

Chicago (L&M) Mine

Aka Bellevue King

Preliminary Assessment Report

Blaine County
State of Idaho



Department of Environmental Quality

November 2007

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

November 26, 2007

Mr. Gordan and Mrs. Mary K. Smith
807 Main Street
Salmon, Idaho 83467

RE: Site Assessment of the Chicago L&M.

Dear Mr. and Mrs. Smith:

The Idaho Department of Environmental Quality (IDEQ) has completed a review of historical mining data and geological information relating to the above referenced mine. Subsequent to that review, IDEQ conducted a site visit of the Chicago L&M mine and claim. During the site visit, mining facilities were mapped and sampled to complete the analysis necessary to complete a final Preliminary Assessment (PA) report.

PAs are conducted according to the Federal Comprehensive Environmental Response, Compensation and Liabilities Act. The reasons to complete a Preliminary Assessment 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 a release of hazardous substances through the Hazard Ranking System (HRS)

IDEQ 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.

Based on a number of factors discussed in the following report, IDEQ has determined that No Remedial Action is Planned (NRAP) for this property. However, if site conditions change

Letter to Mr. & Mrs. Smith

November 26, 2007

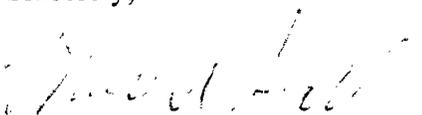
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significantly or residential development is planned for the site, additional site characterization and risk management may be warranted.

Attached is the Preliminary Assessment Report of the property and mine facilities. The report contains a brief mine history, limited geologic information, data results, and maps of the property and surrounding area, and a brief checklist of how IDEQ came to its determination that the property status is NRAP.

IDEQ very much appreciates your cooperation and approval for our access, and looks forward to addressing any questions you may have regarding our findings. Please call me if you have any comments, questions, or I may be of any other assistance.

Sincerely,



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

BAS:tg \chicago mine final pa.doc

attachment

cc: Ken Marcie – U.S. Environmental Protection Agency
Megan Stelma – Blaine County
file

Introduction

This document presents the results of the preliminary assessment (PA) of the Chicago Mine (aka Chicago L&M and Bellevue King). The Idaho Department of Environmental Quality (IDEQ) 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 Mineral Hill Mining District in Blaine County, Idaho.

IDEQ 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, IDEQ 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

