



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

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

April 28, 2011

Mr. Clint Hughes  
Minerals Specialist  
USFS – Nez Perce National Forest  
104 Airport Road  
Grangeville, ID 83530

Subject: Site Assessment of the L & L Mine, Dixie Area, Idaho County, Idaho

Dear Mr. Hughes:

The Idaho Department of Environmental Quality (DEQ) has completed a review of historical mining data and geological information for mixed ownership lands including the above referenced mine. During the visit, mine site activities such as shafts, an ore bin, tailings pile/waste dump, and collapsed structures were observed and mapped in order to provide a comprehensive analysis necessary to complete an Abbreviated Preliminary Assessment (APA).

The APA is used to help site investigators determine if their findings result in a determination of No Remedial Action Planned (NRAP) or if additional analysis is warranted. The APA documents the rationale for the decision on whether further steps in the site investigation process are required under the Federal Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA). If additional analysis was warranted, a Preliminary Assessment (PA) would have been prepared for this site.

PAs are conducted in accordance with CERCLA. The reasons to complete a PA include:

- 1) To identify those sites which are not Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) caliber because they do not pose a threat to public health or the environment (No Remedial Action Planned (NRAP));
- 2) To determine if there is a need for removal actions or other programmatic management of sites;
- 3) To determine if a Site Investigation, which is a more detailed site characterization, is needed; and/or

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- 4) To gather data to facilitate later evaluation of the release of hazardous substances through the Hazard Ranking System (HRS).

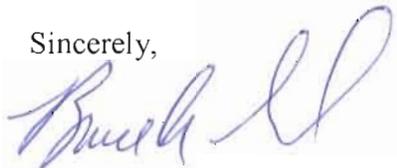
DEQ has also completed PAs under contract with the U.S. Environmental Protection Agency in order to identify risks to human health and the environment and make recommendations to land owners regarding how risks might be managed, if necessary.

DEQ found a pit or collapsed shaft, collapsed structures, a tailings pile/waste dump, and an ore bin. The tailings pile/waste dump was composed of country rock with little or no evidence of ore or mineralized material.

Attached is the APA for the L & L Mine. It contains the mine history, limited geological information, site photographs, and maps of the property. Based on this information, DEQ is recommending the L & L Mine property status be designated as NRAP.

If you have any comments or questions about this site, the report, DEQ's recommendations, or if I may be of any other assistance, contact me at (208) 373-0554.

Sincerely,



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

Attachment

cc: Ken Marcy – U.S. Environmental Protection Agency  
L & L Mine File

## ABBREVIATED PRELIMINARY ASSESSMENT

This is an Abbreviated Preliminary Assessment (APA) for the L & L Mine near Dixie, Idaho. This document provides the rationale for the determination of No Remedial Action Planned (NRAP) or if additional analysis or site investigation is necessary for the L & L Mine. Additional sheets are attached which contain relevant information including historical data, site photographs, and maps generated during the site visits or desktop research.

**Preparer:** Daniel D. Stewart **Date:** 3/31/11  
Idaho Department of Environmental Quality  
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Grangeville, ID 83530  
(208) 983-0808  
daniel.stewart@deq.idaho.gov

**Site Name:** L & L Mine

**Previous Names (aka):** Colfax, Quebec, Triangle, Wasp, Professor, Tenderfoot, Nipper, and Cimitar claims

**Site Owner:** United States Forest Service  
Nez Perce National Forest

**Address:** 104 Airport Road  
Grangeville, ID 83530

**Site Location:** The L & L Mine is on the ridge between Boulder Creek and Dixie Gulch. Access to the mine is from FS Road 222 at the north end of Dixie and then north on FS Road 9527 for about three quarters of a mile to FS Road 9527D. The mine is less than one half mile northwest on FS Road 9527D and is located on United States Forest Service (USFS) land.

Township 26 North, Range 8 East, Section 22

**Latitude:** 45.57325°N **Longitude:** -115.46277°W

### **Describe the release (or potential release) and its probable nature:**

This site was investigated for potential releases of heavy metals and sediment from mine waste dumps and potential discharges of other deleterious materials, such as petroleum products and ore processing chemicals. No evidence or indications of these materials were located on site. See the site photographs in the attachments at the end of this report.

