



***Abandoned Mine Lands  
Initial Investigation Report  
Shoemaker Mine  
Colville, Washington***

***Prepared for  
Washington State  
Department of Ecology***

***June 25, 2007  
17274-01(SM)***

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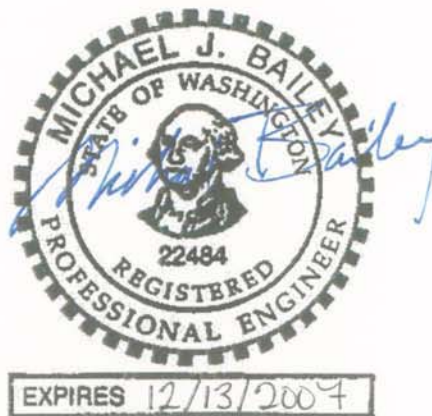
***Prepared for  
Washington State  
Department of Ecology  
Rick Roeder, Project Manager***

***June 25, 2007  
17274-01(SM)***

Prepared by  
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# ABANDONED MINE LANDS INITIAL INVESTIGATION REPORT

## SHOEMAKER MINE

### COLVILLE, WASHINGTON

## 1.0 EXECUTIVE SUMMARY

Information obtained during this assessment is summarized in Table 1.

**Table 1 – Shoemaker Mine Data Summary**

|                                        |                                                                                                                                                                                                                                                                                      |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mine Name:                             | Shoemaker (a.k.a. Schumaker)                                                                                                                                                                                                                                                         |
| Last Known Operation:                  | The Shoemaker Mine is an inactive zinc and silver mine. 81 tons of ore were shipped in 1941 (Hunting 1956). Mining also occurred in 1989, though production is unknown for this period (Derkey & Joseph 1990)                                                                        |
| Location:                              | 9.7 miles north-northeast of Colville, Washington, by road and trail.<br>Stevens County, Washington.<br>Latitude, Longitude: 48.6329°, 117.7856° (North)<br>48.6278°, 117.7860° (South)<br>Quadrangle Map: Gillette Mtn.<br>TRS: Township 36 N, Range 40 E, Section 8, SE 1/4, E 1/2 |
| Features Observed                      | Six waste rock piles (approximately 1,540 cubic yards);<br>One closed, dry adit and three open, dry adits;<br>One dry prospect;<br>Four buildings; and<br>Numerous debris piles and scattered debris.                                                                                |
| Results above Criteria                 | The soil samples exceed MTCA Method A and/or Method B criteria for arsenic, cadmium, and zinc and ecological criteria for arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, and zinc.                                                                               |
| Work by Others                         | No previous site assessment information was identified.                                                                                                                                                                                                                              |
| Potential Receptors / Degree of Hazard | Human health risks possible. Risks to ecological receptors likely. Soil has the potential to fail TCLP cadmium and lead criteria for dangerous waste.                                                                                                                                |

## 2.0 INTRODUCTION

This report summarizes the results of the initial soil and surface water investigation at the Shoemaker Mine site located near Colville, Washington

(Figures 1 and 2). Hart Crowser performed this initial investigation for the Washington State Department of Ecology (Ecology) under Contract No. C06254 according to the Ecology Statement of Work (SOW) and project Sampling and Analysis Plan (SAP) prepared by Hart Crowser (Hart Crowser 2006).

The objectives of this initial investigation are to:

- Determine whether the site has released or has a potential to release hazardous substances to the environment at concentrations above Model Toxics Control Act (MTCA) human health or ecological screening levels, to identify sites that may require additional investigation and sampling;
- Identify and document waste source areas including estimates of waste mass and/or volume; and
- Identify and document the presence of potential waste transport pathways and receptors.

For this study, samples were collected of the soil-like fraction of waste rock, mine tailings, and/or natural soils that were potentially affected by mining. Analytical results were compared to the MTCA criteria for soils. Use of terms such as “soils” or “waste rock,” etc. are for convenience only and do not indicate potential future designation in accordance with Chapter 173-350 WAC, or Chapter 173-303 WAC, or other regulatory criteria.

Subsurface openings observed for this study may include shafts, adits, prospect pits, collapsed stopes, and/or excavations completed for other purposes. The terms used in this report are based on visual interpretation in the field and may not fully characterize historical site use.

Prior to commencing the site visit, Hart Crowser performed file reviews; evaluated aerial photographs, U.S. Forest Service and USGS maps; reviewed the Inventory of Washington Minerals; and reviewed county tax assessor records to:

- Identify the location of mines and associated features/structures;
- Identify property owners, mineral claimants, and mine operators; and
- Obtain contact information to gain permission for site access.

Table 2 presents the project team members and their roles and responsibilities for this investigation. Site visits were accomplished on May 18, 2007.

## **3.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS**

### **3.1 Site Location**

The Shoemaker Mine is located 9.7 miles north-northeast of Colville, Washington, by road and trail.

Directions from Colville, Washington, to the mine are as follows:

- Traveling east out of Colville on State Route 20, turn left (north) onto Aladdin Road/County Road 9435 near the edge of town.
- After 1.9 miles, turn right to stay on Aladdin Road/County Road 9435.
- After 7.0 miles, turn left on Jumpoff Joe Creek Road/Forest Service Road 146.
- Follow Jumpoff Joe Creek Road/Forest Service Road 146 for approximately 0.4 mile and park on the west shoulder of the road. The remainder of the trip is by foot.
- Hike due west approximately 290 feet, crossing Jumpoff Joe Creek and arriving at an old road. A waste rock pile may be visible on the west bank of Jumpoff Joe Creek, and an adit from a mine not associated with Shoemaker Mine is located across the road from the waste rock pile.
- Hike south along the old road for approximately 300 feet to an intersection with another trail. The old road continues south toward private property.
- Follow the trail heading to the southwest, which later curves to the south-southwest for approximately 980 feet. The trail is overgrown with many fallen trees across it and is difficult to hike up.
- Hike down the slope to the east approximately 65 feet to a cleared road below, which is referred to as Upper Road in this report.
- Hike south along Upper Road for 280 feet to the Shoemaker Mine (North).

From the trail and Upper Road intersection, following Upper Road north appears to lead to private property and eventually to the old road along the west bank of Jumpoff Joe Creek. Upper Road is more readily passable, but the private landowners at the base of the slope may need to be contacted for right of entry.

The roads to the specified parking location adjacent to Jumpoff Joe Creek are readily passable in a standard passenger vehicle.

The access description provided herein is based on observations at the time the site was visited for this work. References to roads do not reflect property ownership, and does not imply that public access is available.

The Shoemaker Mine has been split into two sections (North and South), located approximately 1,800 feet apart. Shoemaker Mine (North) is located at latitude 48.6329°, longitude 117.7856° (WGS 1984) in Township 36 N, Range 40 E, Section 8, SE 1/4, NE 1/4 (Willamette Meridian) at elevation 2,600 feet (USGS, 7.5 minute, Gillette Mtn. Quadrangle, 1992). Shoemaker Mine (South) is located at latitude 48.6278°, longitude 117.7860° (WGS 1984) in Township 36 N, Range 40 E, Section 8, SE 1/4, SE 1/4 (Willamette Meridian) at elevation 2,660 feet (USGS, 7.5 minute, Gillette Mtn. Quadrangle, 1992).

### **3.2 Site Description**

The Shoemaker Mine is an inactive zinc and silver mine and was actively mined in 1926, 1941, and 1989. The Shoemaker Mine is located on the east-facing hillside of an unnamed feature west of Little Roundtop and the confluence of Jumpoff Joe Creek and North Fork Mill Creek. The natural terrain slopes downward at approximately 35 to 44 degrees to the east. The two areas of Shoemaker Mine (North and South) cover approximately 37 acres in area and have a vertical relief of approximately 340 feet. The Shoemaker Mine includes six waste rock piles, three open adits, one partially closed adit, one prospect, three buildings, and seven debris piles (Figures 3 and 4).

The Shoemaker Mine is located within the Colville National Forest. However, some waste rock and debris pushed down the slope to the east are located on private property. Since records showed the Shoemaker Mine was located within the Colville National Forest, right of entry was not obtained from the landowners at the base of the slope. Thus, a portion of Shoemaker Mine located on private property was characterized based on our observations from the National Forest boundary.

#### **Shoemaker Mine (North)**

A large waste rock pile, WR-1, is located below Upper Road and east of an adit, Adit 1 (Photograph 1). WR-1 is approximately 540 cubic yards in volume and is composed of moist to dry, light gray to brown, silty, sandy Gravel to gravelly, very silty Sand with occasional cobbles. WR-1 has timber and metal debris scattered over it, including 4- x 6-inch timbers and pieces of plywood with metal

bolted to their surface. Metal and plywood are also located below the waste rock. WR-1 also has a timber structure at the base of the slope, which appears to have been a loading structure. WR-1 may be the location of a rock run used to transport ore and/or waste rock downslope to the possible loading structure below. Approximately one-third of WR-1 is located on private property to the east. National Forest boundary markers were observed on trees adjacent to WR-1. No evidence of seepage from WR-1 was observed.

A second waste rock pile, WR-2, is located west-southwest of Adit 1 and is adjacent to a second adit, Adit 2 (Photograph 2). WR-2 is approximately 46 cubic yards in volume and is composed of dry to moist, light brown-gray, very silty, gravelly SAND with occasional cobbles. Footprints observed on WR-2 indicate recent human activity at the site. No evidence of seepage from WR-2 was observed.

A third waste rock pile, WR-3, is located south of Adit 1 and adjacent to a prospect, Prospect 1. WR-3 is approximately 3 cubic yards in volume and is composed of dry, tan, silty Sand (overburden soil) with cobbles of waste rock. No evidence of seepage from WR-3 was observed.

Adit 1 is located approximately 25 feet west of Upper Road (Photograph 3). Adit 1 was approximately 10 feet wide by 8 feet tall and is blocked and partially closed. Timber and scrap metal covering an area of approximately 25 square feet and 5 feet tall were observed between Upper Road and Adit 1. The timbers were 4 to 12 inches in diameter and appeared similar to timber used for telephone poles. The metal debris was only slightly rusted. Rodent scat was observed inside Adit 1. Adit 1 was dry with no evidence of drainage away from it.