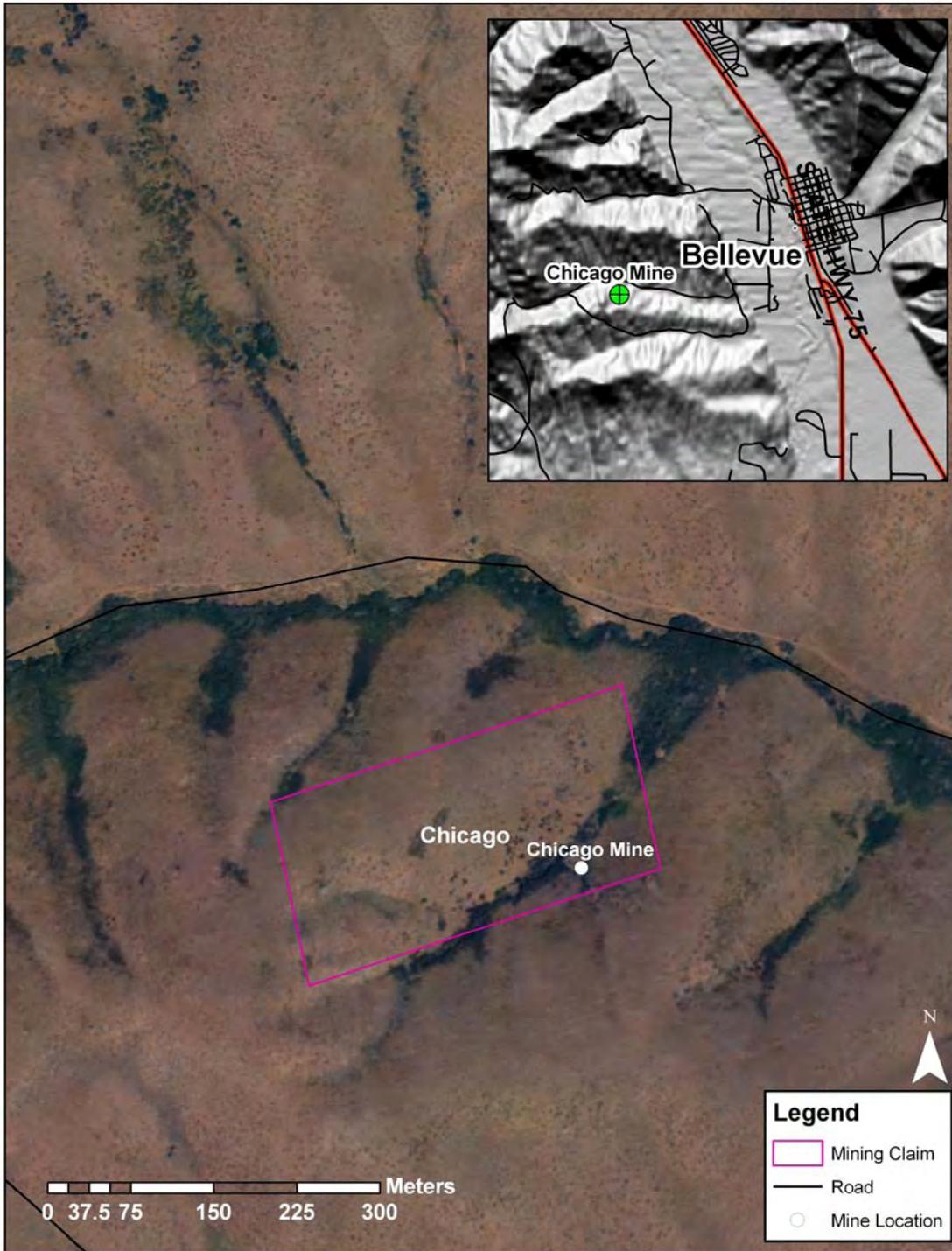
Access to assess the Chicago Mine was provided by Mr. Gordon Smith in 2006.

Ownership

Mr. Gordon and Mrs. Mary K. Smith
807 Main Street
Salmon, Idaho 83467

Location

The Chicago Mine is located in Lees Gulch approximately 2 miles west south west of Bellevue Idaho. It is located in Section 3 Township 1 North, Range 18 East of the Boise Meridian, at Latitude 43 27' 12.49"N, and Longitude 114 17' 55.36"W. The mine is on a gently sloped hillside just above an intermittent stream in Lee's Gulch. Access to the site is by the paved Broadford Road west from Bellevue, across the Big Wood River, then south approximately 1.2 miles to Lee's Gulch Road. From there the Lee's Gulch Road is a dirt road along which one travels approximately 1.7 miles until the workings can be seen on the left (to the south) on the hillside. From there the workings are accessed by foot. There are no unimproved roads or trails that can be used to get closer to the workings.



Climate

Climate information provided in this section is based on a climatological summary for Hailey, Idaho which was obtained from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center. The climatological data was collected at the Hailey Airport

(elevation 5,328 amsl), and is for the period of 1951 through 1980. 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 site is characterized by short cool dry summers and very cold winters. The total annual precipitation measured at the Hailey Airport averages 16.2 inches. The majority of precipitation occurs as snow. Total annual snowfall averages 78.2 inches with most snowfall occurring in December and January. The driest months are July, August and September.

