

Independence & Saturn

(A.k.a. Independence & Saturn lode patents)

Preliminary Assessment Report

Boise County
State of Idaho



Idaho Department of Environmental Quality

January 2009

Submitted to:
U. S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, WA 98101



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

January 7, 2009

Mr. Kenneth G. Jacobs and Mrs. Henrietta L. Jacobs
Henrietta Jacobs Living Trust
6 Emery Hill Court
Marlton, New Jersey 08053

RE: Site Assessment of the Independence and Saturn mine claims, Boise County, Idaho (Parcel No. RP08N05E248300A).

Dear Mr. & Mrs. Jacobs:

The Idaho Department of Environmental Quality (IDEQ) completed a site assessment of the patented claims Independence and Saturn, and the historic mine workings on that property. Because IDEQ staff did not observe any conditions on the site that might pose risks to human health or the environment, no samples of mine waste dump materials or water were collected for analysis. IDEQ has concluded that "No Remedial Action is Planned" (NRAP) for the Independence and Saturn mine claims.

This site is infrequently visited by mountain bikers, hikers, hunters, snowmobile operators, off-road vehicles, or various other outdoor recreation enthusiasts. Waste rock and tailings were not encountered on the site. Exposure to very small doses of heavy metals may occur where enriched soils are disturbed, particularly along logging trails and stream crossings. Aerial dispersion does not appear to be a factor. The exposure levels do not appear to pose a substantial risk, based upon current property uses. This conclusion is based on current conditions. If the property is developed in the future, a development plan should consider any site conditions discovered that were not observed during IDEQ's site assessment.

IDEQ very much appreciates you granting access to the property. If you have any questions or comments, please do not hesitate to call me at (208) 373-0554. Again, thank you very much for your hospitality.

Sincerely,

A handwritten signature in blue ink that reads "Bruce A. Schuld".

Bruce A. Schuld
Mine Waste Projects Coordinator
Waste Management and Remediation Division

BAS:TE:tg G:\Waste & Remediation\Bruce Schuld\Independence and Saturn

cc: Ken Marcie, U.S. Environmental Protection Agency, Seattle
Maggie Manderbach, USDA Forest Service, Region IV
Gordon Ravenscroft, Emergency/Dispatch Manager, Boise County
Independence, Saturn Mine File

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List of Acronyms

<u>Acronym</u>	<u>Definition</u>
amsl	above mean sea level
BLM	United States Department of the Interior, Bureau of Land Management
DEQ	Department of Environmental Quality
EPA	United States Environmental Protection Agency
gpm	gallons per minute
IDTL	Initial Default Target Levels
IGS	Idaho Geological Survey
MCL	Maximum Concentration Limit
PPE	Probable Point of Entry
HHSL	Human Health Medium-Specific Screening Levels
TCLP	Toxicity Characteristic Leaching Procedure
TDL	Target Distance Limit
TMDL	Total Maximum Daily Load
USFS	United States Department of Agriculture, Forest Service

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Section 1. Introduction

The Idaho Department of Environmental Quality (DEQ) was contracted by Region 10 of the United States Environmental Protection Agency (EPA) to provide technical support for completion of preliminary assessments at various mines within the Grimes Pass Mining District in Boise County, Idaho. This document presents the results of the preliminary assessment of the Independence and Saturn lode mining claims.

DEQ often receives complaints or information about sites that may be contaminated with hazardous waste. These sites can include abandoned mines, rural airfields that have served as bases for aerial spraying, old landfills, illegal dumps, and abandoned industrial facilities that have known or suspected releases.

In February 2002, DEQ initiated a Preliminary Assessment Program to evaluate and prioritize assessment of such potentially contaminated sites. Due to accessibility and funding considerations, priority is given to sites where potential contamination poses the most substantial threat to human health or the environment. Priority was also given to mining districts where groups or clusters of sites could be assessed on a watershed basis.

For additional information about the Preliminary Assessment Program, see the following:

