STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

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C.L. "Butch" Otter, Governor
Curt Fransen, Director

March 28, 2012

Mr. Kevin Tomlinson
Black Swan Development
171 Highway 95 N
Grangeville, ID 83530

RE: Abbreviated Preliminary Assessment of the Mother Lode Mine,
Elk City Mining District, Idaho County, Idaho

Dear Mr. Tomlinson:

The Idaho Department of Environmental Quality (DEQ) has completed a review of historical mining data and geological information for the above referenced mine, located near Elk City, Idaho. On September 21, 2011 DEQ conducted a site visit to the Mother Lode Mine. During the site visit, mining activities such as a waste dump and collapsed adit were observed and mapped in order to provide a comprehensive analysis necessary to complete an Abbreviated Preliminary Assessment Report.

Preliminary Assessments are conducted by DEQ according to the Federal Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA). The reasons to complete a Preliminary Assessment (PA) include:

1) To identify those sites which are not 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

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.

During a DEQ field visit if sources, pathways, and receptors are identified for heavy metal contamination and samples are collected, a PA is generally written. If there is no evidence of receptors being influenced by sources of contamination, as was the case with the Mother Lode Mine, then an Abbreviated Preliminary Assessment (APA) is written.

Attached is the Abbreviated Preliminary Assessment for the Mother Lode Mine. The APA includes limited historical and geological information, photographs, and maps of the property.

This information was used by DEQ to recommend the property status of the Mother Lode Mine be designated as No Remedial Action Planned (NRAP).

DEQ looks forward to addressing any questions you may have regarding our findings. Please contact me (208-983-0808) if you have any comments, questions, or if I may be of any other assistance.

Sincerely,

Daniel Stewart
Watershed Monitoring Coordinator

Attachment

cc: Ken Marcy – EPA
Scott Sanner – BLM
Mother Lode Mine File

ABBREVIATED PRELIMINARY ASSESSMENT

This is an Abbreviated Preliminary Assessment (APA) for the Mother Lode Mine near Elk City, Idaho. This document provides the rationale for the determination of No Remedial Action Planned (NRAP) and that no additional analysis or site investigation is necessary for the Mother Lode Mine. Additional sheets are attached which contain relevant information including historical and geologic information, photographs, maps, and references generated during the site visit or desktop research.

Preparer: Daniel D. Stewart **Date:** 10/25/11
Idaho Department of Environmental Quality
300 W. Main
Grangeville, ID 83530
(208) 983-0808
daniel.stewart@deq.idaho.gov

Site Name: Mother Lode Mine

Previous Names (aka): General Grant

Site Owner: Bennett Lumber Products, Inc.

Address: c/o Mr. Kevin Tomlinson
Black Swan Development
171 Highway 95 N
Grangeville, ID 83530

Site Location: The Mother Lode Mine is approximately 1.15 miles north of County Road 222 (Mother Lode-Red River Road) and approximately 4.7 miles southeast of the junction with State Highway 14 and the old Bennett Lumber Mill site. The mine is on Bennett Lumber property.

Township 29 North, Range 8 East, Section 36

Latitude: 45.80306°N **Longitude:** -115.41056°W

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

The Mother Lode Mine was investigated by the Idaho Department of Environmental Quality (DEQ) on September 21, 2011 for potential releases of heavy metals by airborne, surface water or ground water pathways. Additionally, potential discharges of other deleterious materials, such as petroleum products and ore processing chemicals were investigated. No deleterious materials, petroleum products or ore processing chemicals were evident at the site.

Part 1 - Superfund Eligibility Evaluation

If all answers are "no" go on to Part 2, otherwise proceed to Part 3.	**YES**	**NO**
1. Is the site currently in CERCLIS or an "alias" of another site?		**x**
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		**x**
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)?		**x**
4. Are the hazardous substances that may be released from the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		**x**
5. Is there sufficient documentation to demonstrate that there is no potential for a release that constitutes risk to human or ecological receptors? (*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)?*	**x**	

Please explain all "yes" answer(s):

A site inspection involving direct observations confirmed that contaminants of concern including hazardous materials and petroleum products do not exist in concentrations that present a threat to human health or the environment. No contaminants or hazardous substances remain on the site. Little evidence of mining activity remains.

The Mother Lode Mine adit, which is located approximately 50 feet above the Red River Road, was collapsed and discharging water at approximately 1-2 gallons per minute (gpm). This water flows into a marshy area in the ditch along the road. A culvert is nearby and the discharge may go through the culvert and subsequently into Red River. The adit water had a yellowish hue color.

