°-46'-55&quot;</td>
<td>115°-07'-12&quot;</td>
<td>4849403</td>
<td>0651301</td>
</tr>
<tr>
<td>HA-62</td>
<td>HA-62</td>
<td>Boise-Rochester Mine</td>
<td>600 Level, Adit 1</td>
<td>43°-47'-03&quot;</td>
<td>115°-06'-25&quot;</td>
<td>4849673</td>
<td>0652323</td>
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<tr>
<td>HA-62</td>
<td>HA-62</td>
<td>Boise-Rochester Mine</td>
<td>600 Level, Adit 2</td>
<td>43°-47'-02&quot;</td>
<td>115°-06'-21&quot;</td>
<td>4849644</td>
<td>0652413</td>
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<tr>
<td>HA-62</td>
<td>HA-62</td>
<td>Boise-Rochester Mine</td>
<td>900 Level, Adit 3</td>
<td>43°-47'-16&quot;</td>
<td>115°-06'-35&quot;</td>
<td>4850069</td>
<td>0652090</td>
</tr>
<tr>
<td>HA-65</td>
<td>K7250101</td>
<td>Polar Bear Group</td>
<td>Adit 1</td>
<td>43°-47'-02&quot;</td>
<td>115°-05'-15&quot;</td>
<td>4849660</td>
<td>0653878</td>
</tr>
<tr>
<td>HA-65</td>
<td>K7250101</td>
<td>Polar Bear Group</td>
<td>Adit 3</td>
<td>43°-46'-56&quot;</td>
<td>115°-05'-03&quot;</td>
<td>4849490</td>
<td>0654145</td>
</tr>
<tr>
<td>HA-66</td>
<td>K7260101</td>
<td>Flint Claim Group</td>
<td>adit and shaft</td>
<td>43°-46'-09&quot;</td>
<td>115°-06'-08&quot;</td>
<td>4848000</td>
<td>0652740</td>
</tr>
<tr>
<td>HA-66</td>
<td>K7260102</td>
<td>Flint Claim Group</td>
<td>adit(?)</td>
<td>43°-46'-38&quot;</td>
<td>115°-05'-51&quot;</td>
<td>4848910</td>
<td>0653100</td>
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<tr>
<td>HA-68</td>
<td>B7260104</td>
<td>Last Chance Adit</td>
<td>caved adit</td>
<td>43°-46'-36&quot;</td>
<td>115°-06'-46&quot;</td>
<td>4848815</td>
<td>0651871</td>
</tr>
<tr>
<td>HA-69</td>
<td>B7260109</td>
<td>Monarch Mine</td>
<td>adit and shaft</td>
<td>43°-46'-43&quot;</td>
<td>115°-07'-03&quot;</td>
<td>4849034</td>
<td>0651481</td>
</tr>
<tr>
<td>HA-69</td>
<td>E8040101</td>
<td>Monarch millsite</td>
<td>mill</td>
<td>43°-48'-08&quot;</td>
<td>115°-08'-02&quot;</td>
<td>4851629</td>
<td>0650110</td>
</tr>
<tr>
<td>HA-69</td>
<td>E8030101</td>
<td>Kirby Fraction Prospect (part of the Monarch)</td>
<td></td>
<td>43°-46'-48&quot;</td>
<td>115°-07'-19&quot;</td>
<td>4849183</td>
<td>0651127</td>
</tr>
</tbody>
</table>
Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Atlanta area of the Boise National Forest.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Field Site No</th>
<th>Site Name</th>
<th>Adit/Shaft No.</th>
<th>Latitude (North)</th>
<th>Longitude (West)</th>
<th>UTM Northing</th>
<th>UTM Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA-69</td>
<td>B7260109A</td>
<td>Atlanta Claim or Kirby Fraction</td>
<td>small pit</td>
<td>43°-46'-48&quot;</td>
<td>115°-07'-12&quot;</td>
<td>4849168</td>
<td>0651277</td>
</tr>
<tr>
<td>HA-69</td>
<td>B7260110</td>
<td>Atlanta Claim or Kirby Fraction</td>
<td>caved adit</td>
<td>43°-46'-44&quot;</td>
<td>115°-07'-13&quot;</td>
<td>4849048</td>
<td>0651249</td>
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<tr>
<td>HA-70</td>
<td>B7250109</td>
<td>Buffalo Adit</td>
<td>caved adit</td>
<td>43°-46'-40&quot;</td>
<td>115°-07'-09&quot;</td>
<td>4848933</td>
<td>0651345</td>
</tr>
<tr>
<td>HA-70</td>
<td>B7250111</td>
<td>Buffalo Shaft</td>
<td>shaft</td>
<td>43°-46'-43&quot;</td>
<td>115°-07'-06&quot;</td>
<td>4849019</td>
<td>0651404</td>
</tr>
<tr>
<td>HA-70(?)</td>
<td>B7250109</td>
<td>Buffalo Mine(?)</td>
<td>dump</td>
<td>43°-46'-39&quot;</td>
<td>115°-07'-16&quot;</td>
<td>4848896</td>
<td>0651195</td>
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<tr>
<td>HA-73</td>
<td>B7250108</td>
<td>Hill and Davis Claim</td>
<td>dump</td>
<td>43°-46'-34&quot;</td>
<td>115°-07'-28&quot;</td>
<td>4848720</td>
<td>0650928</td>
</tr>
<tr>
<td>HA-74</td>
<td>B7250101</td>
<td>Atlanta #2 Adits</td>
<td>Adit 1</td>
<td>43°-46'-29&quot;</td>
<td>115°-07'-33&quot;</td>
<td>4848571</td>
<td>0650815</td>
</tr>
<tr>
<td>HA-74</td>
<td>B7250102</td>
<td>Atlanta #2 Adits</td>
<td>Adit 2</td>
<td>43°-46'-25&quot;</td>
<td>115°-07'-41&quot;</td>
<td>4848452</td>
<td>0650645</td>
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<tr>
<td>HA-74</td>
<td>B7250103</td>
<td>Atlanta #2 Adits</td>
<td>Adit 3</td>
<td>43°-46'-25&quot;</td>
<td>115°-07'-45&quot;</td>
<td>4848436</td>
<td>0650562</td>
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<tr>
<td>HA-74</td>
<td>B7250104</td>
<td>Atlanta #2 Adits</td>
<td>Adit 4</td>
<td>43°-46'-24&quot;</td>
<td>115°-07'-45&quot;</td>
<td>4848417</td>
<td>0650599</td>
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<tr>
<td>HA-75</td>
<td>B7250107</td>
<td>Minerva Mine</td>
<td>upper adit</td>
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<td>115°-07'-25&quot;</td>
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Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Atlanta area of the Boise National Forest.

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<th>Site No.</th>
<th>Field Site No</th>
<th>Site Name</th>
<th>Adit/Shaft No</th>
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<th>Longitude (West)</th>
<th>UTM Northing</th>
<th>UTM Easting</th>
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Table A-1 (continued). Global Positioning System (GPS) readings for properties in the Atlanta area of the Boise National Forest.

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<th>Site No.</th>
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