http://www.deq.idaho.gov/waste/prog_issues/mining/pa_program.cfm

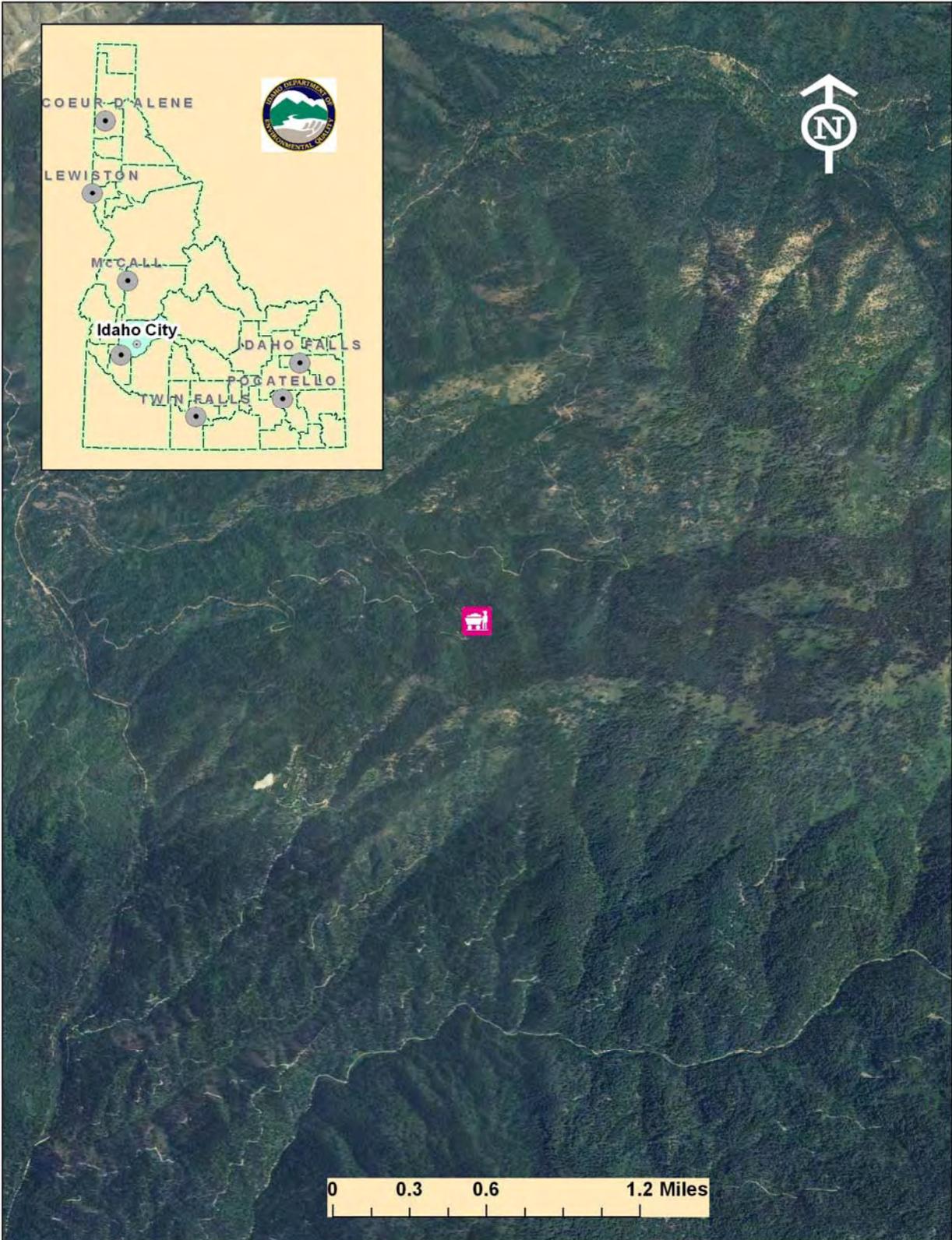


Figure 1: Location Map

Section 2. Site Background

Ownership

Based on a limited search, the current owners of the patented mine claims are Henrietta L. and Kenneth G. Jacobs (Henrietta Jacobs Living Trust). However, there may be other associated facilities located on USDA Forest Service (Forest Service) administered lands. IDEQ does not warrant the ownership research or location of property boundaries contained in this report. The information regarding ownership and property boundaries was obtained from the Boise County Tax Assessor's Office in Idaho City, Idaho.

Within the following ownership descriptions the **“Recommendation”** is meant to convey a very brief summary of IDEQ's assessment of individual claims and parcels relative to human health and ecological risk factors associated with toxicological responses to mine wastes. A determination of No Remedial Action Planned or **“NRAP”** means that based on current conditions at the site IDEQ did not find any significant evidence that would indicate the potential of adverse effects to human or ecological receptors on the parcel of land. This recommendation says nothing about risks associated with physical hazards such as open adits, open shafts, high walls, or unstable ground.

“Recommendation” or **“calculate HRS”** indicates that IDEQ has determined that there is sufficient evidence to warrant calculation of a Hazard Ranking Score (HRS) by EPA's contractors. It also indicates that IDEQ has made significant conclusions and recommendations that additional site assessment and/or remedial actions are necessary to prevent adverse affects to human or ecological receptors. These conclusions and recommendations are contained in the final section of this report.

<u>Owner</u>	<u>Claim</u>	<u>Parcel Number</u>	<u>Recommendation</u>
Henrietta Jacobs Living Trust	Independence	RP08N05E248300A	NRAP
6 Emery Hill Court	Saturn	RP08N05E248300A	NRAP
Marlton, NJ 08053			