Adit 2 is located west-southwest of Adit 1 and is approximately 35 feet above Upper Road (Photograph 4). Adit 2 is approximately 4 feet wide by 5 feet tall and is visibly 20 feet long. A 2-foot square piece of corrugated sheet metal was observed adjacent to Adit 2. No evidence of animal activity in Adit 2 or drainage from Adit 2 was observed.

Prospect 1 is located south of Adit 2 and is an approximately 8-foot-wide by 8-foot-tall by 8-foot-long slope cut. Some timbers and a right-angle, 3-inch to 1-inch hose fitting were observed adjacent to Prospect 1. Prospect 1 is dry with no evidence of drainage away from it.

A slope washout was observed between Adit 2 and Upper Road, north of WR-2. This slope failure feature may be the location of a former rock run possibly extending from Adit 2 to the lower possible rock run (Photograph 2).

Debris piles, DB-1 and DB-2, are located near Upper Road on either side of WR-1. DB-1 and DB-2 are approximately 10 feet by 20 feet by 1 foot and 10 feet by 5 feet by 1 foot piles of debris, respectively. DB-1 and DB-2 contain 4-x 6-inch and 2-x 6-inch timbers, and slightly rusted pieces of flat and corrugated sheet metal.

A rusted steel tank (possible boiler or process vessel) approximately 80 gallons in volume is located on the southern edge of WR-1 on the private property east of the mine (Photograph 1).

### **Shoemaker Mine (South)**

Shoemaker Mine (South) is approximately 1,800 feet south of Shoemaker Mine (North).

Waste rock, WR-4, associated with an adit, Adit 3, is present below Upper Road extending downslope to Lower Road 1 and below Lower Road 1 (see Figure 4 and Photograph 5). WR-4 is approximately 210 cubic yards in volume and is composed of moist, gray to light brown, slightly silty to silty, sandy Gravel with occasional cobbles. WR-4 is covered in large amounts of debris, DB-3. WR-4 is too steep to safely access and characterize the lower extent of the pile. WR-4 may be in the location of a remnant loading structure. No evidence of seepage from WR-4 was observed.

South of WR-4 and below Lower Road 1 is another waste rock pile, WR-5. WR-5 is approximately 120 cubic yards in volume and is composed of the same material as WR-4. No evidence of seepage from WR-5 was observed.

Another waste rock pile, WR-6, is located east of WR-4, below Lower Road 2, and adjacent to an adit, Adit 4 (Photograph 6). WR-6 slopes approximately 44° downward toward the east and is only marginally stable. WR-6 was not safe to hike down and was completely characterized from Lower Road 2. WR-6 is approximately 620 cubic yards in volume and is composed of moist, gray, very silty, gravelly Sand. No evidence of seepage from WR-6 was observed.

Adit 3 is located on the west side of Upper Road. Adit 3 is open and approximately 6 feet tall by 6 feet wide and is visibly, approximately 30 feet long (Photograph 7). The timber entryway structure is still intact. Metal cage doors are located at the mouth of Adit 3 and were open. A wood feature, possibly a door, was observed approximately 30 feet into Adit 3. Adit 3 was dry with no evidence of drainage away from it. Rodent scat was observed in the entryway structure.

Adit 4 is located east of and below Adit 3 and on the west side of Lower Road 2 (Photograph 8). Adit 4 is partially blocked but open and is approximately 6 feet tall by 6 feet wide and is visibly, approximately 25 feet long. The timber entryway structure is still intact. Two signs were located on the face of the entryway structure: (1) a sign in/out board with a list of names and a heading reading "General Mine, Truices Corp., Level 3" and (2) a sign reading "Level 3 Personnel Only." Half of a wood door was observed approximately 25 feet into Adit 4. Adit 4 was dry with no evidence of drainage away from it. No evidence of animal activity was observed in Adit 4.

Three buildings were observed at Shoemaker Mine (South). Building 1 is located at the southern end of Upper Road. Building 1 is still standing and is approximately 8 feet wide by 10 feet long by 8 feet wide. Building 1 may have been a tool shed/small workshop or a small sleeping quarters. Just north of Building 1 is a debris pile, DB-5, that is likely the remnants of a collapsed building. DB-5 is pile of timbers approximately 10 feet square by 1 foot tall. A possible outhouse structure, Building 2, is located southeast of the southern end of Lower Road 2. Building 2 is leaning against a tree but still standing, though it appears on the verge of collapse. Building 2 could not be safely accessed but is estimated to be 6 feet square by 8 feet tall. Building 3 is a collapsed, charred structure south of Adit 4 on Lower Road 2. The remains of Building 3 are approximately 8 feet wide by 12 feet long by 2 feet tall. All that is left of Building 3 is charred timbers and some green roof shingles.

Various scattered debris and piles of debris were observed at Shoemaker Mine (South). DB-3 is approximately 100 feet long by 20 feet wide with an extra 30-foot by 30-foot lobe to the northwest and is approximately 1 to 2 feet thick (Photograph 5). DB-3 contains timbers; rusted rails; slightly rusted, corrugated sheet metal; and rusted sheet metal and plywood (similar to the WR-1, rockrun). A rusted, 5-gallon bucket with no lid was observed at the northeast end of DB-3 but was inaccessible to determine its contents. DB-4 is a 30-foot-long by 10-foot-wide by 1-foot-thick pile of timbers between Upper Road and Lower Road 2 and south of DB-3. A 4-foot by 5-foot wooden door, Door 1, on Lower Road 1 is southeast of DB-4. A ladder; 1-gallon, rusted, empty can of Shell Zone brand antifreeze; and an aluminum Pepsi can (circa 1980s-1990s) were observed adjacent to Door 1. A 3-inch-diameter, rusted metal pipe, Pipe 1, extends across Lower Road 1 northeast of DB-4. A debris pile, DB-6, located just off Upper Road south of Adit 3 is about 6 feet wide by 8 feet long by 2 feet tall and contains timbers and rusted, corrugated sheet metal. An 8-foot-wide by 10-foot-long by 1-foot-thick pile of timber debris, DB-7, was observed at the south end of Lower Road 2. A degraded, yellow plastic glove and a 2-liter plastic bottle were observed near Adit 4.

## Shoemaker Mine (North and South)

The Shoemaker Mine is located west of Jumpoff Joe Creek and North Fork Mill Creek. The steep slope below the Shoemaker Mine terminates at the west edge of the estimated floodplains of Jumpoff Joe Creek and North Fork Mill Creek. North Fork Mill Creek flows south to its confluence with Mill Creek approximately 1.1 miles south of Shoemaker Mine, by creek.

Evidence of animal and human activity was observed at the Shoemaker Mine. Evidence of animal activity includes animal scat observed throughout the site and a chipmunk observed in Adit 1. Evidence of human activity includes footprints on WR-2.

Surrounding vegetation is evergreen and some deciduous trees, grasses, and shrubs. No vegetation appears distressed.

The approximate direction of surface water runoff varies from east-southeast to east-northeast and is generally east toward Jumpoff Joe Creek and North Fork Mill Creek.

A few residences were observed at the base of the steep slope on which the Shoemaker Mine located. The nearest of these residences are located approximately 500 feet northeast of WR-1 and 400 feet east-southeast of WR-6.

### 3.3 Site Ownership and Operations History

Information on site ownership and operations is based on readily available public information and may not reflect all details of ownership and operations. An ownership timeline is shown in Table 3.

**Table 3 – Ownership Timeline**

| Date          | Ownership                                                                                                        |                                      |
|---------------|------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Current Owner | Colville National Forest                                                                                         | Stevens County Tax Assessor's Office |
| 1989          | 1989 Cordilleran Development was mining for part of the year in Sec. 8, 36N R40E, identified as "Shoemaker mine" | Derkey & Joseph (1990)               |
| 1944 - ?      | Daroy Metals, Inc. Operating on six unpatented claims.                                                           | Hunting (1956)                       |
| 1941          | 81 tons shipped to Wallace, Idaho                                                                                |                                      |
| 1926          | Producing. No ownership listed.                                                                                  |                                      |

## **4.0 SITE INVESTIGATION ACTIVITIES**

An initial site investigation was conducted on May 18, 2007. Photographs were taken and GPS data points and waste rock samples were collected. Mine features, photograph locations and directions, GPS waypoints, sample locations, and the likely direction of surface water flows are shown on Figures 3 and 4.

### ***4.1 Soil and Waste Pile Sampling***

Six waste rock sample were collected: two from WR-1, Shoemaker WR1-S1 and Shoemaker WR1-S2; one from WR-2, Shoemaker WR2-S1; two from WR-4, Shoemaker WR4-S1 and Shoemaker WR4-S1; and one from WR-6, Shoemaker WR6-S1. Sample descriptions are provided in Table 4.

### ***4.2 Surface Water and Seep Sampling***

No mine-related surface water or seeps from waste rock were observed at the time of the site visit; therefore, no water samples were collected.

### ***4.3 Sediment Sampling***

No drainage paths from mine features were observed during the site visit; therefore, no sediment samples were collected.

## **5.0 ANALYTICAL RESULTS AND ENVIRONMENTAL HAZARD ASSESSMENT**

Soil quality data were compared to regulatory criteria for screening purposes as discussed below. Further analysis, including risk-based analyses may be appropriate in additional future site assessments.

### ***5.1 Soil***

Soil and waste rock sample analytical results are compared with applicable MTCA Method A cleanup levels, MTCA Method B cleanup levels for soil ingestion, soil ingestion and dermal contact combined, and with criteria for ecological protection of plants, soil biota, and wildlife. Arsenic concentrations exceed MTCA Method B human health criteria in all samples; sample Shoemaker WR2-S1 also exceeds the MTCA Method A criterion for arsenic. Samples Shoemaker WR1-S2, Shoemaker WR2-S1, Shoemaker WR4-S2, and Shoemaker WR6-S1 also exceed the ecological criterion for arsenic. The

samples, except Shoemaker WR4-S1, exceed the MTCA Method A and ecological criteria for cadmium. MTCA Method A criteria for cadmium is based on protection of groundwater. Sample Shoemaker WR2-S1 also exceeds the MTCA Method B human health criteria for cadmium. Sample Shoemaker WR6-S1 exceeds the ecological criterion for copper. Samples Shoemaker WR1-S2, Shoemaker WR2-S1, Shoemaker WR1-S1, Shoemaker WR4-S2, and Shoemaker WR6-S1 exceed the ecological criteria for lead and mercury. Samples Shoemaker WR1-S1 and Shoemaker WR6-S1 exceed the ecological criterion for nickel. Samples Shoemaker WR1-S1, Shoemaker WR1-S2, Shoemaker WR4-S2, and Shoemaker WR6-S1 exceed the ecological criterion for selenium. Samples Shoemaker WR1-S2, Shoemaker WR2-S1, and Shoemaker WR6-S1 exceed the ecological criterion for silver. All samples exceed the ecological criterion for zinc; samples Shoemaker WR1-S2 and Shoemaker WR2-S1 also exceed MTCA Method B human health criteria.