**Part 1 - Superfund Eligibility Evaluation**

<b>If all answers are “no” go on to Part 2, otherwise proceed to Part 3.</b>	<b>YES</b>	<b>NO</b>
1. Is the site currently in CERCLIS or an “alias” of another site?		<b>x</b>
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		<b>x</b>
3. Are the hazardous substances that may be released from the site regulated under a statutory exclusion (e.g., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?		<b>x</b>
4. Are the hazardous substances that may be released from the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		<b>x</b>
5. Is there sufficient documentation to demonstrate that there is no potential for a release that constitutes risk to human or ecological receptors? <i>(e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA approved risk assessment completed)?</i>	<b>x</b>	

**Please explain all “yes” answer(s):**

A site inspection involving direct observations confirmed contaminants of concern do not exist in concentrations that present a threat to human health or the environment. The mine site is approximately one half mile up hill of Dixie Gulch Creek which flows into Crooked Creek. The town of Dixie is upstream on Crooked Creek, approximately one half mile from the mouth of Dixie Gulch Creek. No residences or permanent structures lie between the L & L Mine and Crooked Creek.

**Part 2 - Initial Site Evaluation**

For Part 2, if information is not available to make a “yes” or “no” response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

<b>If the answer is “no” to any of questions 1, 2, or 3, proceed directly to Part 3.</b>	<b>YES</b>	<b>NO</b>
1. Does the site have a release or a potential to release?		<b>x</b>
2. Does the site have uncontained sources containing CERCLA eligible substances?		<b>x</b>
3. Does the site have documented on-site, adjacent, or nearby targets?		<b>x</b>

**If the answers to questions 1, 2, and 3 above were all “yes” then answer the questions below before proceeding to Part 3.**

	YES	NO
4. Does documentation indicate that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?		<b>x</b>
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?		<b>x</b>
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (e.g., targets within one mile)?		<b>x</b>
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?		<b>x</b>

**Notes:**

During the site assessment, DEQ used references from several different documents including USGS maps, county tax rolls, and historical reports that have spelled numerous claim names, town sites and/or geographic features differently from one and another. DEQ’s use of the different spellings is to remain in context with the reference used for each given section of text written in this report.

**Exhibit 1 – Site Assessment Decision Guidelines for a Site**

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. The assessor should use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below. **(Circle or highlight responses)**

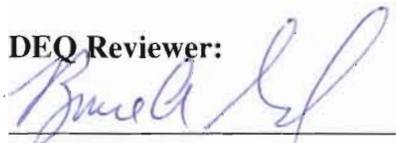
Suspected/Documented Site Conditions		APA	Full PA	PA/SI	SI
1. Releases or potential to release are not documented at the site.		Yes			
2. Uncontained sources with CERCLA-eligible substances have not been documented as being present on the site. (i.e., they do exist at site)		Yes			
3. On-site, adjacent, or nearby receptors are not present.		Yes			
4. There is no documentation or observations made leading to the conclusion that a sensitive receptor is present or may have been exposed (e.g., drinking water system user inside four mile TDL) 5. There is documentation that a sensitive receptor has been exposed to a hazardous substance released from the site.	Option 1: APA	Yes			
	Option 2: Full PA or PA/SI	No			
6. There is an apparent release at the site with no documentation of targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	No			
	Option 2: PA/SI	No			
7. There is an apparent release and no documented on-site targets and no documented targets immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within one mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site.		No			
8. There are: no indications of a hazardous substance release; uncontained sources containing CERCLA hazardous substances; but there is a potential to release with targets present on site or in proximity to the site.		No			

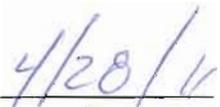
**Part 3 - EPA Site Assessment Decision**

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was “no,” then an APA may be performed and the “NRAP” box below should be checked. Additionally, if the answer to question 4 in Part 2 is “yes,” then you have two options (as indicated in Exhibit 1): Option 1 -- conduct an APA and check the “Lower Priority SI” or “Higher Priority SI” box below; or Option 2 -- proceed with a combined PA/SI assessment.

**Check the box that applies based on the conclusions of the APA:**

<input checked="" type="checkbox"/>	No Remedial Action Planned (NRAP)	Defer to NRC
<input type="checkbox"/>	Higher Priority SI	Refer to Removal Program
<input type="checkbox"/>	Lower Priority SI	Site is being addressed as part of another CERCLIS site
<input type="checkbox"/>	Defer to RCRA Subtitle C	Other: _____

**DEQ Reviewer:**  
  
 Bruce A. Schuld

  
 Date

**Please Explain the Rationale for Your Decision:**

There are no direct airborne, surface or ground water pathways to any potable water sources or residences from the L & L Mine. The mine is a dry site with no water present. The closest residence is approximately 1.5 miles away in Dixie. Water flowing from Dixie Gulch Creek does not flow through the town of Dixie. Airborne pathways to Dixie do not exist due to structural geology between the mine site and town. No significant evidence of mineralization remains at the mine site. As shown in the site photographs, the tailings pile/waste dump sites are well vegetated impairing soil movement off the site. The tailings pile/waste dump sites consisted primarily of native, country rock.

As a result of our observations, DEQ is recommending this site be designated as “No Remedial Action Planned” (NRAP).