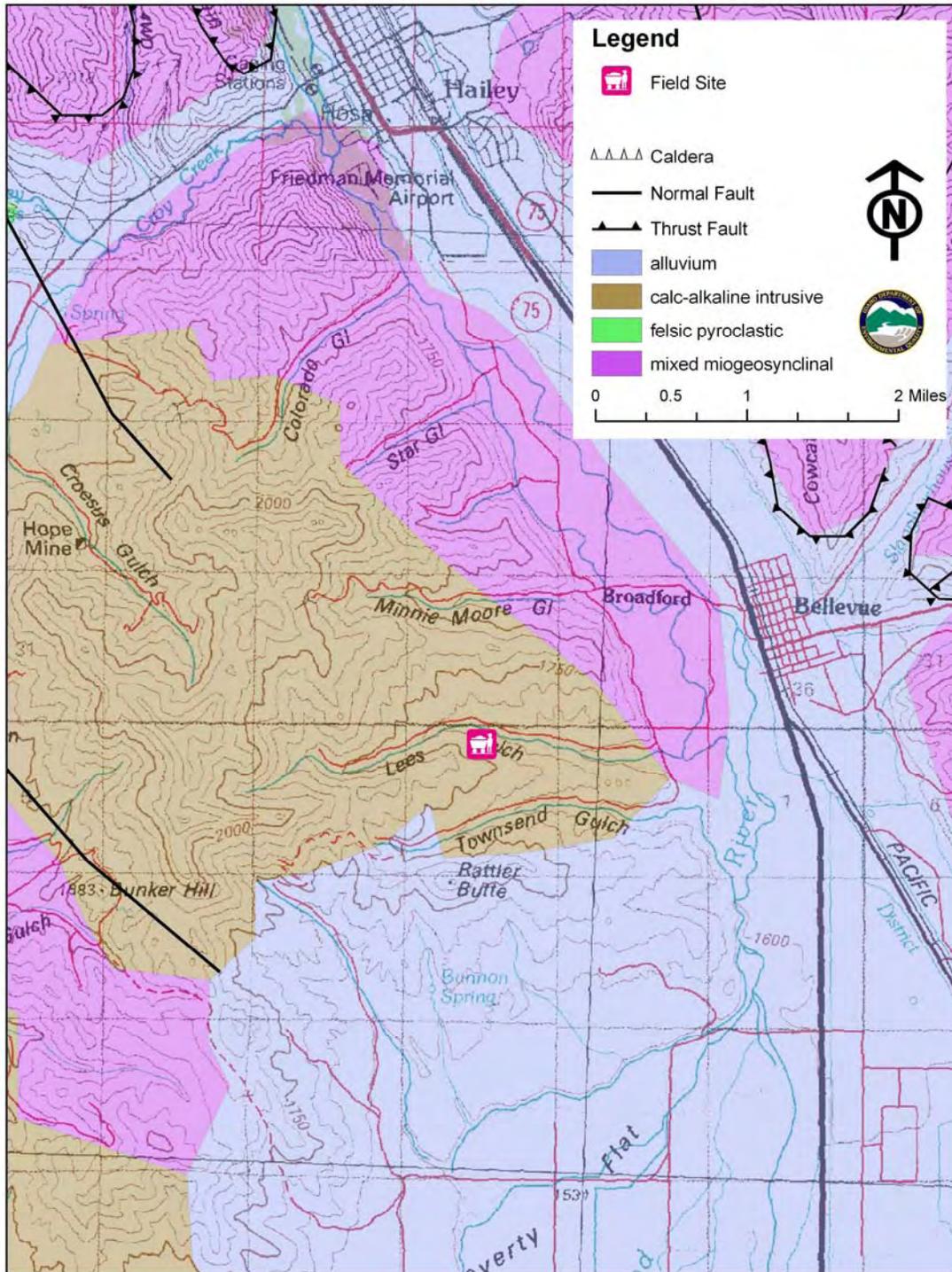
Based on records from 1951 to 1980, the average annual temperature measured at the Hailey Airport is 43 degrees Fahrenheit (F). The lowest temperature recorded for this period was – 28 degrees F in 1962. The highest temperature for this period of record was 100 degrees F in 1953. January is the coldest month with an average temperature of 19.5 degrees F. July is the hottest month with an average temperature of 67 degrees F.

History

Development of the property resulted in a number of tunnels that, until recently, were known to remain partially open. Although there is evidence that massive sulfides were encountered along the veins previously described, no ore production records were found. The workings are currently caved, and the dumps are slowly being covered by native vegetation.