Surface water sample MLAD1SW1 was analyzed for total recoverable metals. Metals analysis indicates this surface water sample exceeded the DEQ ground water standard for iron by 6.4 times and manganese by 5.5 times. Surface water sample MLAD1SW1 did not exceed DEQ Cold Water Biota Standards (Acute or Chronic) and the values are unremarkable. Table 1 summarizes the laboratory analysis of the surface water sample taken from the adit.

Table 1. Total Recoverable Metals Analysis in Surface Water – Mother Lode Mine Adit
(Concentrations expressed in mg/l unless otherwise stated.)

Description	DEQ Ground Water Standard (T)	DEQ Drinking Water Standard MCL	DEQ Cold Water Biota Standard Acute	DEQ Cold Water Biota Standard Chronic	Surface Water Sample MLAD1SW1
Antimony					<0.020
Arsenic	0.05	0.01	0.36	0.19	<0.025
Barium	2	2			0.0041
Cadmium	0.005	0.005	0.00082 (H)	0.00037 (H)	<0.0020
Chromium (Total)	0.1	0.1			<0.0060
Copper	1.3		0.0046 (H)	0.0035 (H)	<0.010
Iron	0.3*				1.94
Lead	0.015	0.15	0.014 (H)	0.00054 (H)	<0.0075
Manganese	0.05				0.275
Selenium	0.05	0.05	0.018 (T)	0.005 (T)	<0.040
Silver	0.1*		0.0032 (H)		<0.0050
Zinc	5*		0.035 (H)	0.032 (H)	<0.01

*Secondary MCL (T) – Standard in Total (H) – Hardness dependent *25 mg/l
Yellow = Exceeded DEQ Ground Water Standard.

Little evidence remains that shows a waste dump existed. This material presumably sloughed off the hill and is now incorporated as part of the road fill below. No signs of mineralization remain and the dump remnants are country rock. The dump and adit are well vegetated with trees, grass, and brush.

Sediment sample MLAD1SD1 was taken and metals analysis indicates it exceeded the Idaho Default Target Levels (IDTLs) for arsenic by 52.9 times, chromium by 3.56 times, manganese by 8.7 times, and mercury by 51.6 times. Sediment sample MLAD1SD1 did not exceed EPA Region 6 Human Health Screening Levels (HHSLs). Table 2 is a summary of the laboratory analysis results.

Table 2. Mother Lode Mine Sediment Sample Analysis

Metals	IDTLs (mg/kg)	HHSLs (mg/kg)	Sediment Sample MLAD1SD1 (mg/kg)
Antimony	4.77	31	<2
Arsenic	0.391	23	20.7
Barium	896	1,600	105
Cadmium	1.35	39	0.3
Chromium	7.9	210	28.2
Copper	921	2,900	11.7
Iron		55,000	30,800
Lead	49.6		5.69
Manganese	223	3,600	1,960
Selenium	2.03	23	4.6
Silver	0.189	390	<0.5
Zinc	886	390	52.1
Mercury	0.00509	23	0.263

Orange = Exceeded Idaho Initial Default Target Levels (IDTLs).

Sediment sample MLAD1SD1 was also compared to the U.S. Bureau of Land Management (BLM) risk management criteria for soils. Metals analysis results indicate this sample exceeded the BLM Risk Management Benchmark for the robin with arsenic by 5.1 times, copper by 1.6 times, and zinc by 1.2 times. These values are not remarkable. The sample was taken below a heavy vegetation layer and it is unlikely a robin would be exposed to this sediment. Table 3 summarizes the laboratory analysis for sediment sample MLAD1SD1.

Table 3. Wildlife and Livestock Risk Management Criteria for Metals in Soils (mg/kg)
BLM Technical Note 390 Rev. 2004 "Risk Management Criteria for Metals at BLM Mining Sites"

Metals	Elk	Mule Deer	Deer Mine	Cottontail Rabbits	Canada Goose	Mallard	Robin	Cattle	Sheep	Median Values	Sediment Sample MLAD1SD1
Antimony											<2
Arsenic	328	200	230	438	61	116	4	419	275	275	**20.7**
Barium											
Cadmium	3	3	7	6	2	1	0.3	15	12	8	0.3
Chromium											
Copper	131	102	640	358	161	141	7	413	136	136	**11.7**
Iron											
Lead	127	106	142	172	34	59	6	244	125	125	**5.69**
Manganese											
Selenium											
Silver											
Zinc	275	222	419	373	271	196	43	1,082	545	307	**52.1**
Mercury	11	11	2	15	6	4	1	45	8	8	0.263

Bold = Metals concentrations exceeded the BLM Risk Management Criteria.