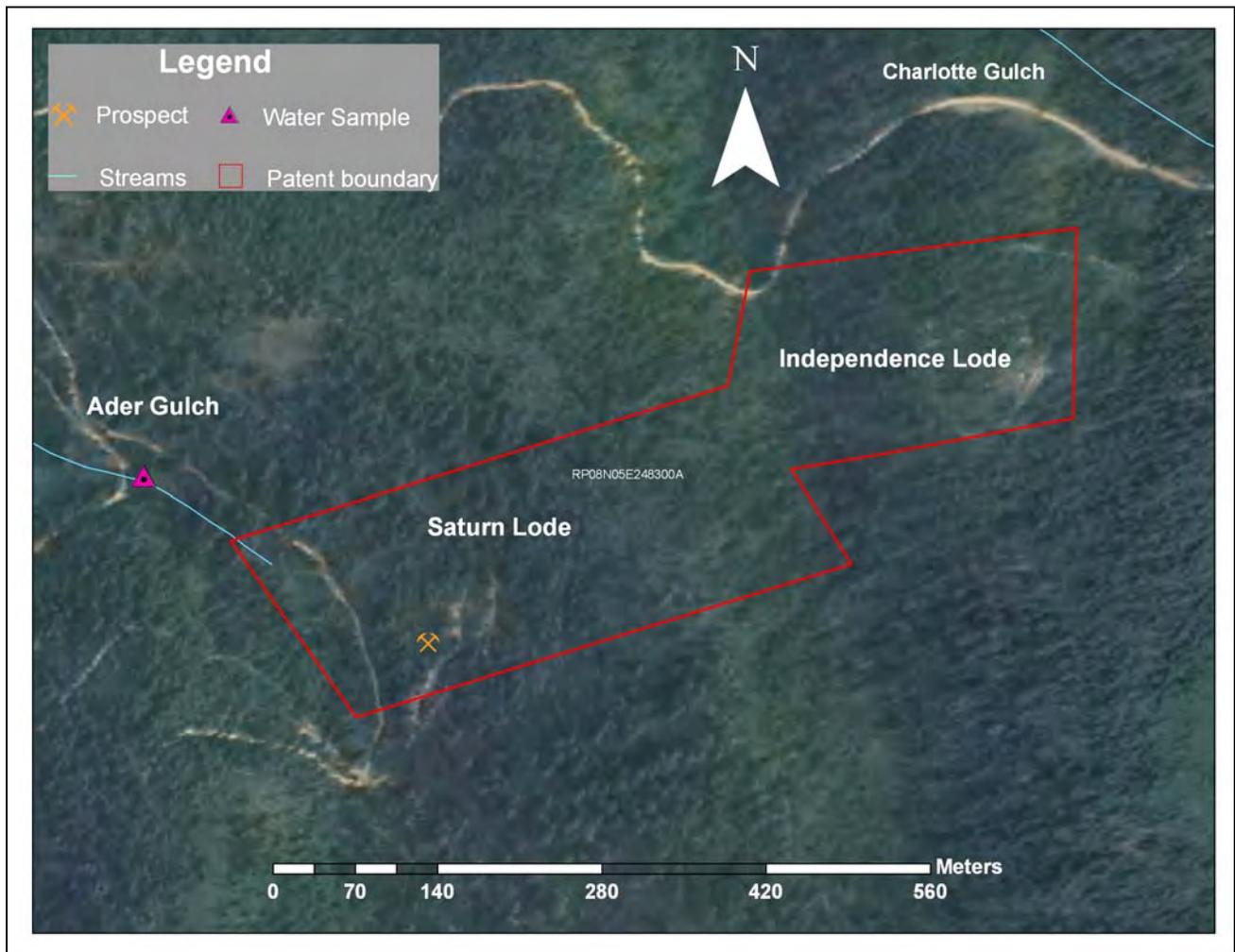


Figure 2: Patented Claims of the Independence & Saturn

Location

The site is located approximately 3.6 miles (air) northeast of Pioneerville in Boise County. The patented land is located in Township 8N, Range 5E, Section 24, of the Boise Meridian. The principal working (prospect) is located at Latitude 44° 00' 45"N, and Longitude 115° 48' 27"W. The Independence and Saturn lode properties can be accessed from Pioneerville, Idaho by heading north of National Forest Development (NFD) Road No. 382 approximately 3.5 miles to the intersection of NFD 382C. One turns east (right) and travels approximately 2.5 miles eastward to Ader Gulch. Here, the road is bisected by old logging roads, one of which leads up the gulch to the southeast and crosses into the Saturn patent claim. An alternate route to the properties is via NFD 382D which is located approximately 0.5 miles north of NFD 382C; one turns east (right) onto the Charlotte Gulch road and continues for 1.25 miles to Ader Gulch (NFD 382D1). One turns southeast (right) and follows the logging road up Ader Gulch. The claims are best accessible by all-terrain vehicle, though forest understory growth often impedes any vehicular traffic.

No gates or fences are present to restrict access to this site. The area is used by the general public to access public lands.

Climate

There are no precipitation records available specifically for the Independence & Saturn Mine. The information provided in this section is based on climate summaries for two nearby weather stations (Centerville and Lowman) obtained from the Western Regional Climate Center (WRCC, 2007).

The Centerville Arbaugh Ran station (site # 101636) is located approximately 8 miles southwest from the mine at an elevation of 4,440 feet amsl. Records from 1949 to 2007 indicated the mean annual precipitation is 27.75 inches; the mean annual snowfall is 119 inches; and the 100-year, 24-hour event is 2.28 inches. Based upon records from 1998 to 2007, the lowest temperature recorded for this period was – 23° F recorded in January 2002 while the highest was 101° F recorded in August 2001.

The Lowman weather station (site # 105414) is located approximately 16 miles northeast from the mine at an elevation of 3870 feet amsl. Records from 1948 to 2005 indicate that the mean annual precipitation is 25.84 inches and the mean total snowfall depth is 90.2 inches. Average temperatures range from a low of 13.9 ° F in January to a high of 85.9 ° F in August.

Each site for which this data is used is subject to more localized meteorological conditions that result from difference in elevation, orientation of slopes in watershed, vegetation, and other factors. The area around the Independence and Saturn claims is characterized by cool dry summers and cold winters. The majority of precipitation occurs as snow, occurring mostly in December and January. The driest months are July, August and September. Dry-season rainfall occurs in relatively short episodes, usually as thunderstorm activity. It is expected that except for rare flash flood-type events, almost all dry-season rainfall events would be completely absorbed by the soils and plants, without much, if any, contribution to the ground water.