Geology

The Chicago Mine was developed in diorite of a calc-alkaline intrusion. Apparently, the most prominent geologic feature in the workings, before they were caved, was a north east trending fault. The fault and its splays were said to cut off veins and hence were determined to be Miocene, in age. Two veins or lodes were mapped underground. One was exposed and explored by development of a winze. Some of the veins contained irregular stringers of tetrahedrite, arsenopyrite and chalcopyrite.



Waste Sampling and Characterization

The Chicago claim has five small dumps on it, which collectively contain less than 1,000 cubic yards of waste rock. Although there are large fragments of massive sulfides that indicate veins had been

developed, the dumps are dominated by diorite country rock through which the tunnels were driven. Because of the size and characteristics of the waste dumps, no samples of wastes were collected.

Current Site Conditions

There is no indication of any mine drainage from any of the caved adits. Erosional features such as well preserved rills are indicative that the only delivery of contaminants is of sediment from the steep faced dumps into the sage brush on the lower slopes.

There is no indication of near surface or ground water other than the intermittent drain below the workings.

With the exception of a few people and dogs that live about 1.5 miles below the mines, who occasionally walk up Lees Gulch, there is no evidence that the mines are frequented by many people. There are no indications that this area is grazed by livestock, but there is evidence of deer and other wildlife.



When approaching the Chicago from Lee's Gulch, it first appears as though there is one large dump on the property. However, this dump was still relatively small as it contained less than 150 cubic yards of diorite waste rock.



Looking east from the hillside above the ephemeral drain, it becomes apparent that the Chicago consisted of four tunnels and waste dumps, plus another in the trees below and to the right. Collectively, the waste dumps contain less than 1,000 cubic yards of mostly diorite country rock.



Although the waste dumps are very obvious from a distance, up close it was noted that native vegetation has recolonized much of their surface area.



There is, however, a large quantity of iron tools, equipment and rails present, which indicate a substantial effort in developing the mine.



A few small areas on the waste dumps contain large fragments of sulfide waste. Phyto-toxicity normally associated with these types of wastes may be the reason that vegetation has not recolonized certain areas of the dumps.

PATHWAYS AND RECEPTORS

Air

Wind borne fugitive dust has been the driving force behind cleanups in the area particularly at the Triumph Mine and Minnie Moore Tailings Impoundment. However there are several factors which render insignificant the Chicago Mine waste dumps as sources for air borne contaminants. First and foremost; the Chicago Mine waste dumps are dominated by very coarse diorite rock. Particle sizes which are generally greater than one inch are not subject to movement by winds. Secondly, although sparsely vegetated, vegetation is deeply rooted, which apparently stabilizes the surface of the dumps quite well.