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.

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

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?		
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?		
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)?		
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?		

Notes:

The Mother Lode Mine is in an isolated area with no residences or cabins near it. The closest potentially occupied site is over five miles downstream and situated well above Red River.

The photographs at the end of this report show the mine area is well vegetated. No hazardous substances are on the mine site. The closest public water system is two miles away in Elk City. The Mother Lode Mine is separated by geology and the American River drainage from Elk City. The collapsed adit has a discharge of approximately 1-2 gpm.

During the site assessment, DEQ used references from several different documents including U.S. Geological Survey (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 or 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.

Suspected/Documented Site Conditions		**APA**	**Full PA**	**PA/SI**	**SI**
1. Releases or potential to release are not documented at the site. **Yes**		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**		Yes			
3. On-site, adjacent, or nearby receptors are not present. **Yes**		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). **Yes**	Option 1: APA	Yes			
5. There is documentation that a sensitive receptor has been exposed to a hazardous substance released from the site. **No**	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. **No**	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**		Yes			
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**		Yes			

Part 3 - DEQ 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:

x	No Remedial Action Planned (NRAP)		Defer to NRC
	Higher Priority SI		Refer to Removal Program
	Lower Priority SI		Site is being addressed as part of another CERCLIS site
	Defer to RCRA Subtitle C		Other:

DEQ Reviewer:

Daniel D. Stewart — Date: 3/28/12

Please Explain the Rationale for Your Decision:

A site inspection involving direct observations confirmed that contaminants of concern including hazardous materials and petroleum products do not exist in concentrations that present a threat to human health or the environment.

The photographs included at the end of this report reveal the adit and waste dump areas are well vegetated and stable. No airborne pathways for sediment or dust exist to any residences or cabins in the immediate area. The surface water sample results did not exceed DEQ Cold Water Biota Standards (Acute or Chronic).

As a result of DEQ's research and observations, it is recommending the Mother Lode Mine site be designated as NRAP.

Attachments:

Historical and Geologic Information
Site Conditions and Photographs
Maps
References

Historical and Geologic Information

Numerous sources were used during desktop research prior to visiting the site. DEQ could not improve or expound upon these reports by writing additional historical or geological text, therefore they were directly referenced and cited.

Mine History: The Idaho Geological Survey (2003) described the Mother Lode Mine as follows:

> *The Mother Lode, one of the older properties in the Elk City area, was purchased by George Brown in 1906 (Shenon and Reed, 1934). In 1912, the mine was one of the main producers in the district, and production was reported from the mine until 1918. In the early 1920s, the older workings included at least two shafts on the veins (60 feet and 70 feet deep), both of which had produced ore. Additional work was being done on the property at that time (Thomson and Ballard, 1924). In the early 1930s, 240 feet of adit was accessible. A third shaft and an old stope about 115 feet long were also noted (Shenon and Reed, 1934), Minor production was reported from the property in the late 1930s.*

Geologic Features: Shenon and Reed (1934) described the geologic features of the Mother Lode Mine as follows:

> *The Mother Lode property, formerly the General Grant, belongs to George Brown and consists of four claims about 2 miles southeast of Elk City on the Elk City-Dixie road. It is one of the old properties of the district and is supposed to have been located by Henry Turner. It was bought by Brown in 1906. About 240 feet of adit was accessible at the time of this survey, but the rest of the workings could not be entered. An old stope about 115 feet long and three old shafts show on the surface. According to Brown, the vein assays from $6 to $20 a ton, and he milled 300 tons at Perry Taylors custom mill in Elk City. The country rock is augen gneiss. The vein strikes about N. 80' E. and dips 80' S. The vein as exposed ranges in thickness from 1 to 4 feet. Locally the walls are intensely silicified for several feet.*

The Idaho Geological Survey (2003) gave the following description of the geologic features of the Mother Mine:

> *The Mother Lode Mine is in the Middle Proterozoic augen gneiss of Red River. The adit is near or within a northeast fault that follows Red Horse Creek. The most prominent quartz vein on the property was 1-4 feet thick, with a strike of N. 80° E. and a dip of 80° S. (Shenon and Reed, 1934). A second vein was also reported about 30 feet to the south, and the zone between the veins was altered and sheared. The principal sulfide minerals were pyrite and small amounts of galena.*

Site Conditions and Photographs

All of the Mother Lode Mine photographs in this section were taken by DEQ on September 21, 2011.