General Geology

Figure 3 illustrates the lithology and structural geology at the Independence and Saturn and the surrounding area. Country rock in the area consists primarily of Cretaceous biotite granodiorite and muscovite-biotite granite (Kiilsgaard & McCarthy, 2001). Relatively large masses of Tertiary (Eocene) diorite and quartz monzonite intrude the granitic basement. Dikes, primarily rhyolite, generally follow a northeast trend. Northeast-trending faults of the Trans-Challis fault system cut the area into elongate blocks.

During the past 100 plus years numerous authors including Jones (1916), Ballard (1924), Ross (1933) and Anderson (1947) have described the geology and/or ore deposits within the Grimes Pass Mining District. Later investigations by IGS staff members (Mitchell & Bennett, 1995; Leppert and others, 2007) covered the Comeback mine, southwest of the site, but failed to include the Independence and Saturn, the nearby Enterprise Group or the Golden Age mines, as the private property owners would not provide access.

Jones (1916) described the mineralogy of several mines in the area:

The primary ore minerals that were observed in the ores of the Quartzburg and Grimes Pass belt are native gold, pyrite, galena, sphalerite, chalcopyrite, stibnite, and tetrahedrite, and those derived from the alteration and oxidation of the primary minerals are cerusite, chalcocite, malachite, and native copper. The zone of oxidation, however, extends only a short distance below the surface, and the secondary minerals form no well-defined deposits and nearly everywhere are associated with some unaltered sulphide material. Native copper was noted in a specimen of finely brecciated rhyolite obtained near the surface on the Coon Dog No. 1 claim, and malachite in surface croppings of granite porphyry on the same claim. Chalcocite occurs as a sooty coating and partial replacement of the chalcopyrite in the Coon Dog ores. Cerusite occurs sparingly as a partial alteration product of galena in shallow ores in the Golden Age, Enterprise, and other workings near Grimes Pass.

The mineral composition of the veins along this belt is variable. Pyrite and sphalerite are most widely distributed; some of the other minerals occur only here and there. Thus massive arsenopyrite was noted only in the deeper workings of the Mountain Chief mine. Stibnite is common in the Mountain Chief and Gold Hill ores. Tetrahedrite occurs chiefly in the ores in the vicinity of Grimes Pass but was also noted in specimens from the Carroll mine. Chalcopyrite is particularly abundant in the ores of the Coon Dog group and occurs sparingly, intergrown with arsenopyrite, in the Mountain Chief ores. Galena is most abundant near Grimes Pass. (p. 98)