**Attachments:**

- Historical Information
- Site Photographs
- Maps

## Historical Information

**Mine History:** McKay (1996, p. 161-163) reported the following on the history of the L & L Mine:

*The L & L mine was a group of eight claims and a mill site located about two miles north of Dixie, on the divide between Boulder Creek and Dixie Gulch at an elevation of 6200'. In 1904 the claims were the Colfax, Quebec, Triangle, Wasp, Professor, Tenderfoot, Nipper, and Cimitar. Louis Larson came to Dixie in 1895, and he located the L & L Mine in 1896. James Lynch was also interested in the claim, so the partners located and named it the L & L. In 1899 Larson bought out Lynch, and he continued to work the property in a small way for many years, treating the ore in an arrastra. Before he built his own arrastra, Larson treated about 250 tons of ore at the Pritchard arrastra on Fourth of July Creek, with a reported recovery of \$6,000. In the 1930s he cyanided the tailings for additional gold recovery. . . . The work was concentrated on six ore shoots above the adit level, with about 1,300 tons of ore mined by the late 1930s. In 1909 the development work included a crosscut tunnel 300' long, plus a 125' shaft (by the late 1930s there was a 120' shaft and about 700' of tunnels, drifts, and crosscuts). The average recovery was \$35 per ton in gold, with values up to \$60, and there were some silver values. In 1909, ore from the Professor Mine averaged \$15 per ton on a 30" vein. By 1909 Rory Burke and F. M. Hinds owned the Professor claims, which at that time were developed by a 35' shaft showing both copper and gold, open cuts, and a 100' crosscut. Larson's arrastra, at the mouth of Dixie Gulch, was water-powered, using an undershot wheel fed by water from a ditch/flume system that came from Nugget Gulch. At the outlet of the ditch a flume brought the slow-moving water into the upper end of a penstock. A pipe carried the water from the bottom of the penstock to a 2" nozzle aimed at the bottom of the water wheel. Larson built a long snow shed over the ore car track from the portal of the tunnel, past a blacksmith shop and a small ore bin, to the dump. During the winters Larson would mine the ore and bring it over 1/4 mile to the arrastra using a light sled that he designed, a canvas sled that held 500 pounds. He roasted the ore during the winter, before the milling began in the spring or summer. Before feeding the ore to the arrastra, Larson would break it with a hammer to fist-sized or smaller pieces. When the arrastra was grinding ore, Larson lived at the site in a room close to the tub, and he would sprinkle quicksilver over the ore every once in a while and feed in more ore as necessary. The arrastra would grind ore continuously until with the ore or the water ran out. The arrastra saved only the free-milling gold, which represented about 50% of the values.*

*In 1903 M. F. Tytler of Seattle bonded a number of claims in the Dixie area, including the L & L, and he kept it under bond until 1905. He planned to put in a hoist and a cyanide plant and a Huntington mill. Although Tytler did accomplish some underground development work and put up the head frame for the hoist, it does not appear that he ever installed the proposed mill. By the spring of 1905 Larson was again at work at his mine, pounding out "a good grub stake." He continued to mine and mill ore from the L & L using his arrastra through 1932.*

*To recover the gold in the sulfide ores, Larson hired A. C. Conrad to set up leaching tanks and zinc shavings boxes to treat the tailings by cyanidation. He converted the arrastra into a cyanide tank, using an improvised bucket-line and a shift on the undershot water wheel. Another bucket-line took the solutions from the cyanide tank to the settling tanks. The total cost of the plant was \$7.80 plus the costs for lime and cyanide. Although he had not stockpiled all his tailings, he ran what he could through the cyanide tank to recover more of the remaining values. In 1933 Larson reportedly amalgamated 25 tons of gold ore from the L & L and cyanided 160 tons from old tailings and a prospect. By 1936 Larson had moved to Lewiston, where he died in 1941. He told a reporter that "the secret of his success in his chosen work is work."*

*Ernest W. and Minnie Wagner bought the L & L mine from Larson (trading a home in Lewiston for the mine) in the late 1930s. Minnie Wagner was the aunt of Pearl Chittick, another Dixie resident, and she and her husband Jim and brother Frank Wagner helped work the mine. They replaced rotted timbers, cleared the track to the shaft, and rebuilt the shaft (they spanned the glory hole with trees and set up a gallows frame and ore bucket). They also installed a small flotation mill. The mine was active through at least 1939.*