Photos 1 and 2 show the collapsed adit of the Mother Lode Mine. Having been incorporated into the fill under the asphalt road just below the mine site, little or no waste dump material remains. Little to no mineralized material remains with country rock the predominant substrate. Waste material and adit area are well vegetated and stable and covered with grasses, brush, and trees.



Photo 1. Mother Lode Mine collapsed adit.



Photo 2. Close up of Mother Lode Mine collapsed adit.

Maps

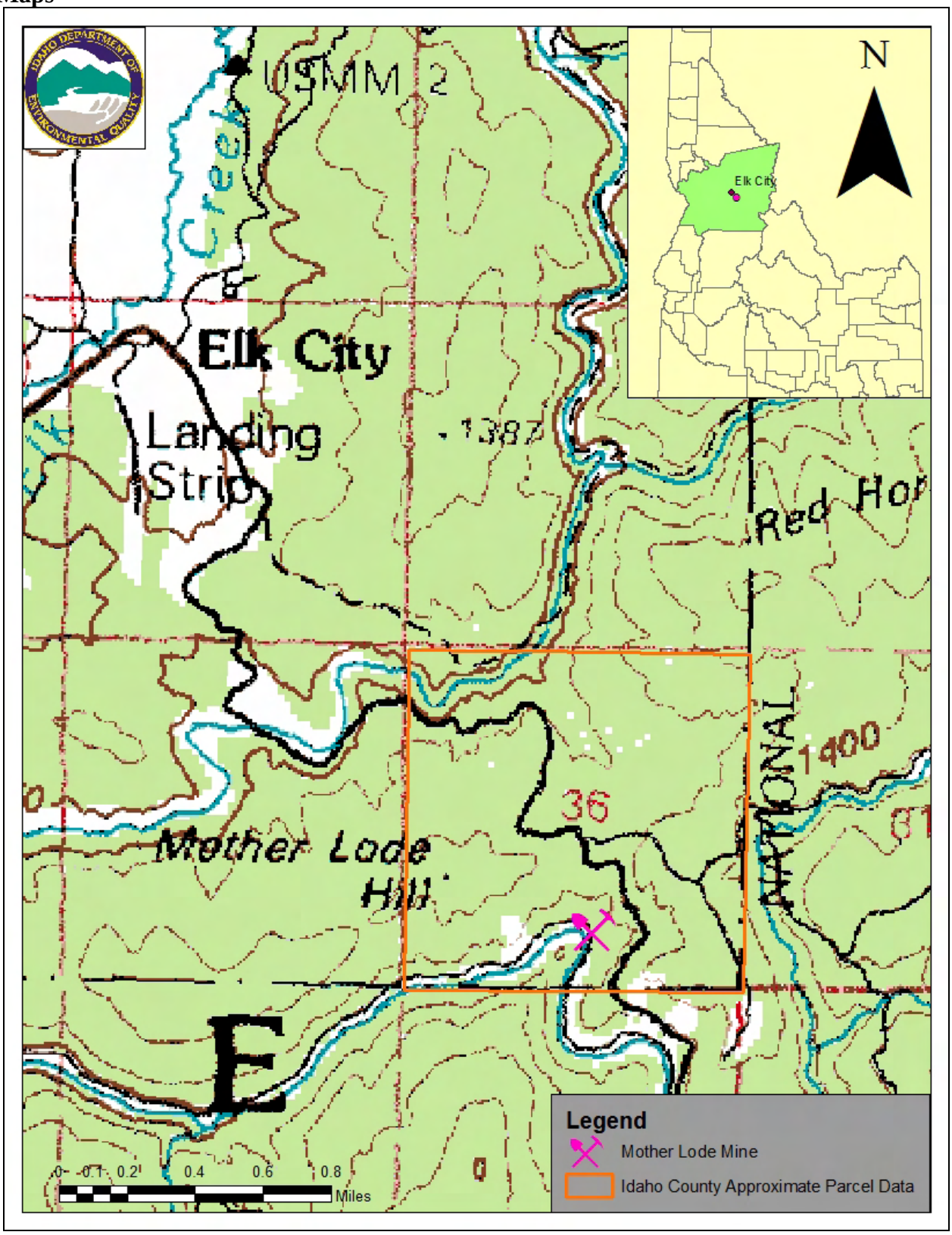


Figure 1. Location of the Mother Lode Mine in Idaho County, Idaho
(Map Source: USGS 100k Quads)