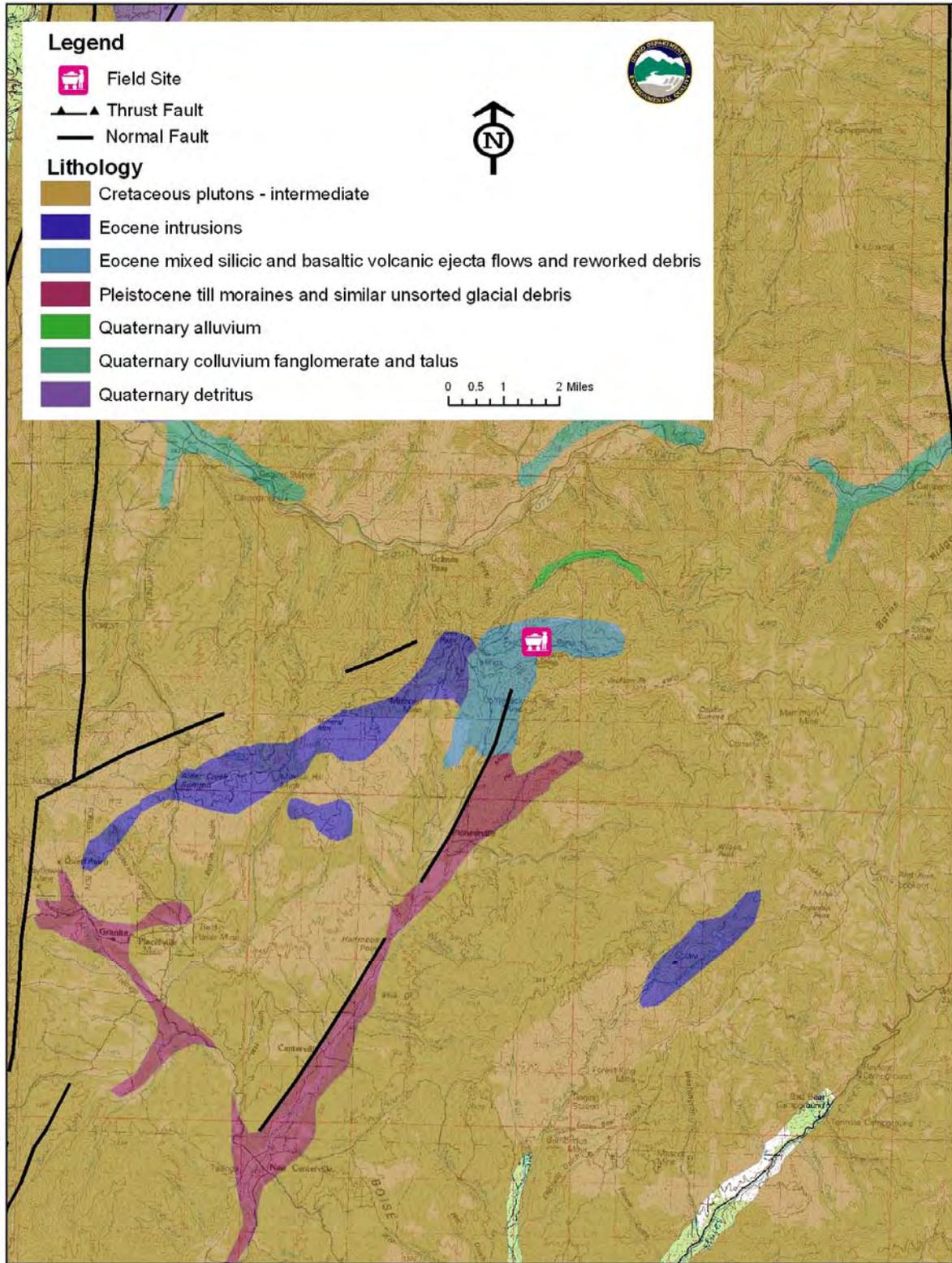


Figure 3: Geological Map of the Independence & Saturn Area

Mine Operations and History

The amount of historical information IDEQ found on the site was very limited. Although Anderson (1947) wrote about the structure and mineralogy of the Enterprise Group which lies approximately 0.5 miles north in Charlotte Gulch, specific information concerning either the Independence or Saturn lodes was not found.

Section 3. Site Description and Field Activities

IDEQ conducted a site visit to the Independence & Saturn properties on July 9, 2007. According to the Mr. Jacobs, the property owner, only limited mining activity has occurred on the property. No obvious workings or structures were noted on either property. The USGS Grimes Pass (ID) Quadrangle topographic map indicates the location of a prospect, which is illustrated in the figures included in this report. However, former timber harvesting activities across the site has apparently obscured the location of the prospect.



Photo No. 1: Looking east. Previously logged area on the Saturn claim.



Photo No. 2: Looking north. A small creek flows down Ader Gulch, near NW corner of Saturn claim. Field parameters were collected at this location.

Section 4. Current and Future Potential Beneficial Uses

The area appears to be occasionally used by recreational vehicles and off-road vehicles (ORV). Other uses include mountain biking, hiking, hunting, horseback riding and firewood collection. Old logging roads or “skid trails” crisscross the steep hillsides of Ader Gulch. Most of these trails are overgrown, thus limiting motorized access.

Soil Sample Collection and Analysis

No samples were collected at either the Independence or the Saturn properties because there was not any evidence of potential contamination.

Surface Water Sample Collection and Analysis

Surface water field parameters were taken from the small creek in Ader Gulch. The water was clear and had no discoloration or odor. Field parameters taken at this point are as follows: pH = 7.73, Conductivity = 0.123mS/cm, Dissolved Oxygen = 12.75mg/L, Turbidity = 378 and Temperature = 18° C. The sample location is illustrated in Figure 2.

Section 5. Pathway and Environmental Hazard Assessment

Pathway and environmental hazards were assessed for groundwater, surface water, and soil/air exposure. The findings from these assessments are presented in the following.

Ground Water

Ground water flow is expected to be controlled structurally within faults and fracture zones in the country rock and be expressed at the surface as drainage from adits, springs or seeps. The source of the surface water flowing in Ader Gulch appears to be located in the northwest corner of the Saturn claim. Recharge of regional aquifers by surface and ground water in the Ader Gulch area is unknown.

According to Idaho Department of Water Resources July 2002 records, there is one private drinking water well located within a 1-mile radius of the site; approximately 0.85 miles to the south-southwest near Miller Gulch. No wells were sampled during this assessment. Drinking water wells are illustrated in Figure 4.

Although no wells were sampled, IDEQ did collect field parameters from surface water in Ader Gulch. The parameters appeared to be within the “normal” range, though turbidity was elevated. However, it is not known whether this source is used for drinking water.

During the cleanup activities of mining and milling properties, the first concerns are related to potential human health risks as a result of contamination of public and private drinking water supplies. Generally speaking, contamination of drinking water systems was thought likely to occur from two types of sources (ore bodies and waste dumps), and along three pathways, as illustrated by the following three scenarios. First, heavy metals are leached from mine waste dumps, enter ephemeral or perennial drains and then contaminate the area’s shallow ground water system. Second, heavy metals leach from the local ore bodies and are transported through the geologic structure to the shallow ground water. Third, heavy metals could leach out of the ore bodies, and be discharged from the underground workings as adit water, that is then conveyed through ephemeral and perennial drains to the shallow ground water systems.