*A 1938 description, of the L & L mine said that the ore was mined by hand and hoisted in a sinking bucket by a single-drum, 18"-diameter gasoline-driven hoist. The bucket dumped directly into an ore car that trammed the ore a short distance to a 50-ton ore bin. The ore from the bin was crushed in a 4" x 6" Straub jaw crusher and elevated by a small bucket elevator to the feed scoop of a 20" x 30" ball mill, which operated in closed circuit with a small Esperanza-type drag classifier. An amalgamating cylinder was attached to the discharge trunion of the ball mill. The classifier overflow passed through a launder lined with corduroy, then to a storage pond (where it was stored for future cyanidation). The mill could process six tons of partly oxidized ore per 24 hours. The recovery by amalgamation was 70%. The power source for the mill was a gasoline engine that used five gallons of gas per ten hours of operation. There was also a sawmill at the mine, with a 3,000 board feet per day capacity.*

*In 1986 the L & L mine site had a collapsed cabin reported to be the one built by Larson by 1896, plus a number of buildings built or moved in during the mid-1930s. The L & L #1-7 had a board-and-batten cabin, a saddle-notched log cabin, an outhouse, and two mill sites. A pole-and-shake arrastra "on Dixie Gulch," with water wheel, was moved to Lewiston to be preserved some time before 1960; this may have been the L & L arrastra.*

## **Geologic Features**

The L & L Mine is in Cretaceous biotite granodiorite of the Idaho batholith near northeast-trending faults (Lewis and others, 1990, 1993). McKay (1996, p. 161) described the deposit as follows:

*The vein was about 3' wide and carried a pay shoot 8" wide that yielded \$35 per ton. The ore occurred in shoots 20'-80' long that ran along the strike in a shear zone. The vein was 6"-8" in width, striking west, and was milky quartz with irregularly distributed sulfides. Locally it contained lenses of the silicified granitic country rock.*

### **Site Features:**

The L & L Mine was visited by Earl Bennett on July 14, 1999:

*The property contains the large pit of a caved shaft and several small prospect pits. Also at the site are an ore bin and the collapsed hoist station. The pit of the caved shaft is 30 feet in diameter and about 15 feet deep. A collapsed structure on the south rim of the pit was probably the hoist works. The waste dump is crossed by roads and divided into two lobes. The larger lobe extends to the northeast and measures 80 feet long, 10 feet wide, and 15 feet thick. The smaller lobe extends to the southwest and is about 35 feet long, 10 feet wide, and 4 feet thick. The ore bin is at the end of the smaller dump. An oblong pit about 25 feet in length is along the access road east of the shaft, and a smaller pit is just west of the shaft. Other small prospect pits pockmark the area. The disturbed area at the site covers about 1 acre.*

*The ore bin at the southern end of the shorter lobe of the dump is mostly intact. Inside are distinctive, thin, sloping poles that are either an ore slide or a collapsed roof. Discharge chutes are at the base of the south wall of the structure. Logs and scrap metal on the ground below the bin may be the remains of the structures related to the milling operation. The collapsed building for the hoist works is the only other structure at the site.*

*The shaft is caved, but the pit is relatively deep and has steep side walls. A marked snowmobile trail passes near the north rim of the shaft. Other small pits in the area could also be a hazard to snowmobiles.*