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Figure 2. Major Lithology of the Mother Lode Mine and Surrounding Area
(Map Source: SDE Feature Class, USGS 1995. Idaho GIS ArcSDE 9.2 Geodatabase)

Domestic Wells and Public Water Systems

No wells exist on the Bennett Lumber Products property. There are 62 domestic wells and three public water system wells located within the 4-mile radius of the Mother Lode Mine (Figure 3). Approximately 12 of the domestic wells are located within the structural geology. Elk City Water & Sewer Association public water system (PWS) ID2250017 is separated by structural geology.

The following four paragraphs were taken from DEQ's 2003 Source Water Assessment to provide historical information relative to the Bennett Lumber Products (aka Bennett Forest Industries) facility near Elk City. The facility no longer exists, the mill closed, and all structures, equipment, etc. were removed approximately five years ago.

Two other public water systems within the four-mile radius belong to Bennett Forest Industries (Well #2 – ID2250056 and Well #3 – ID2250056). The Bennett Forest Industries is a non-community, non-transient drinking water system consisting of one active ground water well (Well #2) and an inactive backup well (Well #3). No locational data is provided for the backup well. The systems previously served 50 people through three connections. The active well is located approximately two miles southwest of Elk City, between the South Fork of the Clearwater River and Hwy 14.

The inorganic chemicals antimony and fluoride have been detected at Well #2 at levels at or slightly greater than their Maximum Contaminant Level (MCL). In November 1997, antimony was detected at 6 mg/L, a level equal to the MCL. Fluoride was detected in November 1997 at 4.4 mg/L and again in June 2001 at 4.1 mg/L, levels slightly above the MCL of 4 mg/L. Arsenic was detected at high levels in Well #2. In November 1997 arsenic was detected at 28 mg/L and again in June 2001 at 27 mg/L, levels greater than the recently revised MCL of 10 mg/L. In October 2001, the EPA lowered the arsenic MCL from 50 mg/L to 10 mg/L, giving PWSs until 2006 to meet the new requirement. No volatile organic chemicals or synthetic organic chemicals have ever been detected in the system. Trace concentrations of inorganic chemicals barium, chromium, nitrate, selenium, and sulfate have been detected in tested water, but at concentrations significantly below the MCLs as set by the EPA.

The Mother Lode Mine is located in the source water delineation zone with a time of travel of three years. The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time of travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water in the vicinity of the Bennett Forest Industries well. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including operator input, local area well logs, and hydrogeologic reports.

The conceptual hydrogeologic model for the Bennett Forest Industries source well near Elk City, Idaho is based on interpretation of available well logs. The source well log indicates water is

derived from fractured crystalline rock. Based on the geologic map of the Elk City quadrangle at a scale of 1:250,000 (Mitchell and Bennett, 1979), the well is in metamorphosed intrusive rock. Rock described as “granite” on the source well log is probably gneiss, based upon the geologic map and experience. Reference to all non-basalt rock in the area as “granite” is a frequently-made error among drillers and road-builders in this region.

The Junction Lodge PWS (ID2250030) is located within the 15-mile TDL outside of the 4-mile radius. Although all structures and buildings still remain, the Junction Lodge has not been open or in operation since 2001. The Junction Lodge drinking water system consists of a single well with six-inch casing drilled to a depth of 127 feet through granite. The water is pumped to two 1,000-gallon storage tanks and is used to supply a motel and RV park. The system rated high susceptibility to inorganic contaminants, volatile organic contaminants, synthetic organic contaminants, and microbial contaminants. The high ratings can be attributed, in large part, to the number and nature of potential contaminant sources within the circle of a 1000-foot radius about the well.