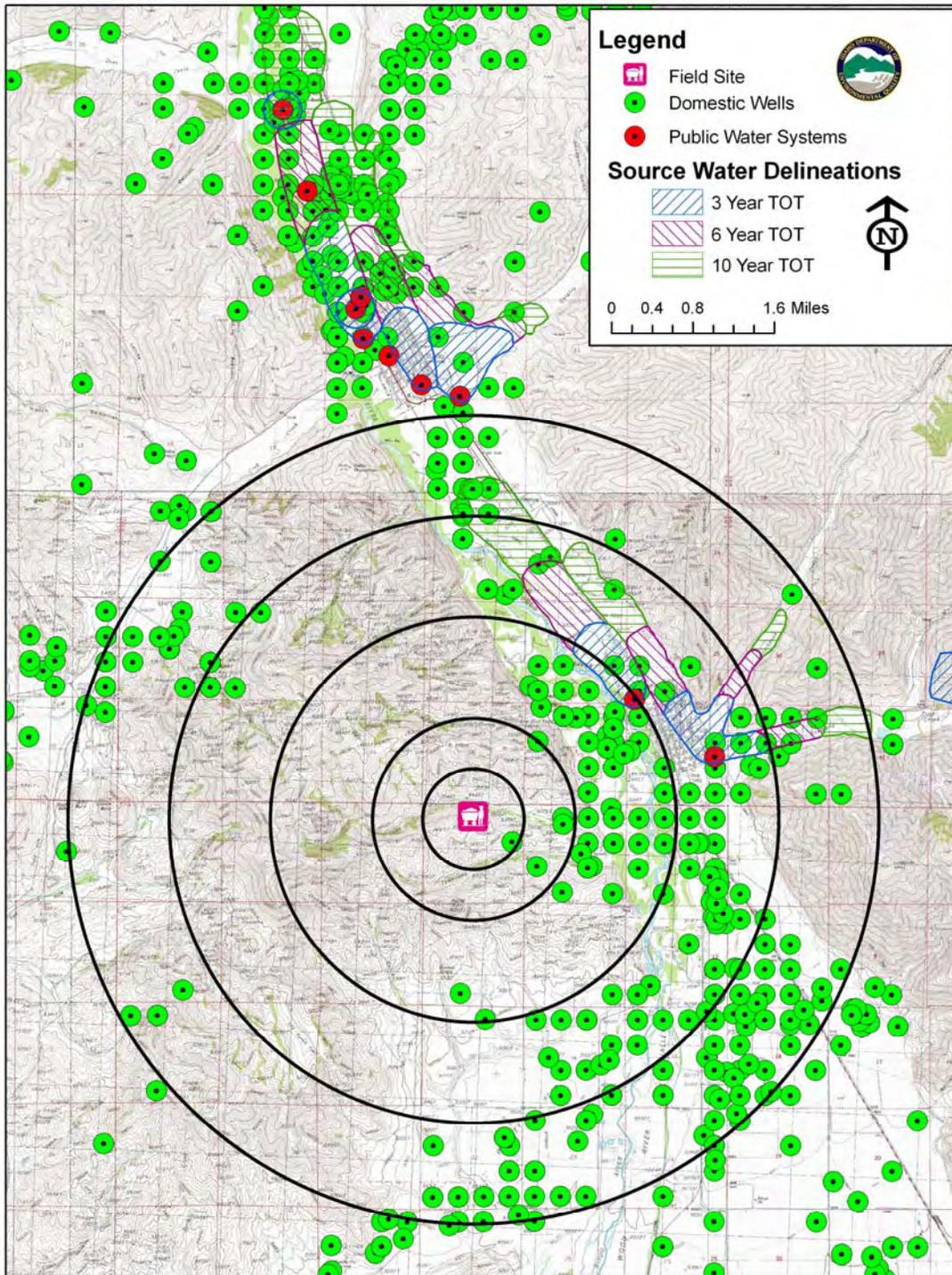
Groundwater

The most significant potential human health risks have been thought to be related to heavy metal delivery to public and private drinking water supplies. Generally speaking sources of contaminant delivery to ground water and then into these systems was thought to likely occur along two separate sources and three closely related pathways. The first pathway is when heavy metals are leached from mine waste piles, enter ephemeral or perennial drains and then enter recharge areas for the shallow ground water system. The second pathway is when heavy metals leach from the local ore bodies are discharged to ephemeral or perennial drains directly from adits. The third pathway is when metals are leached from ore bodies and are transported through the geologic structure (faults and fractures) to the local shallow ground water systems.

For the purposes of completing Preliminary Assessments, Source Water Assessments (completed for local public drinking water supplies) were used to identify potential effects to both public and private (domestic) water supplies.

Source water assessments provide information on the potential contaminant threats to public drinking water sources. In the Big Wood River Valley, Idaho, most of those sources (>95%) are [ground water](#) (IDEQ 2000). Each source water assessment:

- Defines the zone of contribution, which is that portion of the watershed or subsurface area contributing water to the well or surface water intake (**source area delineation**).
- Identifies the significant potential sources of drinking water contamination in those areas (**contaminant source inventory**).
- Determines the likelihood that the water supply will become contaminated (**susceptibility analysis**).



Each assessment is summarized in a [report](#) that describes the above information and provides maps of the location of the public water system, the source area delineation, and the locations of potential contaminant sources. Idaho began developing source water assessments in 1999, and in May 2003 met its obligation under the amendments of the Safe Drinking Water Act by completing delineations for all 2100+ public water systems that were active in Idaho as of

August 1999 (IDEQ 2000). Source water assessments for new public drinking water systems are being developed as those systems come online. Each public water system is provided with two copies of its final assessment report. Four source water assessments for drinking water supplies have been used in this Preliminary Assessment Process to evaluate the potential impacts to both public and private drinking water supplies in and around Sun Valley, Ketchum, Hailey and Bellevue.