## Site Photographs



Photo 1. L & L Mine collapsed shaft or pit



Photo 2. L and L Mine waste dump/tailings pile



Photo 3. L and L Mine collapsed structure

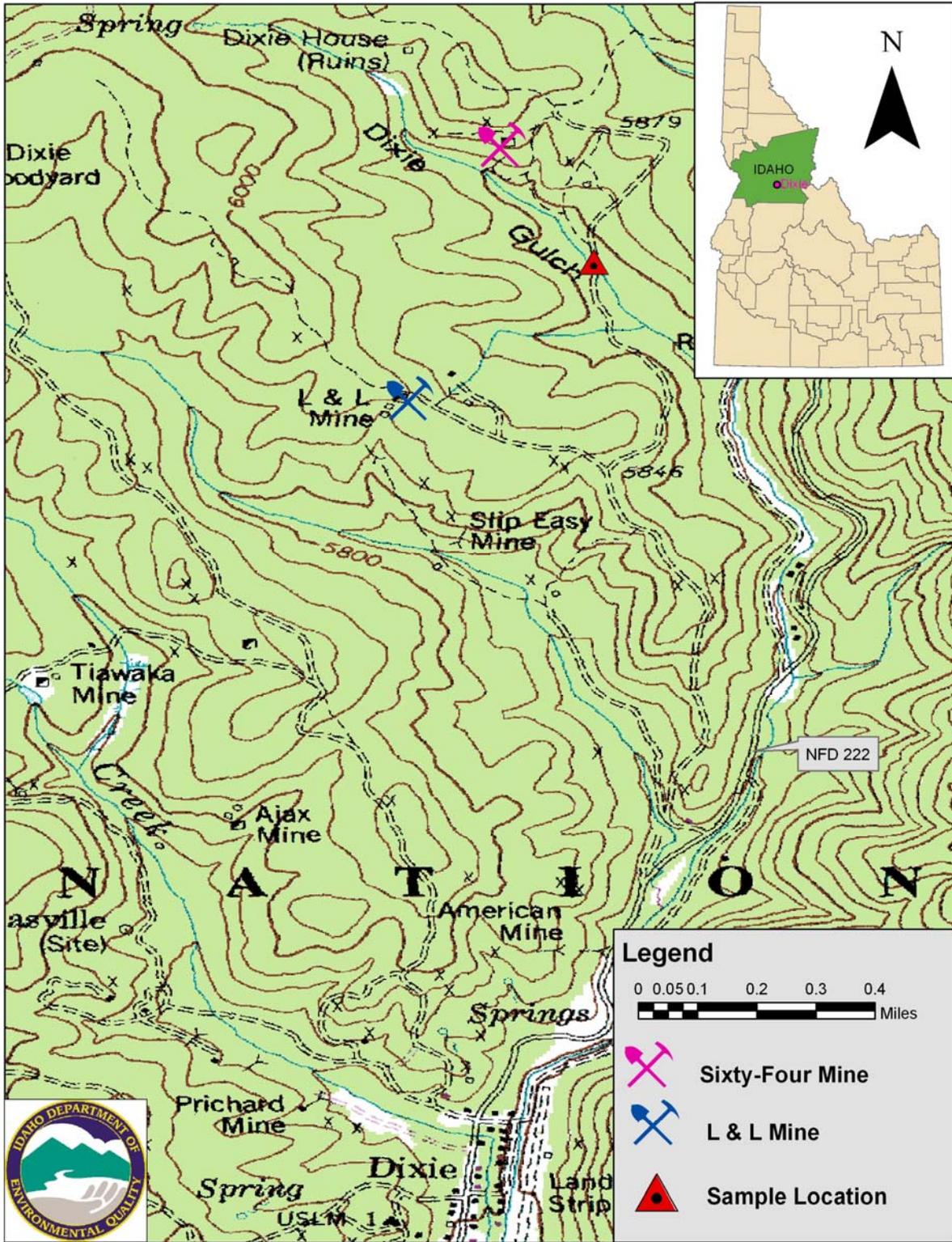