While toxicity characteristic leaching procedure (TCLP) tests were not performed, the cadmium concentrations in samples Shoemaker WR1-S2, Shoemaker WR2-S1, and Shoemaker WR6-S1 and lead concentrations in samples Shoemaker WR2-S1, Shoemaker WR4-S2, and Shoemaker WR6-S1 are sufficiently high to potentially fail TCLP criteria for dangerous waste.

## **5.2 Air**

No airborne dust was observed during the site visit. All waste rock piles are semi-exposed but relatively sheltered from the wind by the surrounding vegetation. WR-4 and WR-6 have the largest exposed areas and potential to generate dust. The surrounding trees and shelter from westerly winds by the hillside would likely limit generation and travel of dust; however, dust generation is possible and would only need to travel a short distance to reach possible receptors. The nearest human residence is approximately 400 feet away. Others that could be affected are recreational users at the site.

## **5.3 Methodology for Threatened and Endangered Species Information**

We contacted the Washington State Department of Natural Resources (DNR), the Washington State Department of Fish and Wildlife (WDFW), the U.S. Fish and Wildlife Service (USFWS), and the Colville National Forest – USDA Forest Service to obtain information on the presence of state and federal threatened or endangered terrestrial and aquatic species. We determined that the WDFW maintained the most accurate and up-to-date information on species distribution in its Priority Habitats and Species (PHS) Database. We requested maps and narratives identifying documented species presence at the Shoemaker Mine. In addition, we contacted DNR and requested information on rare plants and high

quality native wetland and terrestrial ecosystems within the vicinity of the Shoemaker Mine.

Our search ranges included a 4-mile radius for terrestrial species and a 15-mile radius for aquatic species.

We reviewed approximately 40 PHS maps and accompanying narratives to determine whether any threatened or endangered species were documented within our search ranges. We drew 4- and 15-mile radii around the Shoemaker Mine on a Colville National Forest Map. We then examined the PHS maps in relation to the search ranges for our project areas. All state and federal threatened and endangered species and habitats that occurred within our search ranges were recorded. Species and habitats that occurred on the edge of our search range were considered within the range and recorded.

A summary of the threatened and endangered species within our search ranges is provided in Table 6.

## **6.0 SUMMARY AND CONCLUSIONS**

The Shoemaker Mine contains six waste rock piles with an approximate volume of 1,540 cubic yards. Waste rock samples contain metals at concentrations above MTCA Method A, MTCA Method B, or ecological screening criteria. The main contaminants of concern are arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, and zinc. Cadmium and lead concentrations have the potential to fail TCLP criteria for dangerous waste. Additional sampling and TCLP analysis are recommended to determine whether the waste rock would be classified as dangerous waste.

Human health risks may include direct contact by landowners with waste rock on their property and potential recreational users of the site. MTCA Method A and B screening levels may overestimate risk to recreational users since their exposure duration is less than the duration for a residential scenario.

A site-specific terrestrial ecological evaluation (TEE) would be required to evaluate ecological risks.

Potential exposure pathways are shown on Figure 5.

## 7.0 USE OF THIS REPORT

Work for this project was performed, and this report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed, in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of the Washington State Department of Ecology for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

The information in this report is intended to be used to determine whether the site has released or has a potential to release hazardous substances to the environment at concentrations above Model Toxics Control Act (MTCA) human health or ecological screening levels.

## 8.0 REFERENCES

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<http://www.co.stevens.wa.us/assessor/assessor.htm>

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**Table 2 - Project Team Roles and Responsibilities**

| <b>Project Role</b>                              | <b>Personnel Assignment</b>                                   | <b>Roles/Responsibilities</b>                                                                                                                                                                                                     |
|--------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ecology Project Manager                          | Rick Roeder<br>Ecology<br>(509) 454-7837                      | Client Project Manager                                                                                                                                                                                                            |
| Program Manager                                  | Mike Bailey<br>Hart Crowser<br>(206) 324-9530                 | Ensures that all work is carried out in accordance with contractual obligations and the Delivery Order statement of work. Assists the Project Manager as needed with technical decisions and in resolving issues. Final reviewer. |
| Project/Task Manager                             | Roger McGinnis<br>Hart Crowser<br>(206) 324-9530              | Overall responsibility for execution of the Work Plan. Coordinate with Client, Field Manager, and Program Manager as necessary to resolve issues.                                                                                 |
| Corporate Health and Safety Officer (HSO)        | Mike Ehlebracht<br>Hart Crowser<br>(206) 324-9530             | Overall responsibility for review and answering questions regarding H&S.                                                                                                                                                          |
| Field Manager and Site Safety Coordinators (SSC) | Mike Swenson<br>Hart Crowser<br>(206) 324-9530                | Ensures that explorations are conducted and samples are collected in accordance with project specifications. Coordinates field activities with Project and Program Managers.                                                      |
| Mine Information Research                        | Pat Reed<br>Mike Swenson<br>Hart Crowser<br>(206) 324-9530    | Determined location of mine, access route, and ownership                                                                                                                                                                          |
| Project Chemist                                  | Anne Conrad<br>Hart Crowser<br>(206) 324-9530                 | Performs laboratory coordination and data quality review to assure analytical methods and data are consistent with project needs and data quality objectives.                                                                     |
| Laboratory Services                              | Kelley Bottem<br>Analytical Resources, Inc.<br>(206) 695-6211 | Analyzes soil, sediment, and water samples.                                                                                                                                                                                       |

**Table 4 - Shoemaker Mine Sample Inventory**

| Sample Name               | Sample Location                                                                   | Sample Description                                                                |
|---------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Waste Rock Samples</b> |                                                                                   |                                                                                   |
| Shoemaker WR1-S1          | Approximately 3 feet down from Upper Road and near center of WR-1                 | Dry to moist, light brown-light gray, silty sandy GRAVEL with occasional cobbles  |
| Shoemaker WR1-S2          | Near center of WR-1 at the National Forest boundary                               | Moist, dark brown, very silty, very gravelly SAND with occasional cobbles         |
| Shoemaker WR2-S1          | Approximately 1 foot down from the top and near center of WR-2                    | Dry to moist, light brown-gray, very silty, gravelly SAND with occasional cobbles |
| Shoemaker WR4-S1          | Approximately 1 foot down from top and at southern third of upper section of WR-4 | Moist, light gray to light brown, slightly silty, sandy GRAVEL with cobbles       |
| Shoemaker WR4-S2          | Approximately half-way down lower section of WR-4 near northern third of pile     | Moist, gray, silty, sandy GRAVEL with occasional cobbles                          |
| Shoemaker WR6-S1          | Approximately 2 feet down from Lower Road 2 across from Adit 4                    | Moist, gray, very silty, gravelly SAND                                            |

**Table 5 - Analytical Results for Soil Samples - Shoemaker Mine**

| Sample ID<br>Sampling Date   | MTCA<br>Method A<br>(a) | MTCA Method B         |                                           | Ecological<br>Protection (c)<br>Plant/Soil Biota/Wildlife | Shoemaker<br>WR1-S1<br>5/18/2007 | Shoemaker<br>WR1-S2<br>5/18/2007 | Shoemaker<br>WR2-S1<br>5/18/2007 |
|------------------------------|-------------------------|-----------------------|-------------------------------------------|-----------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                              |                         | Soil<br>Ingestion (b) | Soil<br>Ingestion &<br>Dermal Contact (b) |                                                           |                                  |                                  |                                  |
| <b>Total Metals in mg/kg</b> |                         |                       |                                           |                                                           |                                  |                                  |                                  |
| Antimony                     | --                      | 32                    | 29                                        | 5 / -- / --                                               | 0.2 U                            | 0.2 U                            | 0.2 U                            |
| Arsenic                      | 20                      | 0.67                  | 0.62                                      | 10(d) / 60 / 132                                          | 9.1                              | 11                               | 22.9                             |
| Beryllium                    | --                      | 160                   | 144                                       | 10 / -- / --                                              | 0.5                              | 0.2                              | 0.4                              |
| Cadmium                      | 2                       | 80                    | 74                                        | 4 / 20 / 14                                               | 7.9                              | 70.8                             | 96.7                             |
| Chromium                     | 2,000 <sup>e</sup>      | 120,000 <sup>e</sup>  | 44,571 <sup>e</sup>                       | 42 / 42 / 67                                              | 20.4                             | 2.6                              | 11                               |
| Copper                       | --                      | 2,960                 | 2,700                                     | 100 / 50 / 217                                            | 31.9                             | 20.4                             | 34.8                             |
| Lead                         | 250                     | --                    | --                                        | 50 / 500 / 118                                            | 22                               | 75                               | 124                              |
| Mercury                      | 2                       | 24                    | 18                                        | 0.3 / 0.1 / 5.5                                           | 0.1                              | 0.98                             | 1.74                             |
| Nickel                       | --                      | 1,600                 | 1,441                                     | 30 / 200 / 980                                            | 39.8                             | 7.2                              | 20.7                             |
| Selenium                     | --                      | 400                   | 360                                       | 1 / 70 / 0.3                                              | 0.7                              | 2.5                              | 2 U                              |
| Silver                       | --                      | 400                   | 360                                       | 2 / -- / --                                               | 0.9                              | 2.2                              | 8.4                              |
| Thallium                     | --                      | 5.6                   | 5.0                                       | 1 / -- / --                                               | 0.3                              | 0.5                              | 0.8                              |
| Zinc                         | --                      | 24,000                | 22,000                                    | 86 / 200 / 360                                            | 2430                             | 24900                            | 34100                            |

**Table 5 - Analytical Results for Soil Samples - Shoemaker Mine**

Sheet 2 of 2

| Sample ID<br>Sampling Date   | MTCA<br>Method A<br>(a) | MTCA Method B         |                                           | Ecological<br>Protection (c)<br>Plant/Soil Biota/Wildlife | Shoemaker<br>WR4-S1<br>5/18/2007 | Shoemaker<br>WR4-S2<br>5/18/2007 | Shoemaker<br>WR6-S1<br>5/18/2007 |
|------------------------------|-------------------------|-----------------------|-------------------------------------------|-----------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                              |                         | Soil<br>Ingestion (b) | Soil<br>Ingestion &<br>Dermal Contact (b) |                                                           |                                  |                                  |                                  |
| <b>Total Metals in mg/kg</b> |                         |                       |                                           |                                                           |                                  |                                  |                                  |
| Antimony                     | --                      | 32                    | 29                                        | 5 / -- / --                                               | 0.2 U                            | 0.2 U                            | 0.3                              |
| Arsenic                      | 20                      | 0.67                  | 0.62                                      | 10(d) / 60 / 132                                          | 8.9                              | 12.1                             | 16.6                             |
| Beryllium                    | --                      | 160                   | 144                                       | 10 / -- / --                                              | 0.5                              | 0.3                              | 0.6                              |
| Cadmium                      | 2                       | 80                    | 74                                        | 4 / 20 / 14                                               | 2                                | 17.4                             | 44.4                             |
| Chromium                     | 2,000 <sup>e</sup>      | 120,000 <sup>e</sup>  | 44,571 <sup>e</sup>                       | 42 / 42 / 67                                              | 8.6                              | 6.6                              | 11.6                             |
| Copper                       | --                      | 2,960                 | 2,700                                     | 100 / 50 / 217                                            | 28.3                             | 21.7                             | 57.7                             |
| Lead                         | 250                     | --                    | --                                        | 50 / 500 / 118                                            | 44                               | 204                              | 166                              |
| Mercury                      | 2                       | 24                    | 18                                        | 0.3 / 0.1 / 5.5                                           | 0.06                             | 0.62                             | 0.99                             |
| Nickel                       | --                      | 1,600                 | 1,441                                     | 30 / 200 / 980                                            | 22.5                             | 17.1                             | 41.5                             |
| Selenium                     | --                      | 400                   | 360                                       | 1 / 70 / 0.3                                              | 0.6 U                            | 1                                | 2.7                              |
| Silver                       | --                      | 400                   | 360                                       | 2 / -- / --                                               | 0.6                              | 1.6                              | 3.2                              |
| Thallium                     | --                      | 5.6                   | 5.0                                       | 1 / -- / --                                               | 0.2                              | 0.7                              | 0.8                              |
| Zinc                         | --                      | 24,000                | 22,000                                    | 86 / 200 / 360                                            | 470                              | 4510                             | 9000                             |

**Notes:**

U = Not detected at the detection limit indicated.

J = Estimated value.

-- Not established or Not applicable.

Bold - Concentration exceeds ecological criterion.

Box - Concentration exceeds MTCA Method A or Method B criterion.

(a) WAC 173-340-740(2), WAC 173-340-900 (Table 740-1). Model Toxics Control Act (MTCA) Method A.

(b) WAC 173-340-740(3). MTCA Method B Unrestricted land use soil cleanup standards. For carcinogenic constituents, the value presented is the lower of the non-carcinogenic and carcinogenic level calculated using Equations 740-1 and 740-2 for ingestion only. Equations 740-4 and 740-5 for ingestion and dermal contact. Information from CLARC 3.1 was used unless otherwise noted.

(c) WAC 173-340-740(3)(b)(ii), WAC 173-340-749, WAC 173-340-900 (Table 749-3).

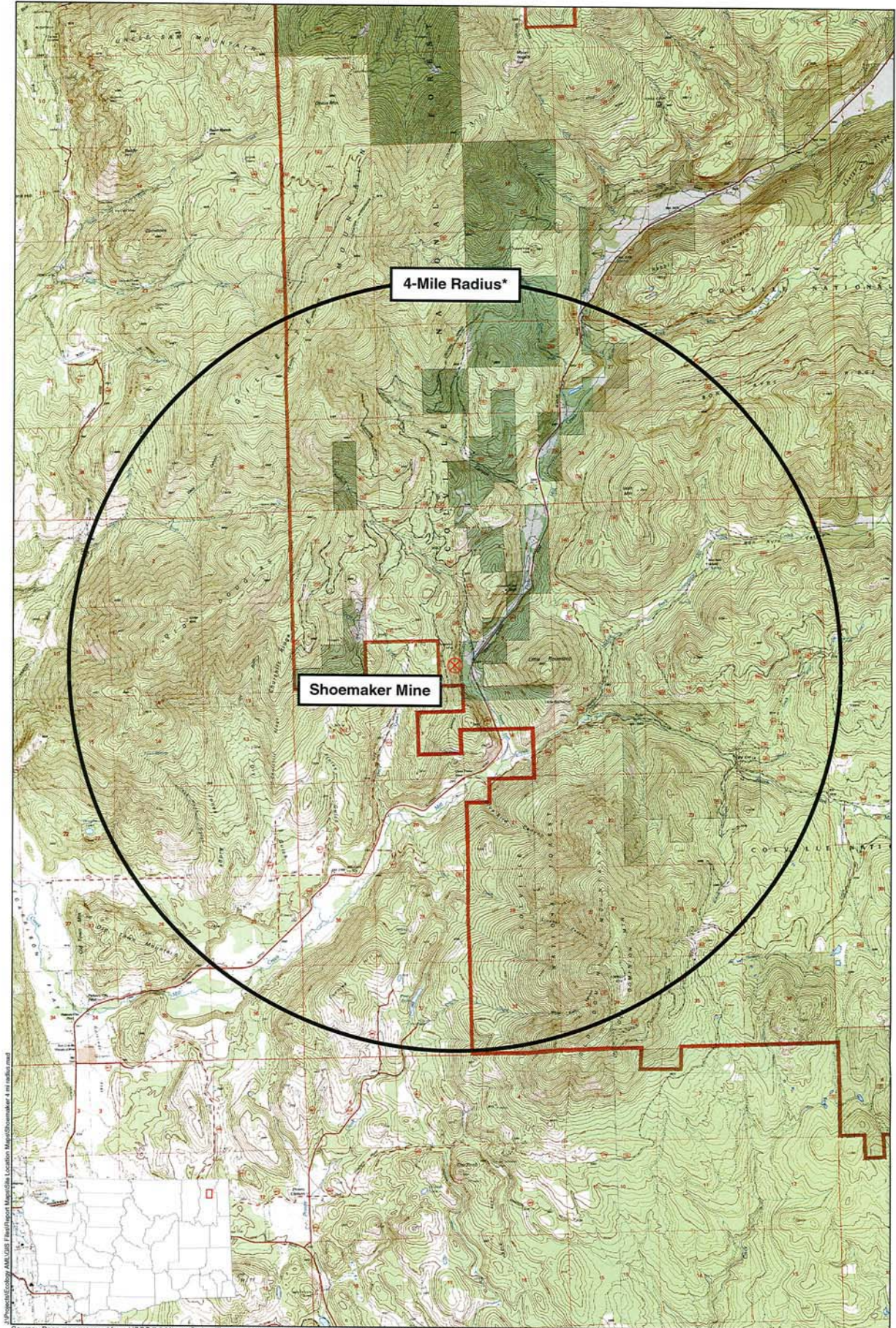
(d) Based on Arsenic V (10 mg/kg)

(e) Based on Chromium III

**Table 6 - Threatened and Endangered Species**

| Site Number | Site Name                    | Species                                      | Federal Status |   | State Status |   | Narrative                                                        |
|-------------|------------------------------|----------------------------------------------|----------------|---|--------------|---|------------------------------------------------------------------|
|             |                              |                                              | T              | E | T            | E |                                                                  |
| 26          | Shoemaker (a.k.a. Schumaker) | Lynx ( <i>Lynx canadensis</i> )              | X              |   | X            |   | Mill Creek area and Staghorn Mtn                                 |
|             |                              | Grizzly bear ( <i>Ursus arctos</i> )         | X              |   |              | X | Onion Creek                                                      |
|             |                              | Bull trout ( <i>Salvelinus confluentus</i> ) | X              |   |              |   | Deadman's Creek, Nancy Creek, Boulder Creek, Pend Oreille River, |

**Site Location Map**  
**Shoemaker Mine**

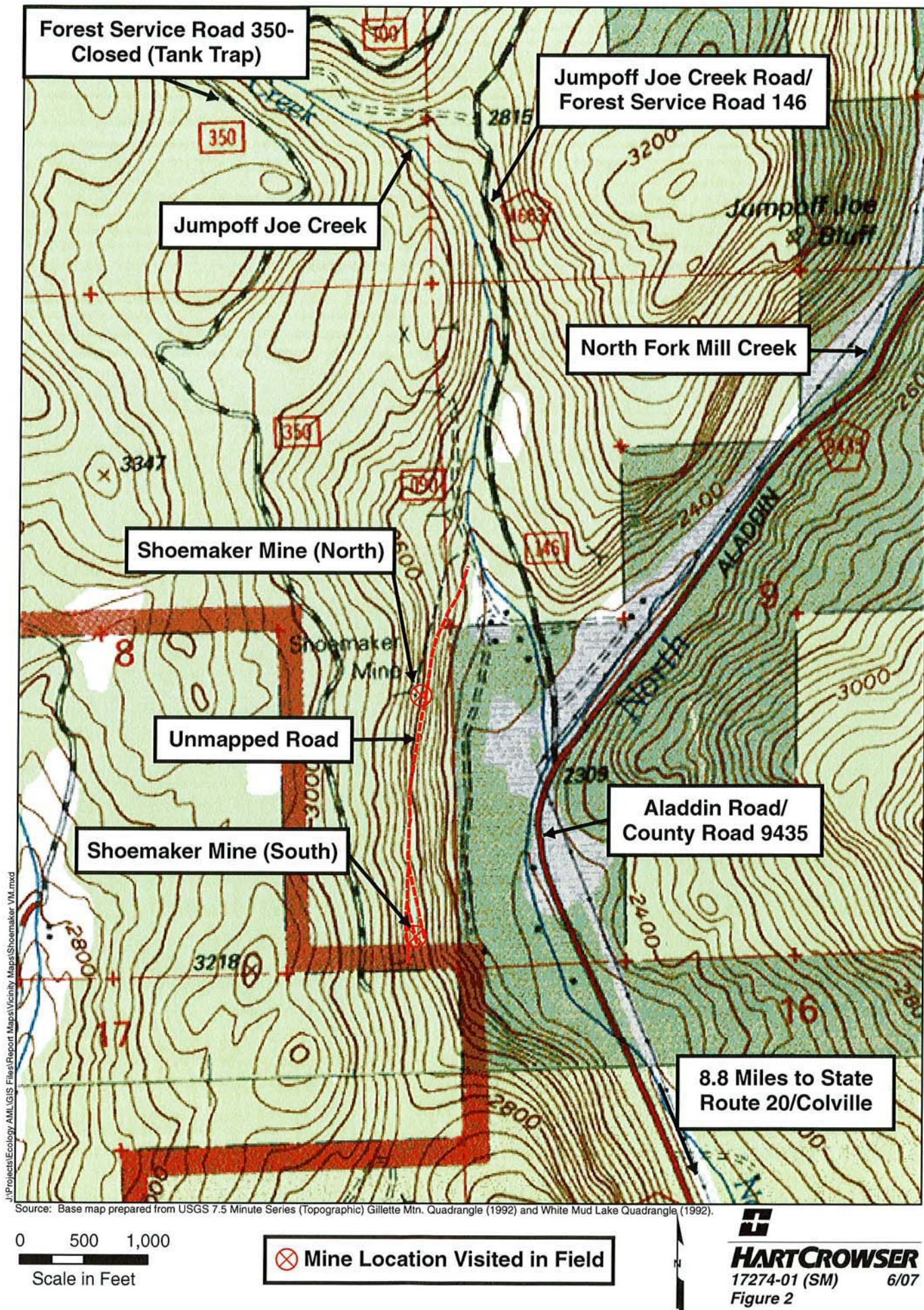


Source: Base map prepared from USGS 7.5 Minute Series (Topographic) Aladdin Quadrangle (1992), China Bend Quadrangle (1969), Colville Quadrangle (1992), Echo Valley Quadrangle (1952), Gillette Mtn. Quadrangle (1992), Onion Creek Quadrangle (1992), Park Rapids Quadrangle (1992), Spirit Quadrangle (1992), and White Mud Lake Quadrangle (1992).

0 0.5 1 2  
 Scale in Miles

\*Circle drawn encompasses a 4-mile radius from all mine areas and has radius slightly larger than 4 miles.

# Vicinity Map Shoemaker Mine

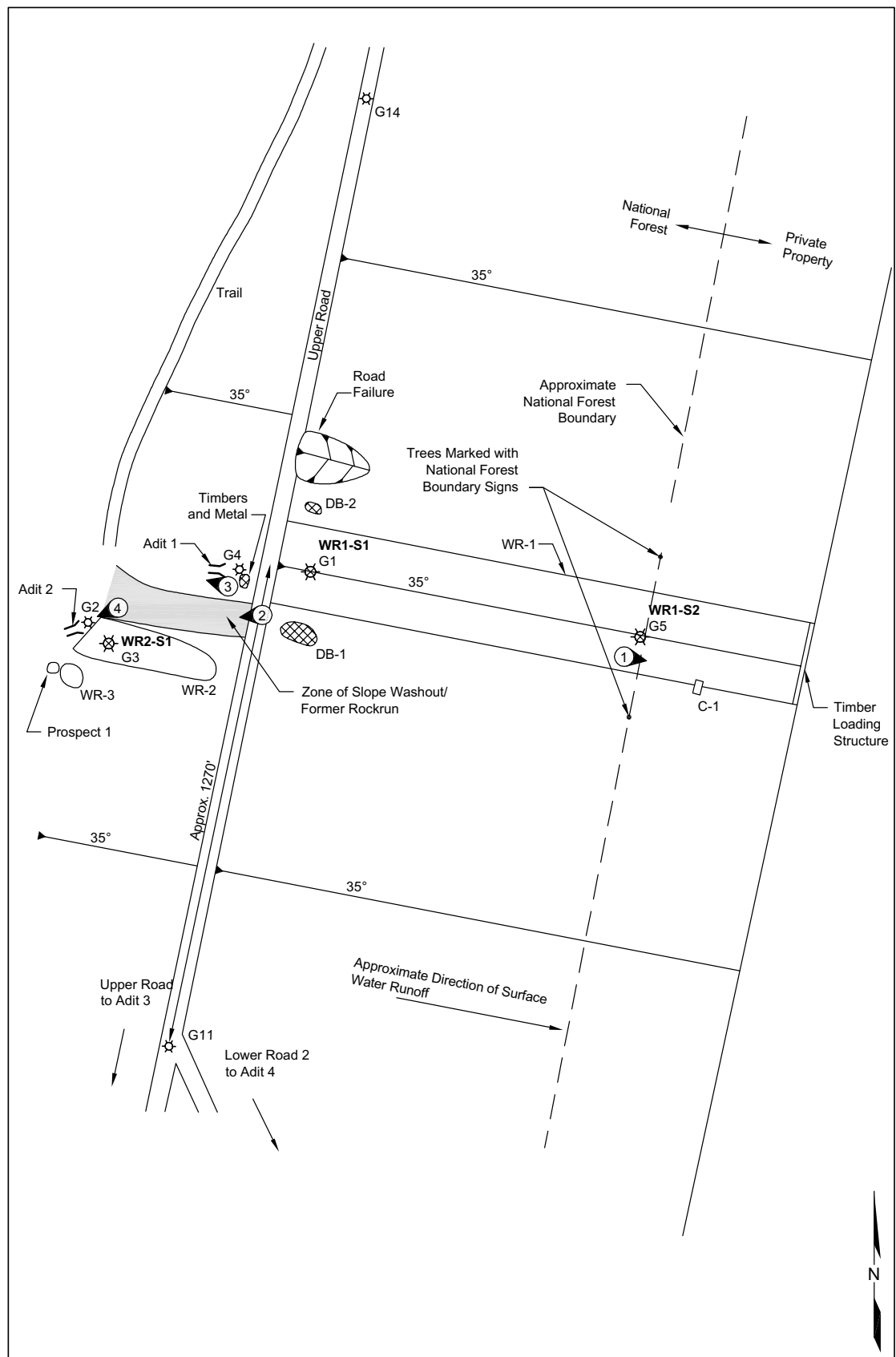


# Standard Key for Site Plan

## Shoemaker Mine

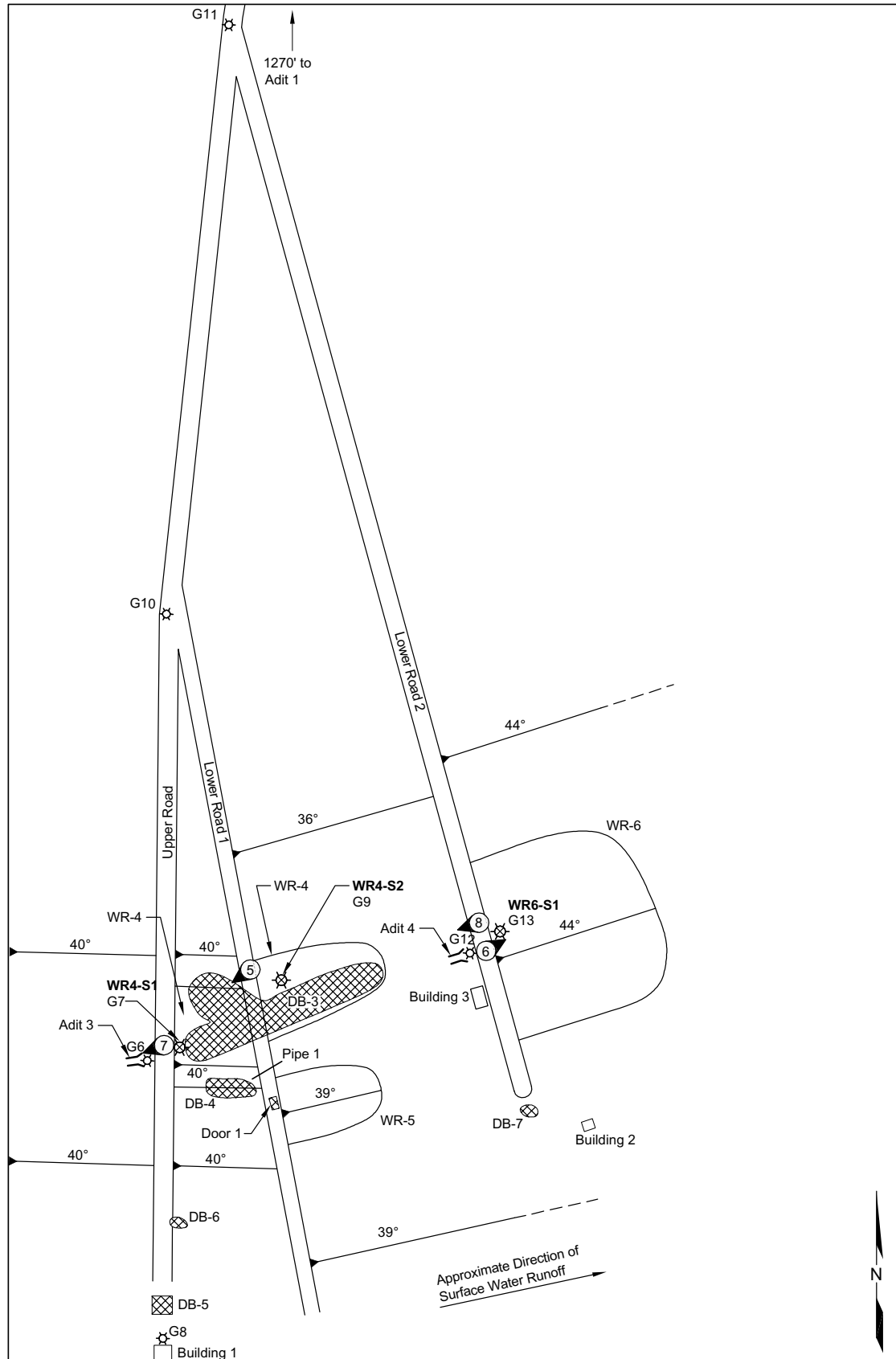
|                                                                                                 |                                                                                                      |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|                | GPS Data Point Location and Number                                                                   |
| <b>WR1-S2</b>  | Soil or Waste Rock Sample Location and Number<br>(Note: Site name prefix also part of sample number) |
| <b>W1</b>      | Water Sample Location and Number                                                                     |
| 45             | Composite Sediment Sample Location and Number                                                        |
|                | Adit                                                                                                 |
|                | Shaft                                                                                                |
|                | Prospect/Pit                                                                                         |
|                | Building/Structure                                                                                   |
|               | Seep                                                                                                 |
|              | Drainage Channel                                                                                     |
|              | Intermittent/Seasonal Drainage Channel                                                               |
|              | Wood Debris                                                                                          |
|              | Metal Debris                                                                                         |
|              | Soil or Seep Staining                                                                                |
|              | Other Feature                                                                                        |
|              | Groundwater Well                                                                                     |
|              | Photo Location, Number, and Direction                                                                |
|              | Approximate Cross Section Location and Designation                                                   |

**Site Plan**  
**Shoemaker North**



Source: Base map prepared from field notes dated 05/21/07.

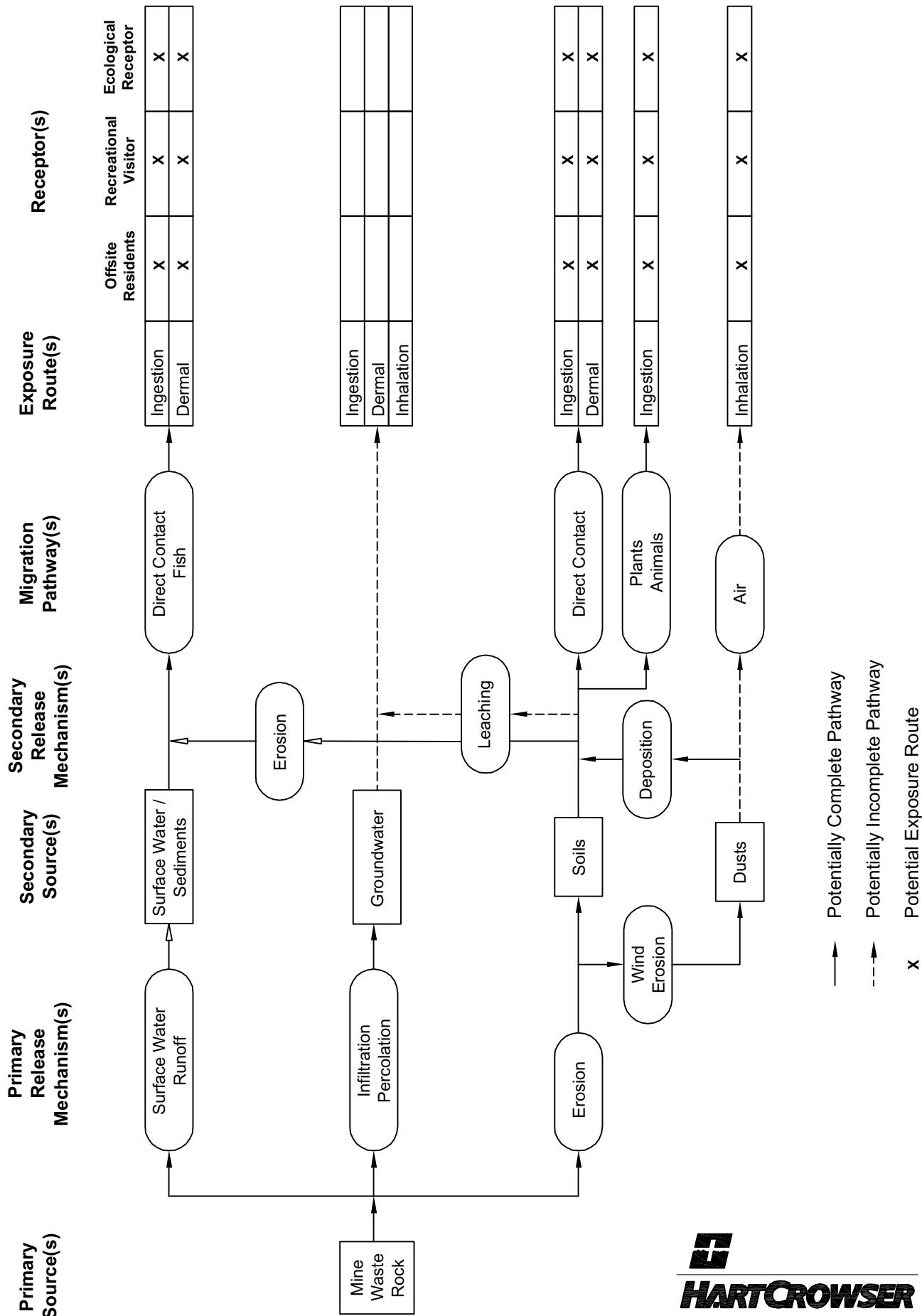
**Site Plan**  
**Shoemaker South**



Source: Base map prepared from field notes dated 05/21/07.

0 60 120  
 Scale in Feet

# Mine Waste Rock Conceptual Site Model for Human and Ecological Risk Shoemaker Mine



## **APPENDIX A FIELD DOCUMENTATION**



# AML Feature Inventory

page 2

Survey Date 5-18-07

Feature ID Shoemaker  
 Surveyor(s) MJS JB/ma

## Physical Features / Sources (Continued)

### Mining Activity-Related Ponds or Liquid Containment Structures:

☐ leach ponds ☐ tailings ponds ☐ tailings impoundment(s) ☐ other (explain)

| Pond Type / Count ID | Dimensions in ft (L x W x D) | Lined (Y/N) | Liquid Present (Y/N) | pH | Cond in mS | Temp in C | Sample Name                  | Sample Name(s)             | GPS                        |
|----------------------|------------------------------|-------------|----------------------|----|------------|-----------|------------------------------|----------------------------|----------------------------|
| <u>None</u>          | <u>50 x 30 x 4</u>           | <u>N</u>    | <u>N</u>             |    |            |           | <u>Butte - Flume Creek 1</u> | <u>Butte - LP1 - S1-S2</u> | <u>G6: 1278985, 476985</u> |
|                      |                              |             |                      |    |            |           |                              |                            |                            |
|                      |                              |             |                      |    |            |           |                              |                            |                            |

☐ Seep(s) ☐ Creek(s) ☐ Pond(s) ☐ Lake(s)

| Type / Count ID  | Location                   | Sample Name                  | Flowrate in GPM | pH         | Cond in mS   | Temp in C   | Parameters: |
|------------------|----------------------------|------------------------------|-----------------|------------|--------------|-------------|-------------|
| (le) Flume Creek | <u>G3: 1278498, 476985</u> | <u>southern site border</u>  |                 |            |              |             |             |
|                  | <u>None</u>                | <u>Butte - Flume Creek 1</u> | <u>0.1</u>      | <u>8.2</u> | <u>0.153</u> | <u>10.9</u> |             |
|                  |                            |                              |                 |            |              |             |             |
|                  |                            |                              |                 |            |              |             |             |

Order, stream, discoloration?  
None

☐ Soil Staining ☐ Seep Staining

| Type / Count ID | Location                         | Color               | Distance from Potential Contaminant Source to Receptor | Source & Receptor | Notes                  |
|-----------------|----------------------------------|---------------------|--------------------------------------------------------|-------------------|------------------------|
| (le) Stain 1    | <u>soil down slope of Adit 1</u> | <u>orange/brown</u> | <u>100' upslope of Flume Creek</u>                     | <u>fish</u>       | <u>ferricrete-like</u> |
|                 |                                  |                     |                                                        |                   |                        |
|                 |                                  |                     |                                                        |                   |                        |

### Seasonal Flow Paths or Channels

| Count / ID      | Water Present (Y/N) | Sample Name          | Flowrate in GPM | pH | Cond in mS | Temp in C | Distance from Potential Contaminant Source to Receptor | Source & Receptor |
|-----------------|---------------------|----------------------|-----------------|----|------------|-----------|--------------------------------------------------------|-------------------|
| (le) Drainage 1 | <u>None</u>         | <u>Butte - Sed 1</u> |                 |    |            |           |                                                        |                   |
|                 |                     |                      |                 |    |            |           |                                                        |                   |
|                 |                     |                      |                 |    |            |           |                                                        |                   |

Wetlands

| Count / ID     | GPS                       | Flowrate in GPM | pH         | Cond in mS | Temp in C   | Distance from Potential Contaminant Source to Receptor | Source & Receptor |
|----------------|---------------------------|-----------------|------------|------------|-------------|--------------------------------------------------------|-------------------|
| (le) Wetland 1 | <u>G7: 127856, 476985</u> | <u>1 Umth</u>   | <u>5.9</u> | <u>0.2</u> | <u>12.1</u> | <u>50' N of Pond Oreille River</u>                     | <u>None</u>       |
|                |                           |                 |            |            |             |                                                        |                   |
|                |                           |                 |            |            |             |                                                        |                   |

# AML Feature Inventory

Feature ID Shoe maker  
 Surveyor(s) MJS & BMK

Survey Date 5-18-07

Page 3

Physical Features / Sources (Continued)

Water Supply Structures:

☐ GW Well(s) ☐ SW Intake(s) ☐ PR Toilet(s) ☐ Other (explain)

| Type / ID   | Inner Diameter | Depth | Soil Type | Position | Distance from Potential Contaminant Source | GPS | General Location |
|-------------|----------------|-------|-----------|----------|--------------------------------------------|-----|------------------|
| <u>None</u> |                |       |           |          |                                            |     |                  |

| AML Present (Y/N) | AML Footprint in ft <sup>2</sup> | AML Associated with Mill | Chemicals Associated with Mill | GPS |
|-------------------|----------------------------------|--------------------------|--------------------------------|-----|
|                   |                                  |                          |                                |     |

## Buildings / Structures

| Count / ID | BLDG. Footprint in ft <sup>2</sup> | Suggested Bldg. Use                                               | Bldg. Condition                                 | GPS | Comments                                        |
|------------|------------------------------------|-------------------------------------------------------------------|-------------------------------------------------|-----|-------------------------------------------------|
| BLDG 1     | 10' x 10'                          | Load on 5' x 10' x 10' supplies, possibly work storage / standing | unroofed                                        |     | on private property - could not inspect         |
| BLDG 2     | 6' x 10' x 8'                      | 4' x 10' x 8' ?                                                   | unroofed                                        |     | end of road - could not inspect                 |
| BLDG 3     | 8' x 10' x 2'                      | ?                                                                 | burned, charred timbers & green shingles remain |     | can't identify access - about 50' ENE of Bldg 1 |

## Liquid or Waste Containment Structures:

| Type / ID | Count | Volume in Gal. | Condition             | Contents |
|-----------|-------|----------------|-----------------------|----------|
| Drum      | 1     | 55             | rusty, no lid         | unroofed |
| Barrel    | 1     | 80             | rusty, no lid         | unroofed |
| Can       | 1     | 1              | rusty, no lid         | unroofed |
| Bottle    | 1     | 2L             | old plastic 2L bottle | unroofed |

Debris / Refuse: ☐ assay equip & reagents ☐ drums ☒ scrap metal ☐ machinery ☐ other (explain)

| Type / ID                | Number | Size           | Location      | Description                                                                   |
|--------------------------|--------|----------------|---------------|-------------------------------------------------------------------------------|
| (a) scrap lumber & metal |        |                |               |                                                                               |
| AB-1                     | 1      | 5' x 10' x 1'  | top of mill   | timbers (some charred), nails, shingles, and sheet metal                      |
| AB-2                     | 1      | 10' x 20' x 1' | South of mill | timbers, corrugated sheet metal                                               |
| AB-3                     | 1      | 5' x 10' x 1'  | North of mill | timbers, corrugated sheet metal                                               |
| AB-4                     | 1      | 2' x 2'        | North of mill | corrugated sheet metal                                                        |
| AB-5                     | 1      | 10' x 10' x 1' | Property      | corrugated sheet metal                                                        |
| AB-6                     | 1      | 20' x 10' x 2' | West of mill  | timbers, metal rods, rusted sheet metal similar to previous location; redwood |

## Other Observations:

| Ground Cover                                  | Description                  | Quantity | Endangered / Threatened? | Disturbed / Degraded? | Comments                             |
|-----------------------------------------------|------------------------------|----------|--------------------------|-----------------------|--------------------------------------|
| Vegetation                                    | Overburden soil & vegetation | 1        | N                        | N                     | dry tan to light brown V. silty sand |
| Evidence of Wildlife or Recent Human Activity | Footprint, shipwreck         | 1        | N                        | N                     | mainly overgrown, some open          |

Slope failures have exposed natural slope but diff. to dig on we from road at natural

→ where rock rim was from upper to lower section

AB-3 (cont'd) rail car rails (?) bucket

appears 3" dia, steel pipe, rusted

Bar 1 - old wood

AB-5 - pile of timbers 10' x 10' x 1' near Bldg 1

AB-6 - 8' x 6' x 2', timbers & rusted corrugated sheet metal

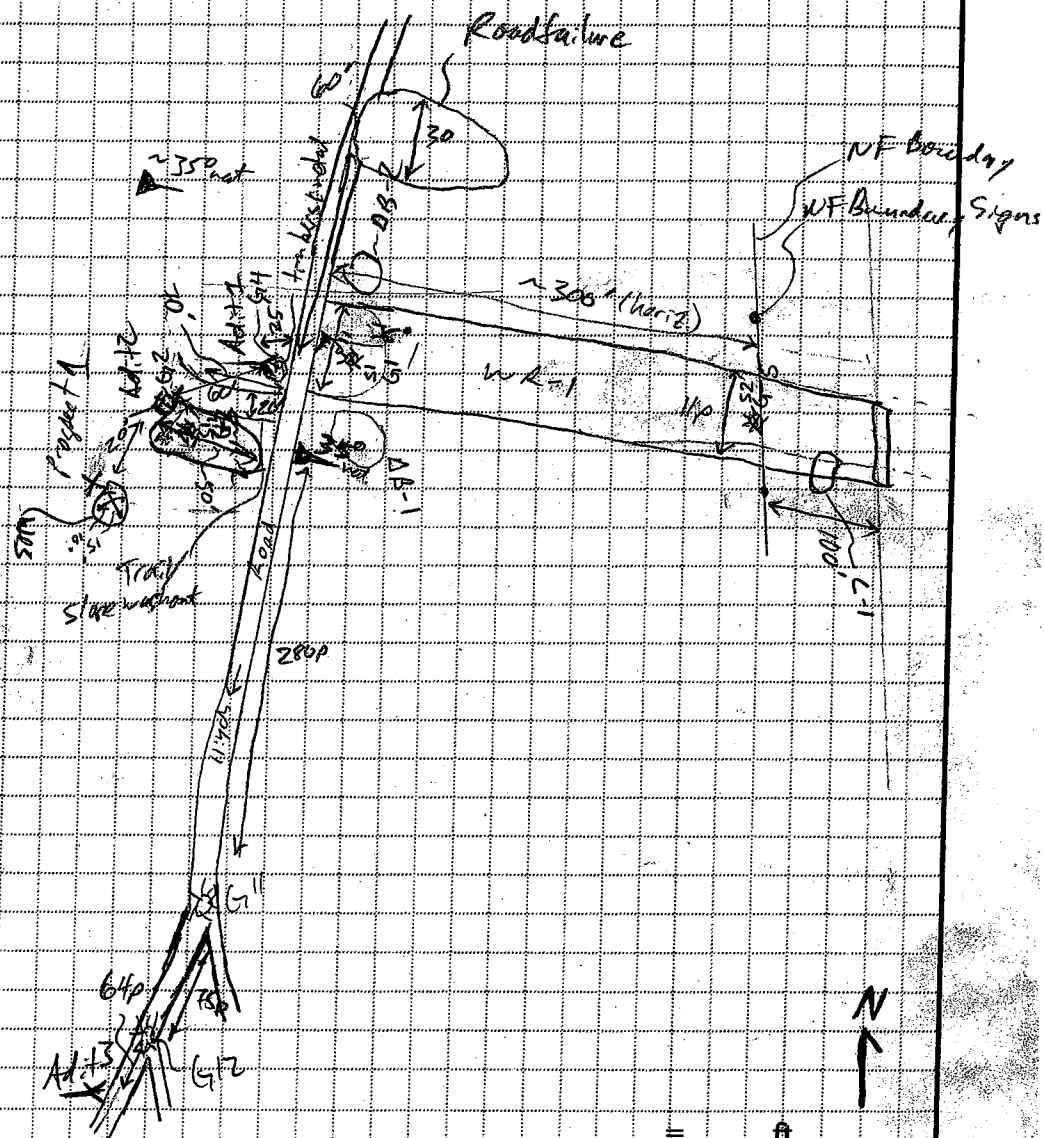
AB-7 - 30' x 10' x 1', timbers @ SE end of Bldg 1

AB-8 - 18' x 10' x 1', timber beams

# AML FEATURE INVENTORY/MONITORING FIELD FORM

|            |                           |
|------------|---------------------------|
| Feature ID | <u>Shower</u>             |
| Date       | <u>5-16-07</u>            |
| Weather    | <u>Sunny, 70's - 80's</u> |

### Plan View Sketch



280p S fork 2 trap

**INCLUDE THE FOLLOWING IN THE FIELD SKETCH FOR:**

## North Arrow

### Scale Bar

**Photo Location(s) and View Direction(s)**

**Sample Location(s) and ID(s):**

W-# Water

**S-# Soil**

T-# Tailings

R-# Rock (Waste)

**O-# Ore**

**S-# Other (Describe)**

**FOOTPRINT(S) OF:**

## MILLS

## BUILDINGS

## BUILDING STRUCTURES

## MINING-RELATED PILES

OTHER

### SURFACE WATER (PONDS, SEEPS, ETC.)

GPS Collection Location 

**Elevation (Topographic Variation)**

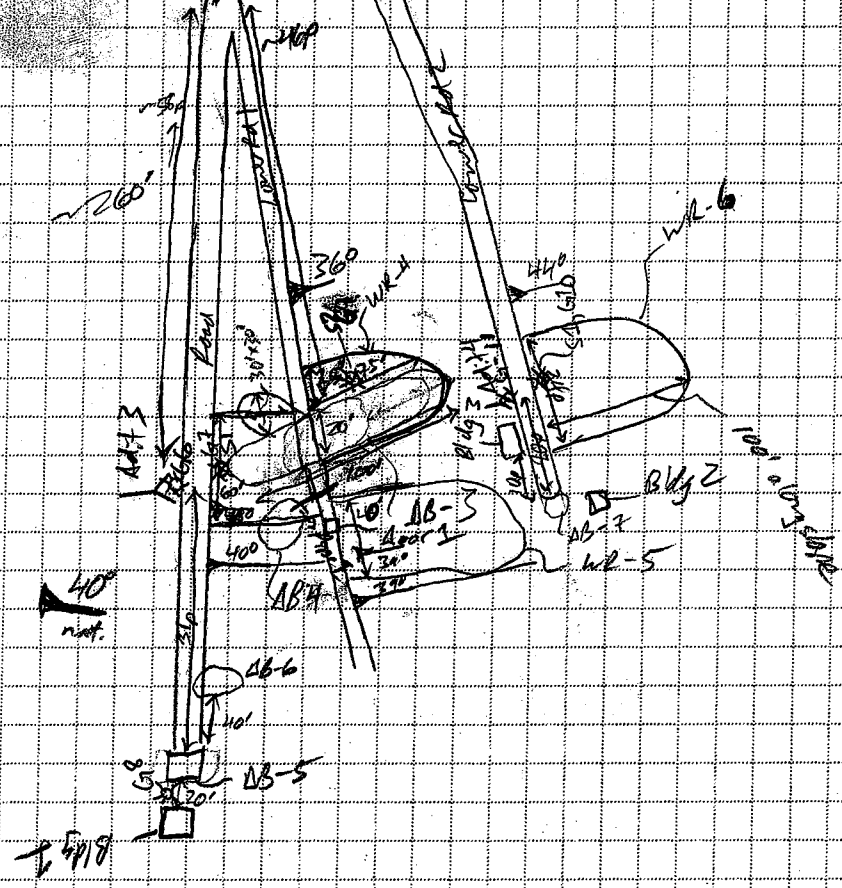
Slope Direction

17 eye heights on a  $35^\circ$  slope  
for NR-7 from NF bound.

|            |                  |
|------------|------------------|
| Feature ID | <u>Glyceride</u> |
| Date       | _____            |
| Weather    | _____            |

pp to othr lower rd inter.  
see othr sketch

Cross Section Sketch (show orientation of section on plan view) plan view to south (cont)



INCLUDE THE FOLLOWING IN THE FIELD SKETCH FOR:

- X - X' Cross Section Orientation
- Scale Bar
- Photo Location(s) and View Direction(s)
- Sample Location(s) and ID(s):
  - W-# Water
  - S-# Soil
  - T-# Tailings
  - R-# Rock (Waste)
  - O-# Ore
  - S-# Other (Describe)

- LOCATION(S) OF:
  - MILLS
  - BUILDINGS
  - STRUCTURES
  - MINING-RELATED PILES
  - OTHER

- SURFACE WATER (PONDS, SEEPS, ETC.)
- GPS Collection Location \*
- Elevation (Topographic Variation)

WR4-360  
pipe Seeps from belt.

05.18.07

SPRINGER

HODIN

W 14 9:00

COND 4.0 m/s/cm

TEMP 1-2

DO 7.85 mg/L

TEMP 19.5°C

SAL 0.7396

VAN PARKED

ACCESS RD/ROAD END

WR1-S1 (12:55 pm)

→ LT BROWN/LT GREY, MOIST

TO DRY, SILTY, SANDY

GRAVEL w/ COBBLES (27%)

2' NØE OF ADIT 2

WR2-S1 (11:25 am)

→ LT BROWN, DRY-MOIST,

V. SILTY, GRAVELLY, SAND

w/ OCC COBBLES (±10%)

SAMPLE ~25' SSE OF ADIT 2

2' NØE OF ADIT 1

WR1-S2 (2:29 pm)

→ DRYEST, DK BROWN,

V. SILTY, V. GRAVELLY

SAND w/ OCC COBBLES (±20%)

(G1)

(G2)

(G3)

(G4)

(G5)

(G6)

(G7)

05.18.07

STOCK MARKET

WR1-S1 11:00 pm

MOIST, SANDY

GRAVEL w/ COBBLES

20' NØE OF ADIT 3

WR2-S2 5:00 pm

MOIST, GRAY, SILTY

SANDY GRAVEL w/ OCC

COBBLES (±14%)

2' NØE OF NE

CORNER OF BUILDING

FOOTPRINT

ACCESS ROAD FORK (UPPER)

WR1-S1 11 11 (lower)

WR2-S2 5:00 pm

MOIST, GRAY, SILTY

SANDY GRAVEL w/ OCC

COBBLES (±14%)

2' NØE OF NE

CORNER OF BUILDING

FOOTPRINT

ACCESS ROAD FORK (UPPER)

WR1-S1 11 11 (lower)

WR2-S2 5:00 pm

MOIST, GRAY, SILTY

SANDY GRAVEL w/ OCC

COBBLES (±14%)

2' NØE OF NE

CORNER OF BUILDING

FOOTPRINT

ACCESS ROAD FORK (UPPER)

(615) ADIT 4

(616) WRF 51 6:21 AM  
MORIST GARY, V.  
SLO, GRAVELLY,  
SAND,

(617) TRAIL/ACCESS RD  
HNT-

03-21-07 COPPER BELLE

# DIRECTIONS

HWY 2 (E) FROM EVERETT  
THROUGH GOLD BAR

→ FROM INT OF HWY 23

500 FT IN GOLD BAR

(L) ONTO RIVER ROAD @ 1.85 MI

(L) @ 2.8 MI THROUGH OPEN GATE

(R) @ 4.2 MILE JUST UNDER

PWR LINES

(R) FORK @ 4.8 AFTER

PARALLEL TO PWR LINES  
(5.00 MILE OPEN THROUGH)

5.0 MI SWITCHBACK

STOP @ 6.2 MI (START OF TRAIL)

TRAIL LS 27194

# Ecology AML

| Shoemaker |                                                                             |          |         |           |
|-----------|-----------------------------------------------------------------------------|----------|---------|-----------|
| Point     | Coordinate Name                                                             | Northing | Easting | Elevation |
| G1        | SHOEMAKER WR1 S1                                                            | 1214913  | 2297102 | 2397      |
| G2        | SHOEMAKER ADIT 2                                                            | 1214823  | 2297021 | 2500      |
| G3        | SHOEMAKER WR2 S1                                                            | 1214807  | 2297037 | 2552      |
| G4        | SHOEMAKER ADIT 1                                                            | 1214840  | 2297121 | 2568      |
| G5        | SHOEMAKER WR1 S2                                                            | 1214875  | 2297342 | 2426      |
| G6        | SHOEMAKER ADIT 3                                                            | 1212999  | 2296874 | 2409      |
| G7        | SHOEMAKER WR4 S1                                                            | 1212981  | 2296968 | 2409      |
| G8        | SHOEMAKER ABANDONED STRUCTURE                                               | 1212779  | 2296983 | 2658      |
| G9        | SHOEMAKER WR4 S2                                                            | 1212997  | 2297048 | 2562      |
| G10       | SHOEMAKER ACCESS ROAD FORK LWR                                              | 1213578  | 2297000 | 2611      |
| G11       | SHOEMAKER ACCESS ROAD FORK UPR                                              | 1213219  | 2296978 | 2611      |
| G12       | SHOEMAKER ADIT 4                                                            | 1213049  | 2297161 | 2611      |
| G13       | SHOEMAKER WR6 S1                                                            | 1213028  | 2297163 | 2534      |
| G14       | SHOEMAKER ACCESS RD/TRAIL INT                                               | 1215133  | 2297181 | 2574      |
| G15       | SHOEMAKER ACCESS ROAD/TRAIL (Start of Trail to mine near Jumpoff Joe Creek) | 1216143  | 2297395 | 2441      |
| G16       | SHOEMAKER RD WAYPOINT1 (Parking Location)                                   | 1216306  | 2297601 | 2440      |
|           | Average                                                                     | 1214154  | 2297123 | 2519      |

## Notes:

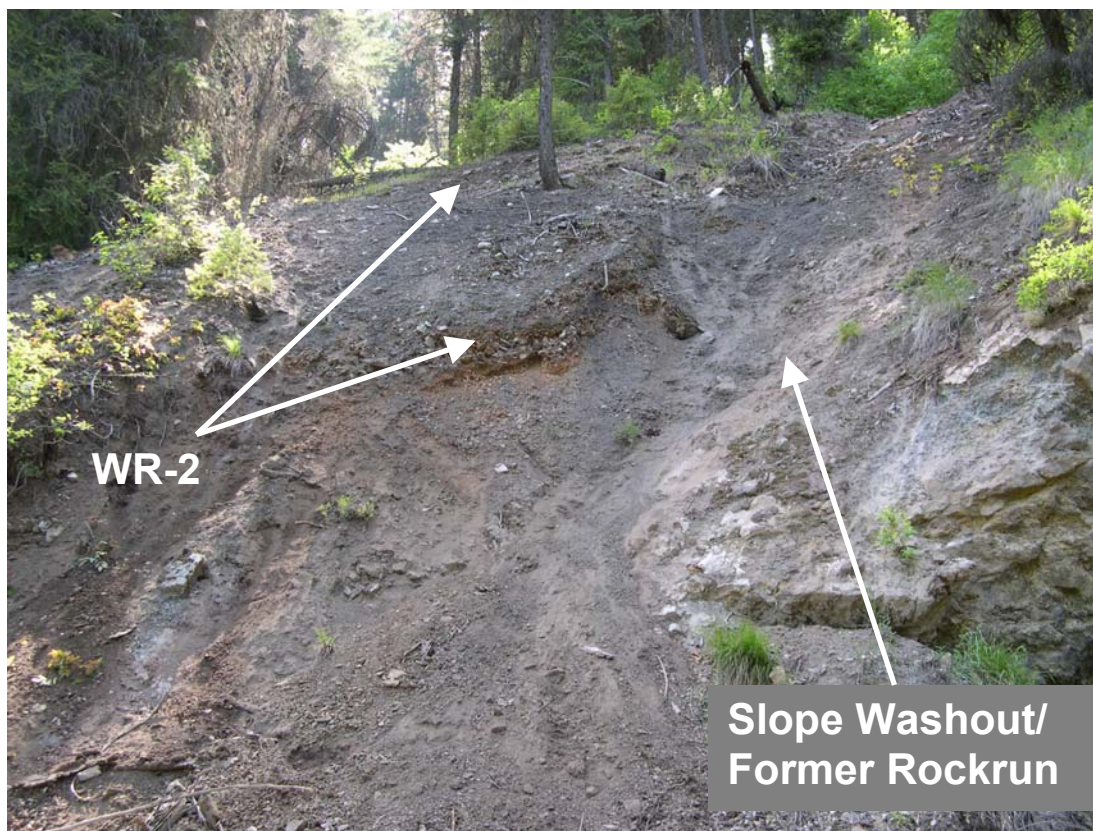
Northings and Eastings are reported in units of US Feet, relative to NAD 83 State Plane Coordinate System, Washington Zone South.

Elevation is reported in units of US Feet, relative to Mean Sea Level.

\* GPS point believed to be inaccurate; approximate location of point estimated from field sketch information and more accurate GPS points provided in italics in the cells immediately beneath the measured data.



Photograph 1 - View of WR-1. Note timber and sheet metal debris and boiler tank.



Photograph 2 - View of WR-2 and adjacent slope washout/former rockrun.



Photograph 3 - View of Adit 1.



Photograph 4 - View of Adit 2.



Photograph 5 - View of upper sections of WR-4 and DB-3.



Photograph 6 - View of WR-6.



Photograph 7 - View of Adit 3.



Photograph 8 - View of Adit 4.