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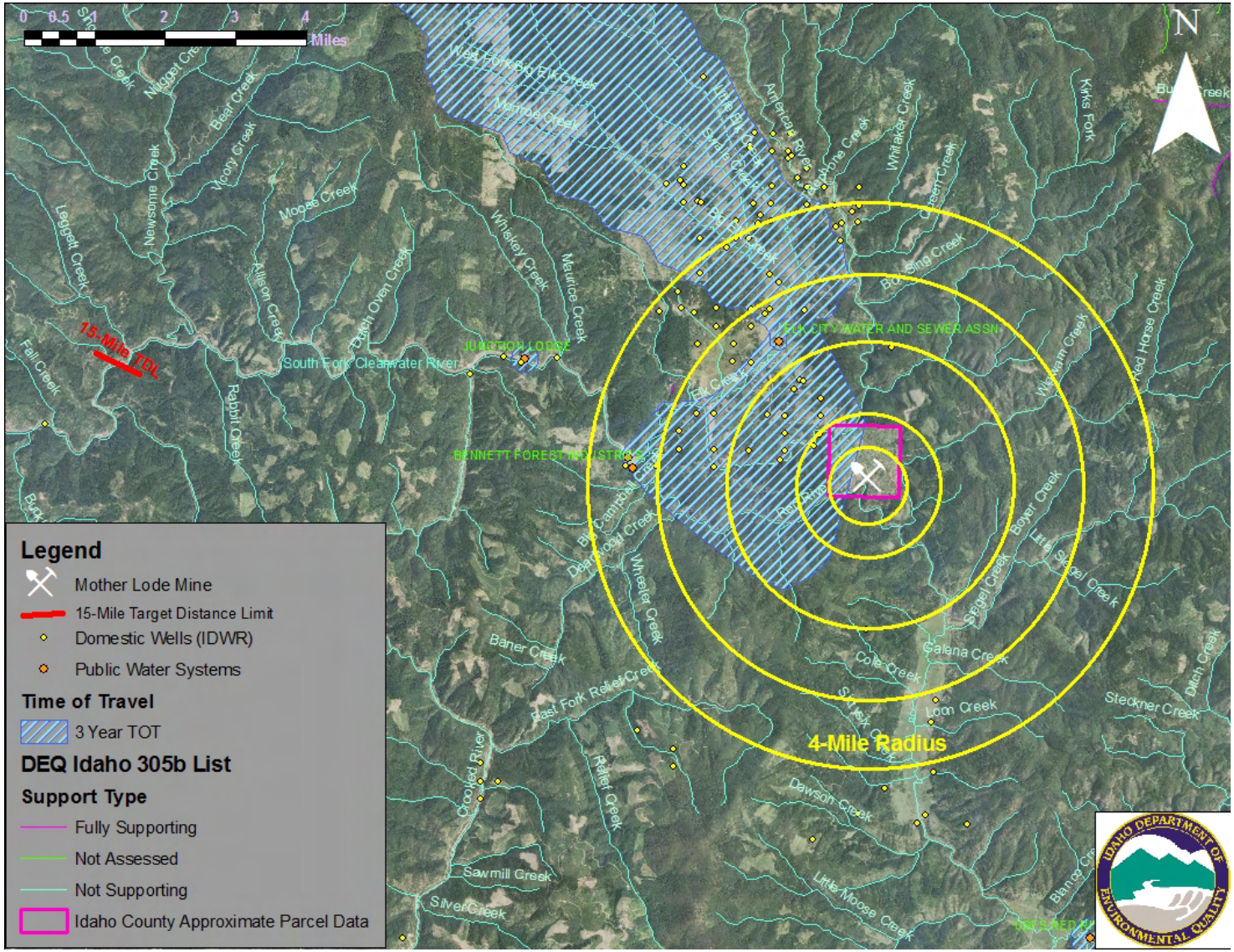


Figure 3. Domestic well locations and Public Water Systems within the 4-mile radius, 15-mile TDL. There are no significant wetlands within a 2-mile radius or in the general area. Sensitive streams located in the vicinity of the Mother Lode Mine are also shown. (Map Source: Idaho GIS ArcSDE 9.3 Geodatabase, National Agricultural Imagery Program (NAIP) 2009, 1-meter)