Photo 4. L and L Mine waste dump/tailings pile and collapsed structure

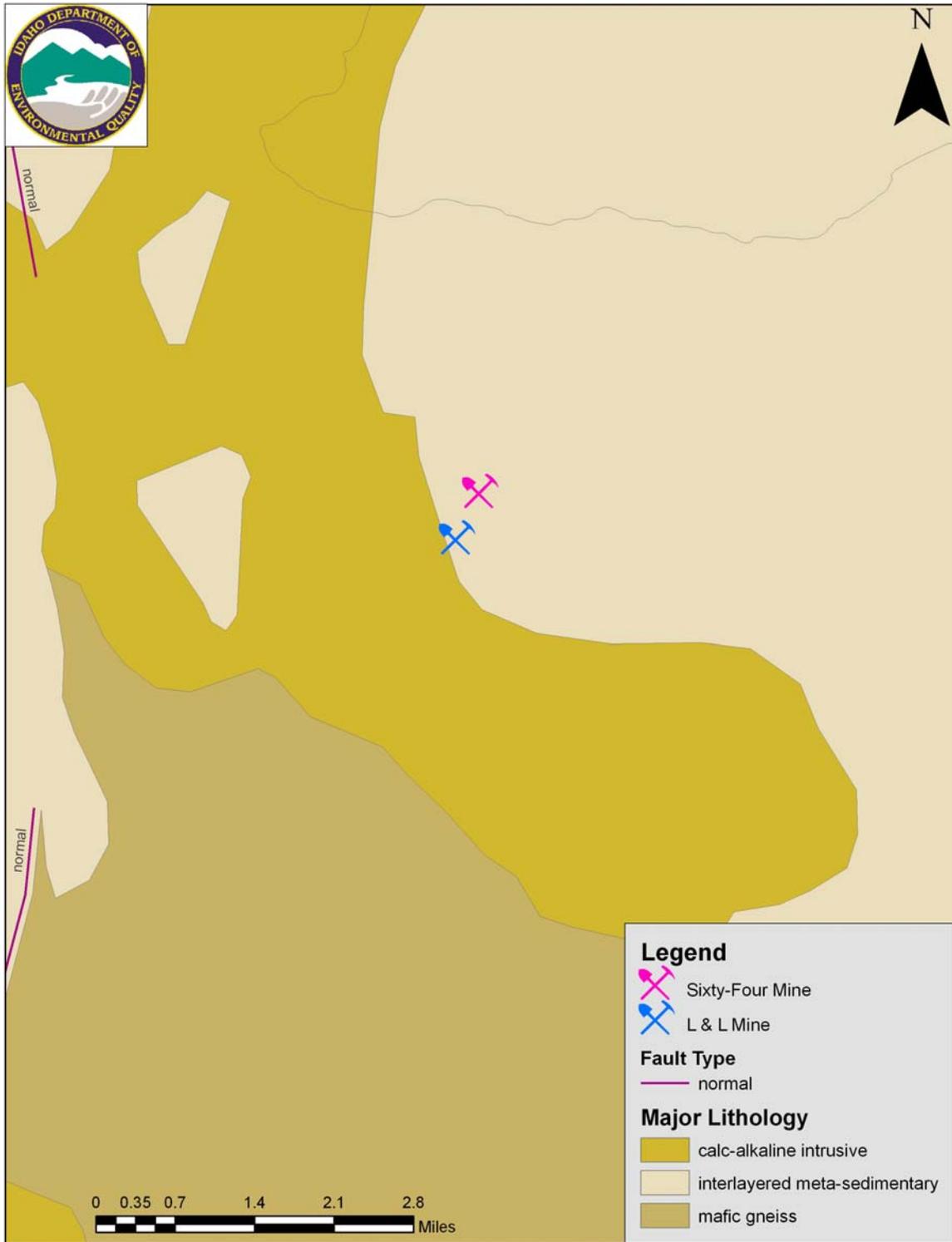


Photo 5. L and L Mine ore bin

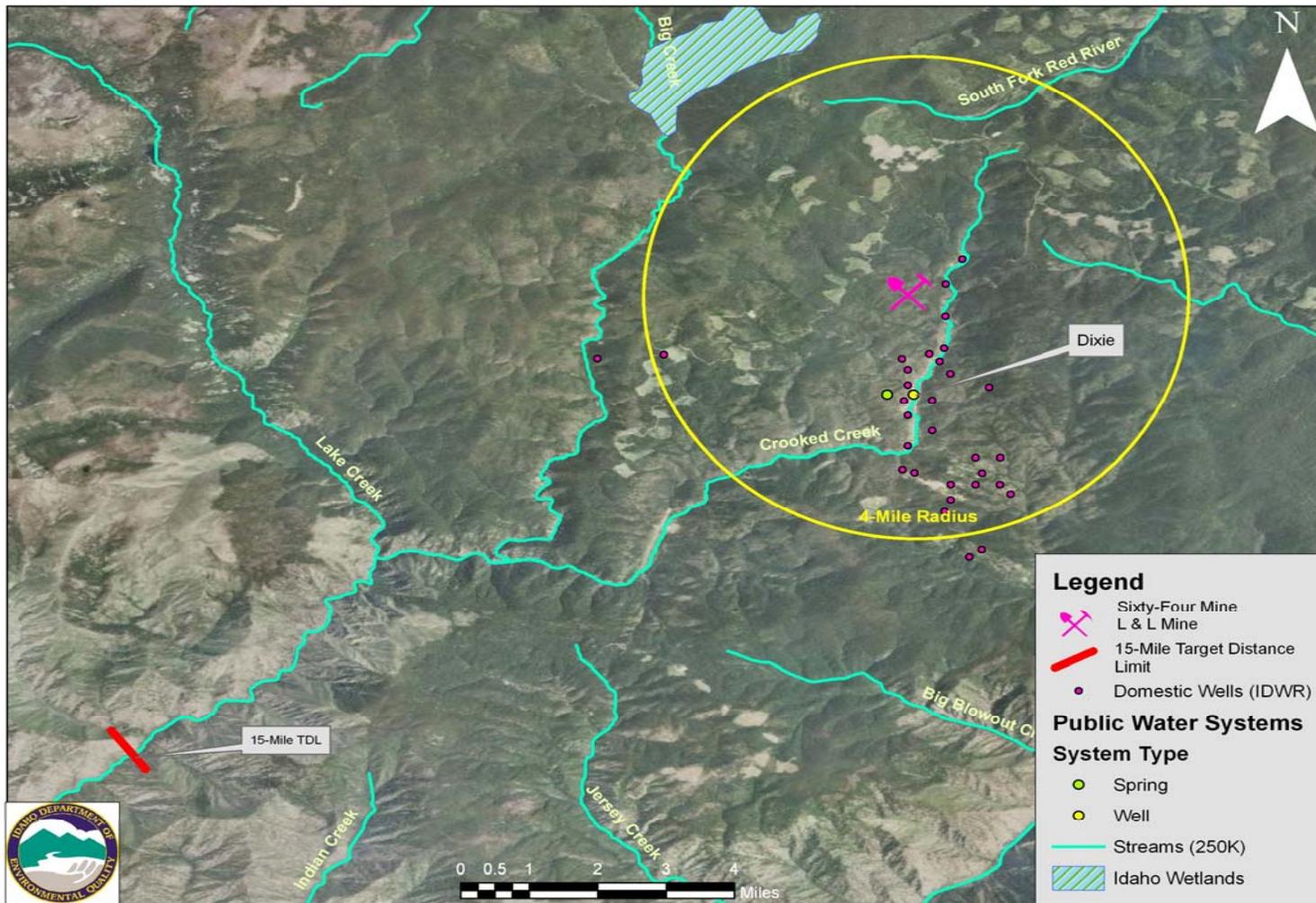