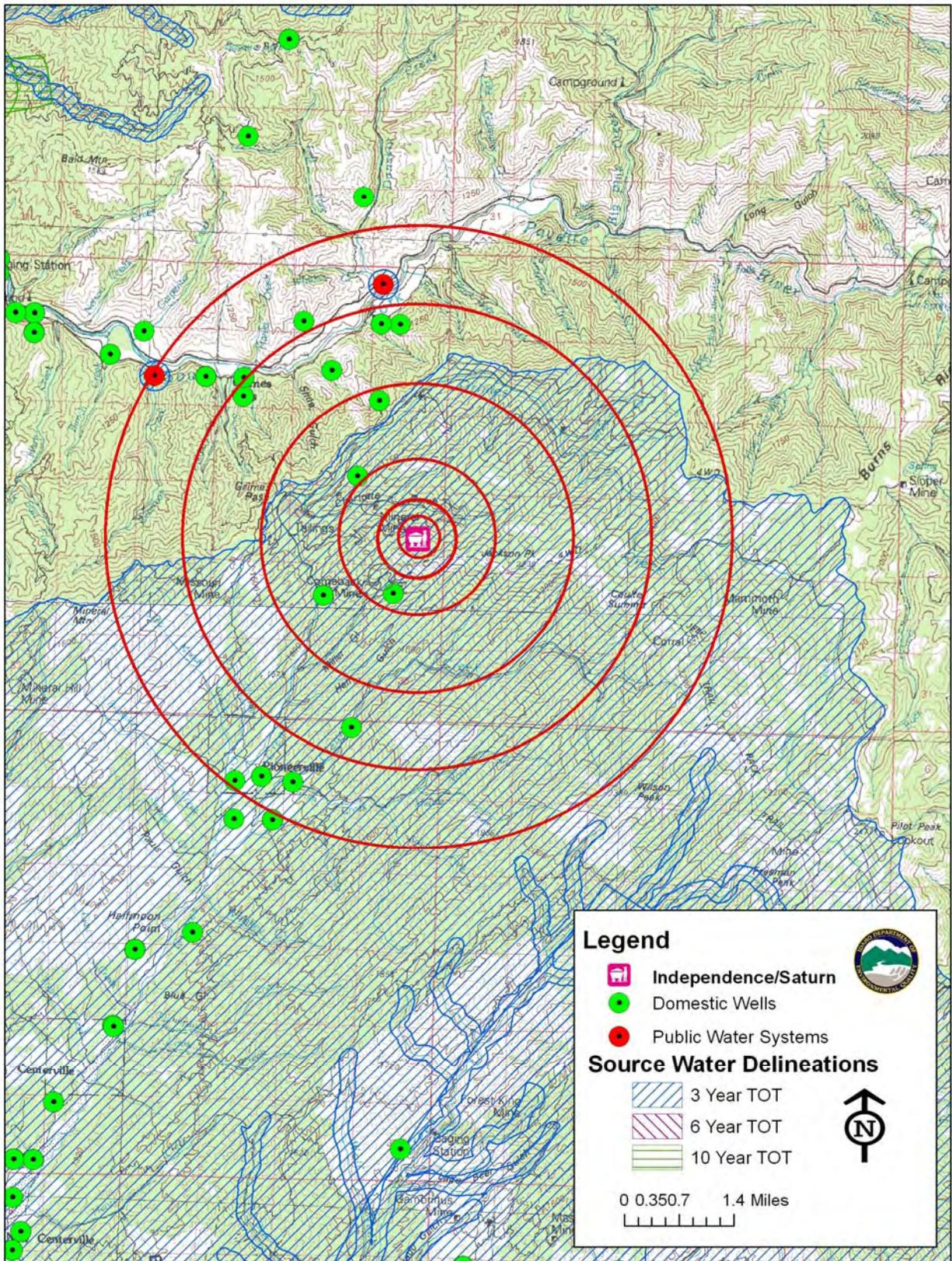


Figure 4: Drinking water wells within 4-mile radius of the Independence & Saturn mine