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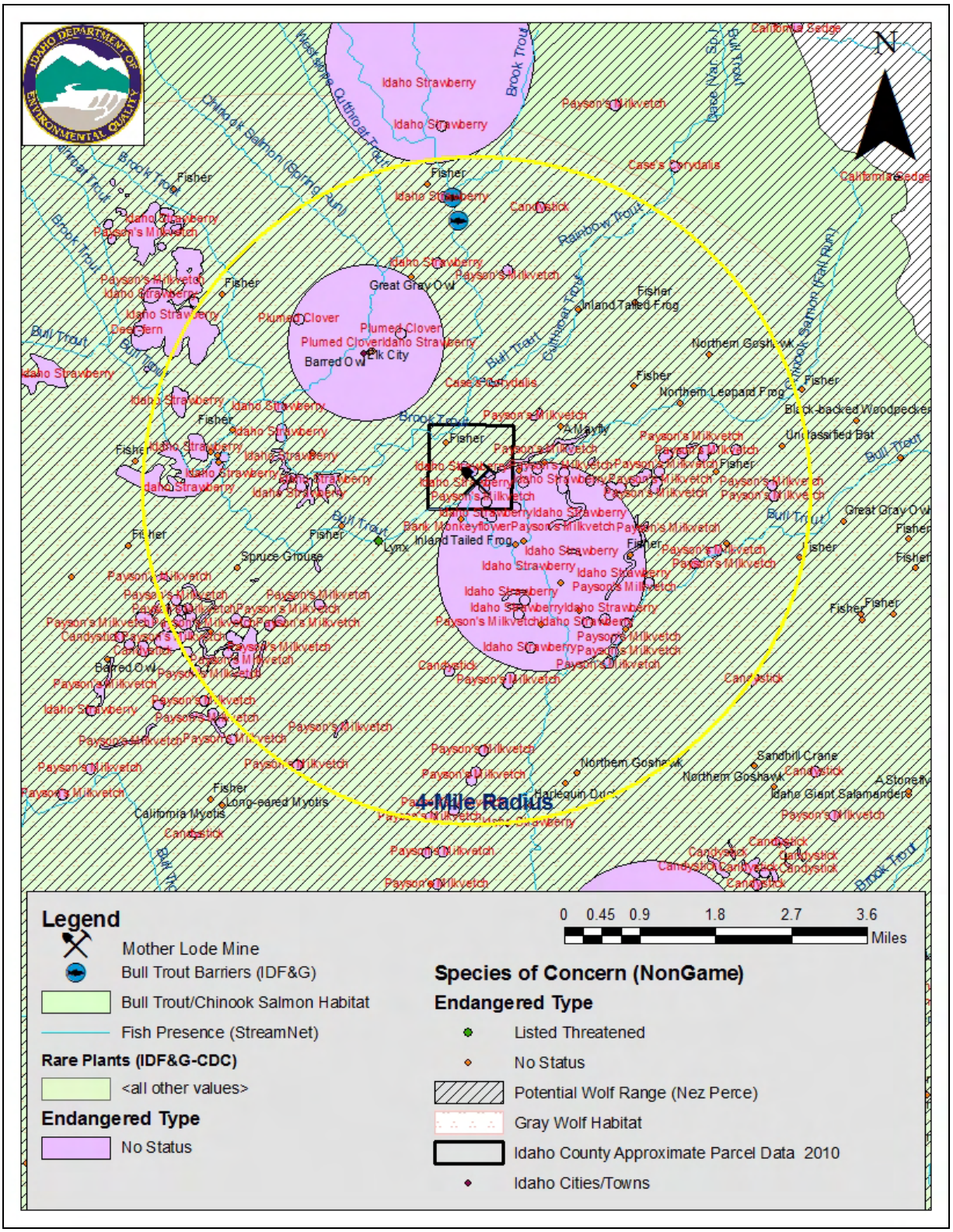


Figure 4. Sensitive Species Within 4-Mile Radius and Surrounding Area of the Mother Lode Mine. Species of Concern: Non-Game Animals and Plants. Fisheries Within 4- Mile Radius and Surrounding Area. (Map Source: SDE Feature Dataset, Animal Conservation Database. Idaho GIS ArcSDE 9.2 Geodatabase)

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References

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IGS (Idaho Geological Survey). Erdman, Ted, Kauffman, John, Bennett, Earl H., Mitchell, Victoria E. 2001. Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1) Nez Perce National Forest. Volume III, Section C: Elk City, Orogrande, Buffalo Hump, and Surrounding Areas, Idaho County, Idaho. Prepared for the U.S. Forest Service Under Participating Agreement No. FS-01-96-14-2800. Staff Report 03-23.

Shenon, P.J., and J.C. Reed. 1934. Geology and Ore Deposits of the Elk City, Orogrande, Buffalo Hump, and Tenmile Districts, Idaho County, Idaho: U.S. Geological Survey Circular 9.