Maps



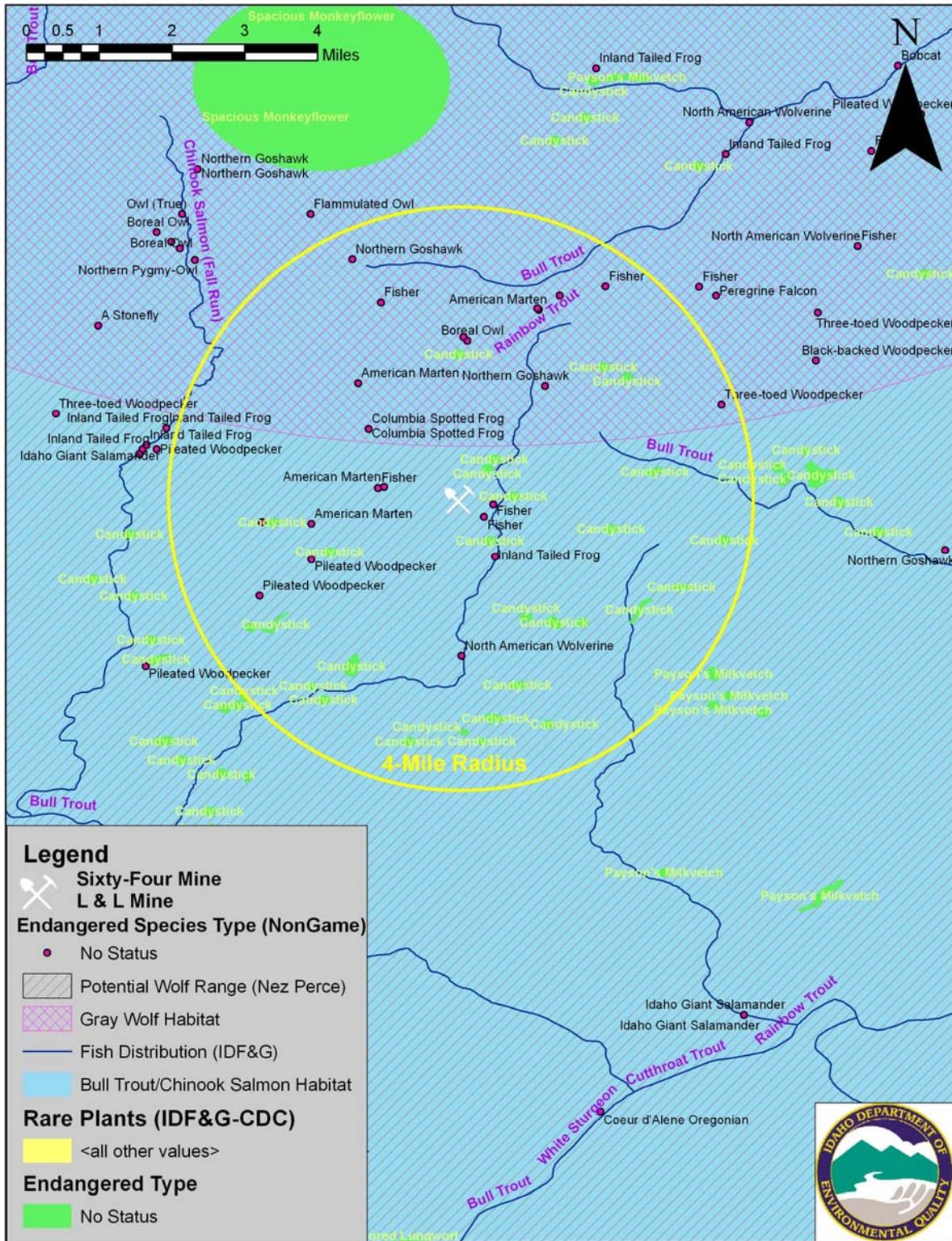
Map 1. Location of L & L Mine and Sixty Four Mine. Sample Location for SPSW1 and SPSD1 Labeled on Map. (Map Source: USGS 24k Quads)