The information extrapolated from these reports is based on data that existed at the time of their writing, and the professional judgment of IDEQ staff. Although reasonable efforts were made to present accurate information, no guarantees, including expressed or implied warranties of any kind are made with respect to these reports or this Preliminary Assessment by the State of Idaho or any of its agents who also assume no legal responsibility for accuracy of presentation, comments or other information in these publications or this Preliminary Assessment report. The results should not be used as an absolute measure of risk, and they should not be used to undermine public confidence in public drinking water systems.

The Source Area delineation process establishes the physical area around a well or surface water intake that becomes the focal point of the source water assessment. The process includes mapping the boundaries of the zone of contribution (the area contributing water to the well or to the surface water intake) into time of travel zones (TOT) indicating the number of years necessary for a particle of water to reach a well or surface water intake (IDEQ 2000). The size and shape of the source water assessment area depend on the delineation method used, local hydrogeology, and volume of water pumped from the well or surface water intake.

IDEQ used a refined computer model approved by EPA to determine the 3-year (Zone 1B), 6-year (Zone 2), and 10 year (Zone 3) time of travel associated with the Big Wood River Aquifer and its sources (IDEQ 2000).

This process involves collecting, recording, and mapping existing data and geographical information system (GIS) coverage to determine potential contaminant sources (e.g., gas stations) within the delineated source water assessment area. The potential contaminant source inventory is one of three factors used in the susceptibility analysis to evaluate the overall potential risk to the drinking water supply (IDEQ 2000). The inventory process goal is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water or surface water contamination.

This susceptibility analytical process determines the susceptibility of each public water system well or surface water intake to potential contamination within the delineated source water assessment area. It considers hydrogeologic characteristics, land use characteristics, potentially significant contaminant sources, and the physical integrity of the well or surface water intake. The outcome of the process is a relative ranking into one of three susceptibility categories: high, moderate, and low. The rankings can be used to set priorities for [drinking water protection](#) efforts (IDEQ 2000).

There are numerous public and private drinking water supplies in the Big Wood River Basin. The Sun Valley Water and Sewer District operates and maintains nine wells in two groupings

(IDEQ 2000). The City of Ketchum drinking water system consists of seven wells in two groupings. The City of Hailey's drinking water system consists of six wells and a spring (IDEQ 2000). The City of Bellevue drinking water system consists of two wells and three springs (IDEQ 2000).

Generally speaking, public drinking water systems in the Big Wood River Valley are rated as moderate to high (IDEQ 2000). Multiple factors affect the likelihood of movement of contaminants from the sources to the aquifer, which lead to this moderate to high score. Soils in the area are poorly to moderately drained. The vadose zone is predominantly gravel, which increases the score. On the valley floors the average depth to ground water is twenty to fifty feet.

To date, routine water quality monitoring of public drinking water indicates that there are no significant volumes of heavy metals migrating through the regional or localized ground water systems. More specifically, there are no long-term or recurring water chemistry problems in the Sun Valley Water and Sewer District drinking water sources. One well in the Sun Valley system has had one instance (August 1991) when cadmium exceeded the MCLs (IDEQ 2000). There is no current, long term or recurring water chemistry problems in the City of Ketchum's drinking water sources. Arsenic, nickel, antimony, barium, selenium, chromium, cyanide and nitrate have been detected in Ketchum's wells, but all were well below MCLs (IDEQ 2000). There is no long term or recurring water chemistry problems in the City of Hailey's drinking water sources. Manganese, zinc, chromium, and mercury have been detected in Hailey's wells, but all were well below MCLs (IDEQ 2001). Currently, there are no data that indicate that any metal concentrations have exceeded MCLs in the Bellevue drinking water systems (IDEQ 2000).

There are not any residences, schools or day-care facilities within 200 feet. The nearest residence is located approximately 1.4 miles east on the Lee's Gulch Road.