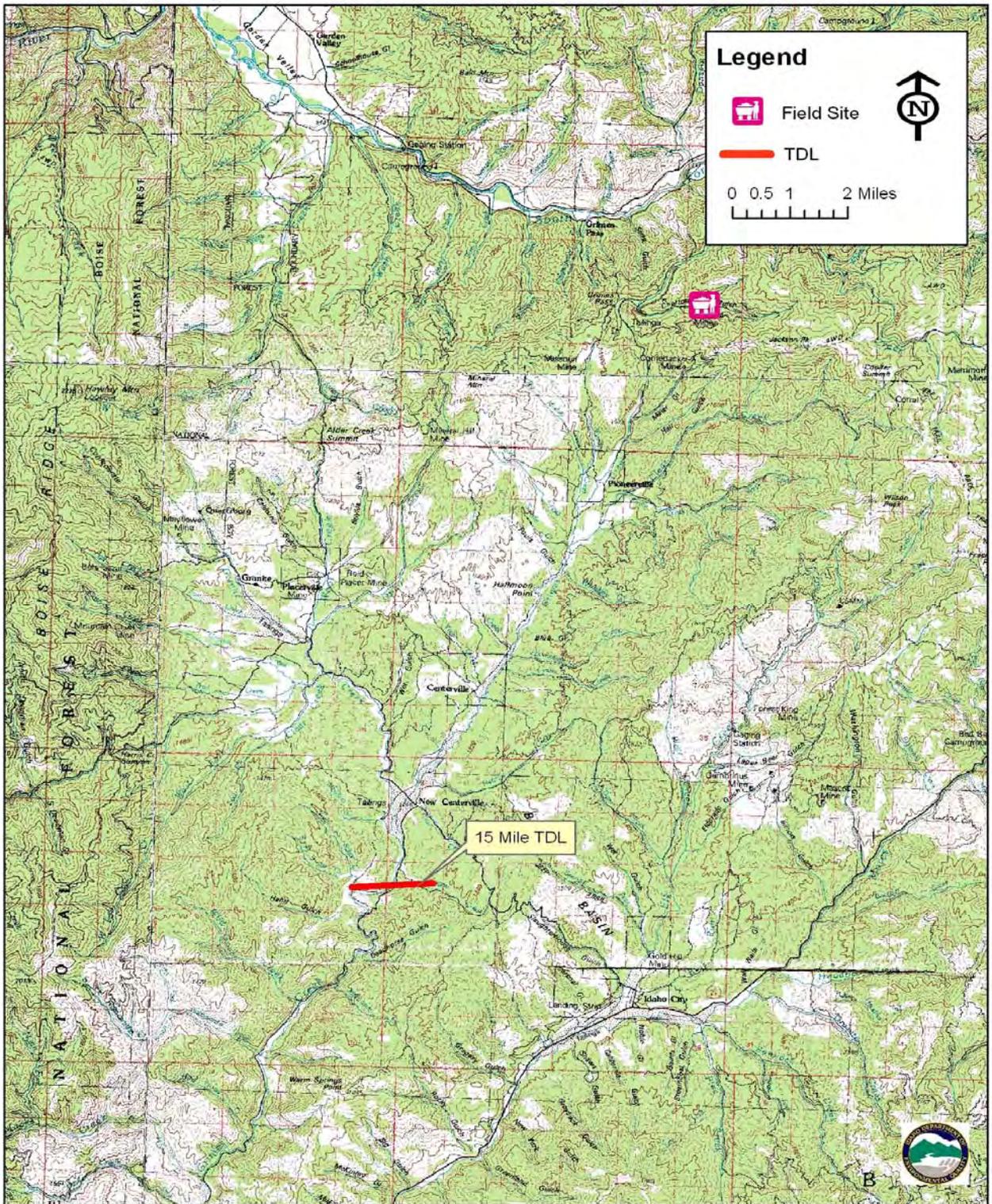


Figure 5: Surface Water - Target Distance Limit

Surface Water

Ader Gulch is a perennial tributary to Charlotte Gulch, a tributary to Grimes Creek (see Figure 5). Ader Gulch flows northwest where it merges with Charlotte Gulch at 0.6 miles which in turn merges with Grimes Creek at 1.7 miles. The Grimes Creek drainage contains several miles of stream alteration caused by placer mining operations. Placer tailings evidenced by gravel windrows line the channel of Grimes Creek and its many minor tributaries, including Charlotte Gulch. Grimes Creek briefly flows west then trends south-southwest before reaching the 15-mile TDL. Grimes Creek is an EPA CWA §303(d) listed stream for sediment and temperature, indicative of the extensive stream alteration caused by the placers.

Surface water field parameters were collected from the creek in Ader Gulch. These parameters appeared within a normal range, though turbidity was elevated.

Wetlands and Sensitive Species and Wetlands

Wetlands

Wetland surveys near the site were reviewed (USFWS, 2007) along with aerial photographs (see Figure 5). Wetland mapping data pertaining to Charlotte Gulch and Grimes Creek was not available. Therefore, no wetlands are represented within the downstream 15-mile Target Distance Limit (TDL).

Species of Concern

Specific fish data was not available for Ader Gulch. However, Bull trout [*Salvelinus confluentus*] are present in Charlotte Gulch and Redband rainbow trout [*Oncorhynchus mykiss gairdneri*]; Brook trout [*Salvelinus fontinalis*] and Bull trout are present within Grimes Creek (IDFG, 2000). Commercial or subsistence fishing does not occur within the 15-mile Target Distance Limit (TDL), but sport fishing does.

Bald Eagle [*Haliaeetus leucocephalus*] wintering areas lie along the South Fork of the Payette River, to the north. Two state listed plant species; the Giant Hellebore orchid [*Epipaticus gigantea*] is found along the South Fork of the Payette River and the Tall Swamp Onion [*Allium validum*] flourishes in the headwaters of Grimes Creek. These relationships are illustrated in Figure 6.

Additionally, the Gray Wolf (*Canis lupus*) may also range in this area. Due to the much greater area of range for these animals compared to the size of the waste dumps, it is unlikely that individual animals would experience sufficient doses to be at risk.

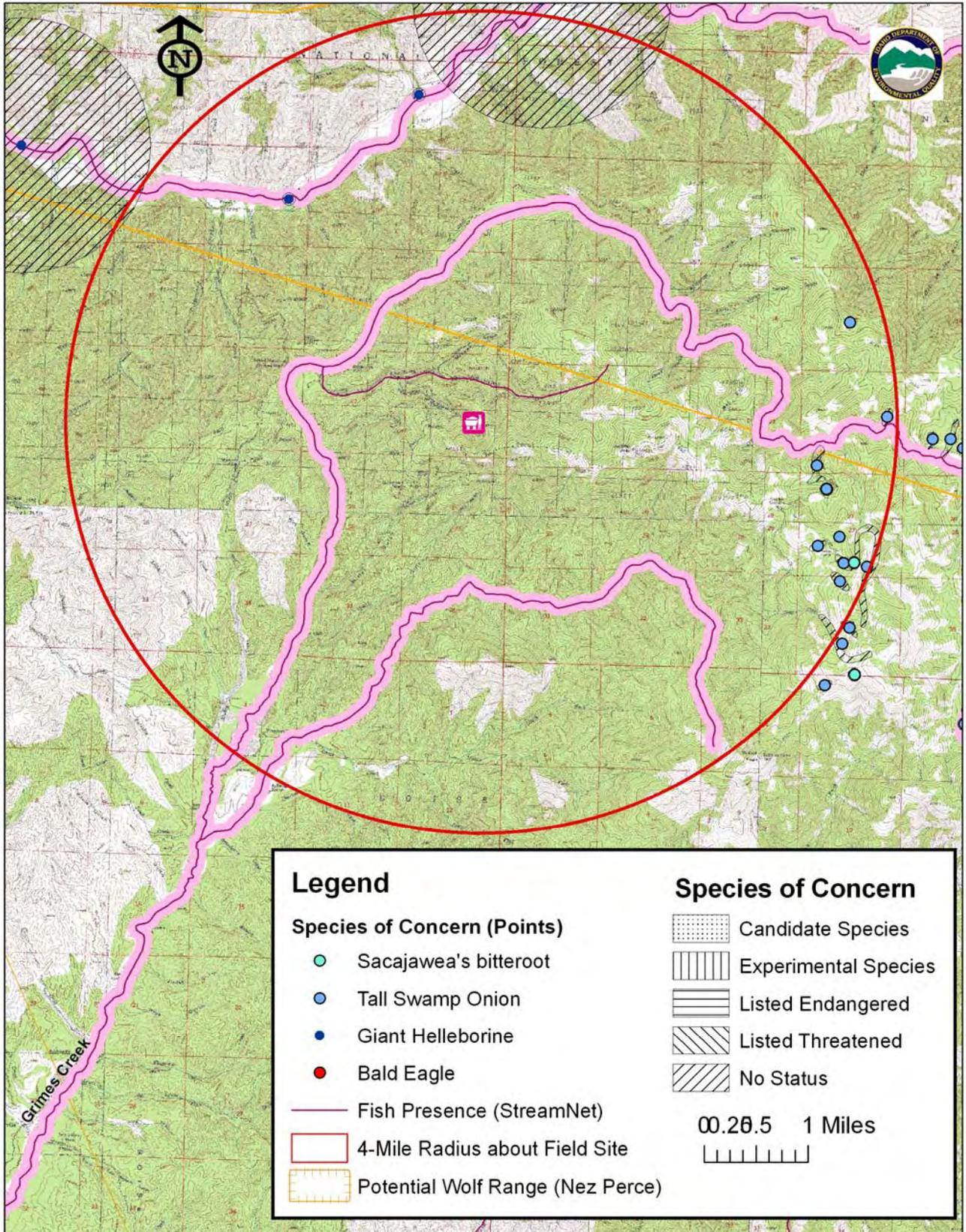


Figure 6: Species of Concern within 4-mile radius of the Independence & Saturn claims

Soil Exposure and Air

Access to the Independence and Saturn properties is unrestricted. Mine workings and waste rock dumps were not identified during DEQ's site visit, but former timber harvesting activities were apparent. The properties are heavily forested and areas previously logged support new growth. Human and ecological receptor exposure to soils and possible mine waste is expected to be minimal. Human activity around the site should be considered limited. Aerial dispersion of soils is expected to be minimal.

Potential Receptors

Potential receptors include hikers, hunters, trail riders (motorized and non-motorized) and wildlife. Active mining claim operations exist in the lower reaches of Ader and Charlotte gulches, though none such activity was present on the Independence or Saturn properties. The land within a one (1) mile radius of the site is a mixture of private and public land administered by the USFS (Boise NF). As previously stated, one prospect or "dog-hole" may be located on the Saturn claim.

Schools, Day-Care Facilities, Private Residences

There are no schools or day-care facilities, or private residences within 200 feet of the site. One year-round residence is located at the Golden Age mine, approximately 1.1 miles northwest of the site.

Section 6. Summary, Conclusions and Recommendations

Mining history and/or production information was not determined for these patented claims. Though nearby mines such as the Enterprise Group, the Comeback and the Golden Age produced gold, silver and lead during the past century, evidence of similar operations at the Independence and Saturn properties is lacking. The USGS mapped a shallow workings or “prospect” on the Saturn patent, but DEQ was not able to locate this working during its site visit.

Potential Exposure for Wildlife and Vegetation

Despite the lack of observable workings at the Independence and Saturn properties, heavy metal constituents may be available to the soils through normal weathering processes. In such case, native plant species may bio-accumulate high concentrations of metals that may be consumed by the local wildlife. Wildlife may be exposed at the site, but relative to the extensive range of the wildlife, it is unlikely that significant exposure to heavy metals occurs.

Potential Exposure for Humans

This site is infrequently visited by mountain bikers, hikers, hunters, snowmobile operators, off-road vehicles, or various other outdoor recreation enthusiasts. Waste rock and tailings were not encountered on the site. Exposure to very small doses of heavy metals may occur where enriched soils are disturbed, particularly along logging trails and stream crossings. Aerial dispersion does not appear to be a factor. The exposure levels do not appear to pose a substantial risk, based upon current property uses.

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