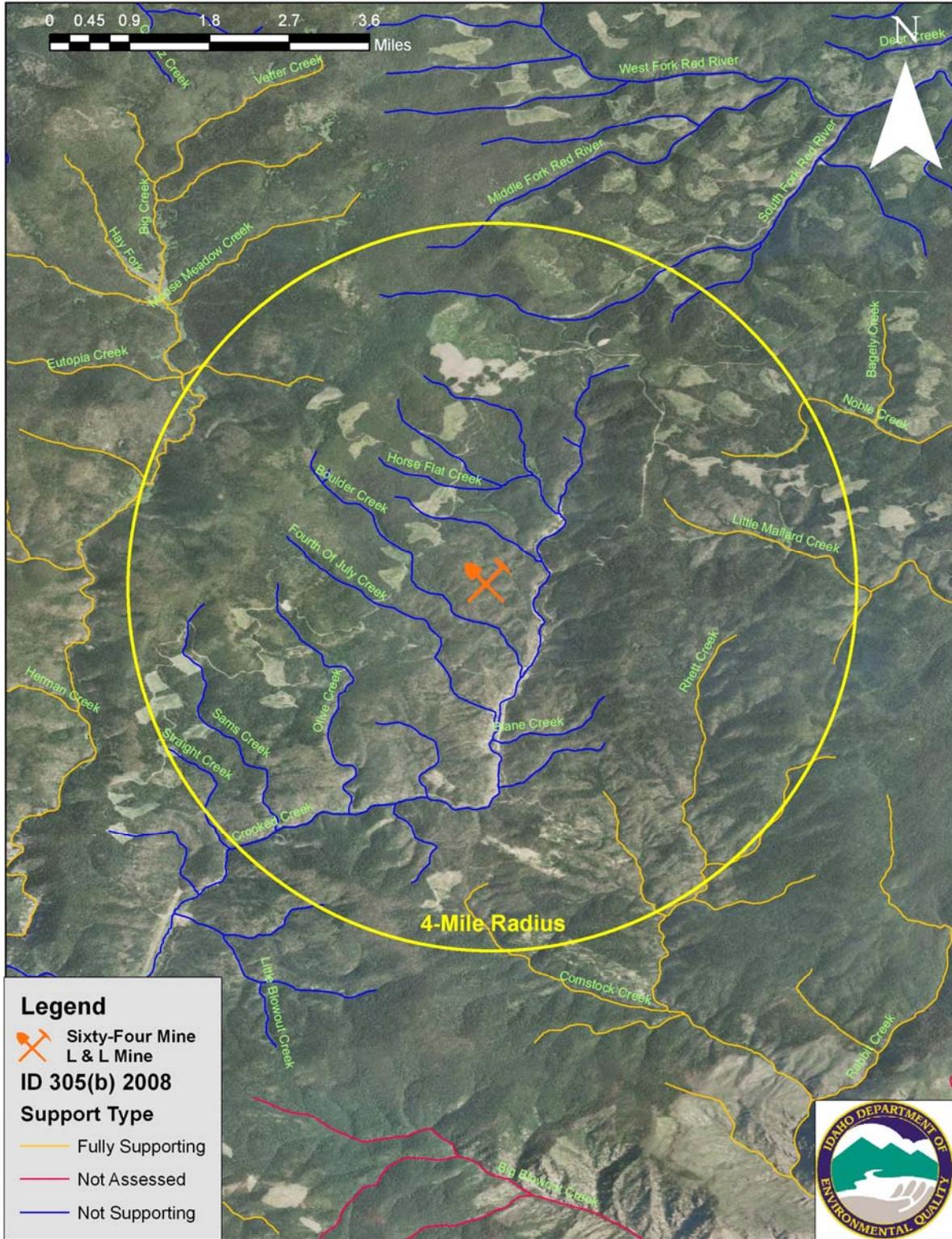
Map 2. Major Lithology of L & L Mine and Sixty Four Mine (Map Sources: SDE Feature Class, USGS 1995 and Idaho DEQ GIS ArcSDE 9.2 Geodatabase)



Map 3. Domestic Well and Public Water System (PWS) Locations. There are two public water systems within the four mile radius; no Time of Travel information is available. Wetlands run along Big Creek, however they are segregated by structural geology. (Map Source: 2009 Natural Color 1-meter National Agricultural Imagery Program (NAIP) Idaho Map)



Map 4. Sensitive Species within Four Mile Radius and Surrounding Area (Map Sources: SDE Feature Dataset, Animal Conservation Database and Idaho DEQ GIS ArcSDE 9.2 Geodatabase)



Map 5. Sensitive Waterways within Four Mile Radius and Surrounding Area (Map Sources: SDE Feature Dataset, Idaho DEQ GIS ArcSDE 9.2 Geodatabase, 305(b) List. 2009 Natural Color 1-meter NAIP Idaho Map)