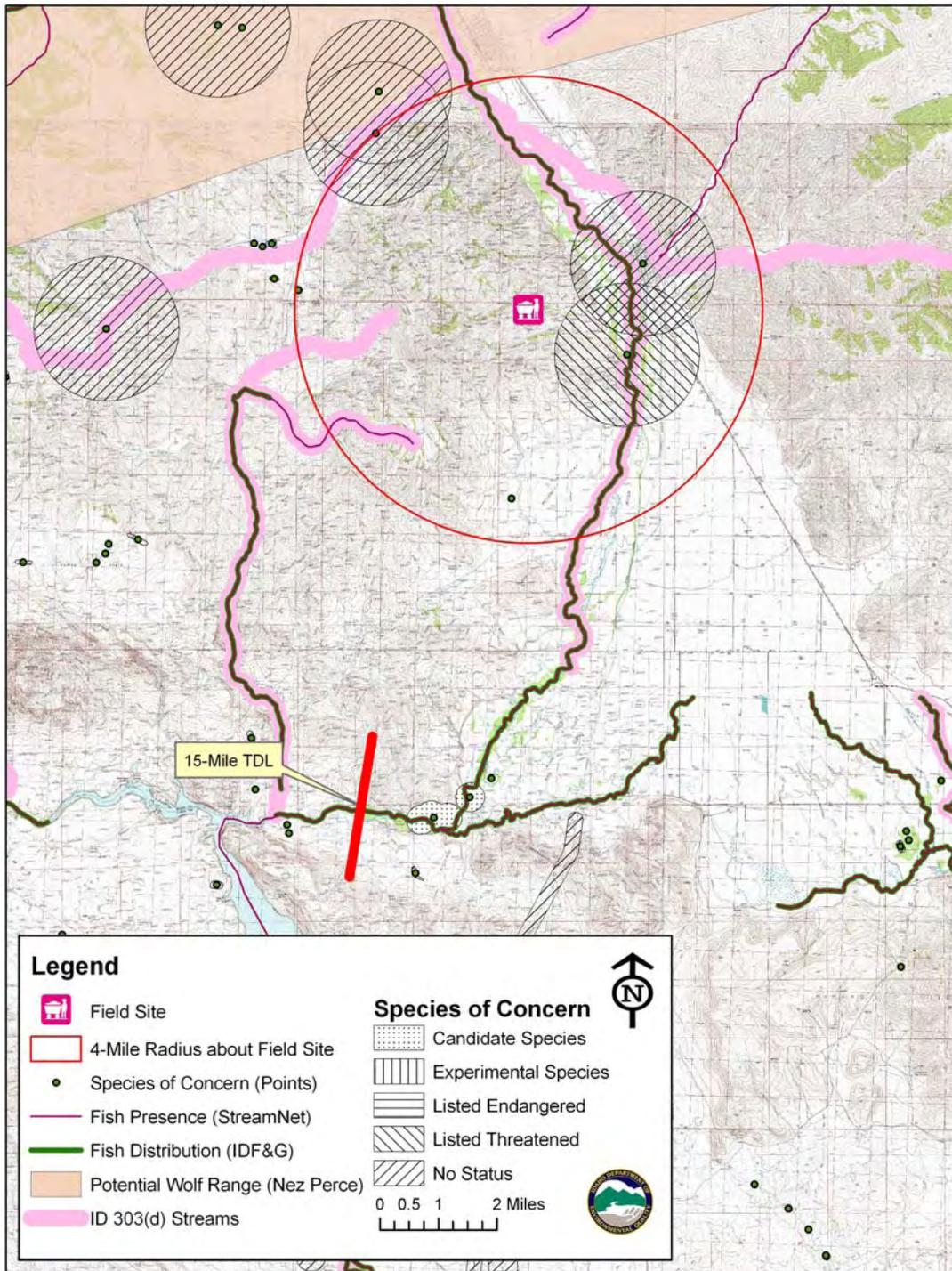
Surface Water

The Chicago Mine is near the mouth of Seamen Gulch which is an ephemeral drain. There is no apparent mine drainage that flows towards or into Seamen Gulch. There are no indications of significant erosion of the Chicago Mine waste dumps, nor are there any indications that any of the sediment generated have entered surface waters. Therefore there is no adverse affects to surface water users evident.

Sensitive Species and Wetlands

The national data base on wetlands inventories indicates that no jurisdictional wetlands exist within a two mile area below the mine site. Although wetland and riparian communities are present adjacent to the Big Wood River, no wetlands were observed at the site. Therefore, there are no indications that adverse affects as a result of development of or drainage from the Chicago Mine.

Although the site is in the potential wolf range, wolves would most not have prolonged exposure to the waste dumps. Therefore, it does not appear as though the site could cause adverse affects in this sensitive species.



Conclusions and Recommendations

Based on existing conditions and uses, historic information, no mine waste or water quality samples were collected during the site visit. Based on IDEQ’s observations and the conclusions of the Source Water Assessments IDEQ has determined that No Remedial Action is Planned (NRAP) for this property.

IDEQ did not note any dangerous openings or other physical hazards which should be managed or closed.

References

- Anderson, A.L., Kiisgaard, T.H., and Fryklund, V.C., Jr., 1950, *Detailed geology of certain areas in the Mineral Hill and Warms Springs mining districts, Blaine County, Idaho*; Idaho Bureau of Mines and Geology, Pamphlet No. 90, 37 p.
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- Idaho Department of Environmental Quality. 2000. City of Hailey (PWS 5070022) Source Water Assessment Final Report.
- Idaho Department of Environmental Quality. 2001. City of Ketchum (PWS 5070028) Source Water Assessment Final Report.
- Idaho Department of Environmental Quality. 2000. City of Bellevue (PWS 5070004) Source Water Assessment Final Report.
- A.L. Anderson, T.H. Kiisgaard, V.C. Fryklund, Jr. 1950. Idaho Bureau of Mines and Geology. Detailed Geology of Certain Areas of the Mineral Hill and Warm Springs Mining District.

APPENDIX A

ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

Checklist Preparer: Bruce A. Schuld - IDEQ (Name/Title) 11/16/07 (Date)
 1410 N. Hilton (Address) 208-373-0554 (Phone)
bruce.schuld@deq.idaho.gov (E-Mail Address)

Site Name: Chicago Mine

Previous Names (if any): Chicago L&M, Bellevue King

Site Location: Approximately 2.5 miles west southwest of Bellevue, Idaho in Lees Gulch.

Latitude: 43 27' 12.49"N

Longitude: 114 17 55.36"W

Describe the release (or potential release) and its probable nature: Sediment and heavy metals were suspected as having been release to the air and both surface an ground waters. Exposures to local residents, recreators, and wildlife was also suspected prior to completing a site visit.

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 potentially released at 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 potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		X
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exists (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). _____

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?		X
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?		X
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 1 mile)?		X
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?		X

Notes: Although the potential exists for a release the source is remotely located, the pathways are incomplete to viable receptors, or there is no indication at the proximity to receptors that and exposure(s) have occurred.

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. You will 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. There are no releases or potential to release.		<u>Yes</u>	No	No	No
2. No uncontained sources with CERCLA-eligible substances are present on site.		<u>Yes</u>	No	No	No
3. There are no on-site, adjacent, or nearby targets.		<u>Yes</u>	No	No	No
4. There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has not been exposed to a hazardous substance released from the site.	Option 1: APA SI	<u>Yes</u>	No	No	Yes
	Option 2: PA/SI	No	No	Yes	NA
5. There is not 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	<u>Yes</u>	No	No	Yes
	Option 2: PA/SI		No	Yes	NA
6. 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 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site.		No	<u>Yes</u>	No	No
7. There is 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.		<u>No</u>	Yes	No	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 “NFRAP” 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 type="checkbox"/>	NFRAP	Refer to Removal Program - further site assessment needed
<input type="checkbox"/>	Higher Priority SI	Refer to Removal Program – NFRAP
<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: _____
<input type="checkbox"/>	Defer to NRC	

Regional EPA Reviewer: Bruce A. Schuld _____
 Print Name/Signature Date

PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION: ___No direct discharges of mine adit drainage to surface waters were identified, and the amount of wastes did not cover a large enough area to represent a significant source of human or ecological receptors. Therefore the source pathway and exposure were incomplete.

NOTES: