ABBREVIATED PRELIMINARY ASSESMENT

MORNING STAR MINE

Willamette National Forest
Marion County, OR

July 2005

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APPENDICES

EXECUTIVE SUMMARY

The Forest Service performed an Abbreviated Preliminary Assessment for the Morning Star (a.k.a Blue Jay Mine) (Site) to determine the need for further site characterization. The Site is located approximately 8.5 aerial miles northeast of the town of Elkhorn, Oregon. The Site is situated on steep side slopes. The Site consists of an open adit with water discharge, a collapsed structure, and waste rock piles.

A Niton XRF unit was used for bench screening of material collected from the waste rock dump. Water and sediment samples were not collected as part of this investigation.

Numerous chemical elements exceeded either State or Federal regulations or guidelines (Appendix A). However, the most notable elements of concern are antimony (616 mg/kg) and lead (4160 mg/kg), which exceed EPA Region IX Preliminary Remediation Goals (PRG) as to acceptable industrial screening levels in soil.

It is recommended that a Site Inspection (SI) be performed because of the concentrations of various elements as noted; the proximity of the waste rock dump to the Blue Jay tributary; and the adit drainage which makes up part of the flow in the Blue Jay tributary, which discharges into Battle Axe Creek. Estimated volume of waste rock material is difficult to determine because much of it has washed down the Blue Jay tributary. An approximation of volume would be 800cy.

1.0 INTRODUCTION

An Abbreviated Preliminary Assessment (APA) was performed by the USDA Forest Service (FS) in accordance with:

- EPA "Guidance for Performing Preliminary Assessments Under CERCLA",
- EPA "Improving Site Assessment: Abbreviated Preliminary Assessments" of 1999,
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980,
- Superfund Amendments and Reauthorization Act (SARA) of 1986,
- National Contingency Plan as outlined in 40 CFR Parts 300.410(c)(1)(i-v).

The purpose of this assessment was to determine whether or not there is a potential for a release of contaminants to the environment and/or to human health. The purpose of an APA is to document whether further site characterization is warranted. A Niton XRF 700 Series was utilized to help in the preliminary screening of this Site.

2.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS

The Site is located:

- Approximately 8.5 aerial miles northeast of Elkhorn, OR at an elevation of 2800 feet above mean sea level (MSL).
- 2.5 miles east of Jaw Bone Flats, along Forest Road 2209.
- On National Forest System lands within the Opal Creek Scenic and Recreation Area and is administered and managed by the Willamette National Forest.
- Within the North Santiam Mining District.

Location information:

Lat./Long.:	44° 51' 14"N/122° 10' 43"W
Legal:	Willamette Meridian, T8S, R5E, NE¼, SE¼ S27
USGS quadrangle:	Battle Ax

The Site consists of:

- One adit (880 feet) with approximately 20 to 30gpm discharge and several small waste-rock dumps.
- Much of the material is distributed downstream in the Blue Jay tributary, thus making an estimate of volume difficult. An approximation would be 800cy.
- The claim consists of 20.66 acres and disturbance of the area is approximately 2 acres.

Water in the Blue Jay tributary and mine discharge flow beneath the waste rock materials distributed downstream of the mine and drains into Battle Axe.

Historical information of the mine is limited. The following information was available:

- 1925 – Located by R. I. Dawes on July 6.
- 1926 – Recorded April 22.
- 1929 – Little North Santiam Mining Road was developed.
- 1930 – Columbia Mines Development Company was formed April 28.
    - Owners: J. P. Hewitt, B. E. Hewitt, A. W. Dawes, J. M. Dixon, and George D. La Roche

- 1930 – R. I. Dawes transferred claim to J. P. Hewitt.
    - J. P. Hewitt quitclaim deeded to the Columbia Mines Development Company January 28.
- 1934 – AMCOL Mining and Milling Company formed on October 20, 1934.
    - Owners: Edward Seufert, Charles J. Merten, and J. P. Hewitt.
- 1937 – Gold Creek Mining and Milling Company was formed on February 24.
    - Owners: George D. La Roche, J. B. Ofner, A. W. Metler, and J. P. Hewitt.
- 1978 – Amended and recorded December 28.

Ore body consisted of:

- The dominant sulfide in the vein is sphalerite.
- Minor galena and chalcopyrite were present.
- Pyrite was noted in amounts up to 5% in some vein float in the creek bed SE of the discovery adit portal.
- The propylitized Andesite wall rock commonly contains 2-3% pyrite.
- Quartz and carbonate are the dominant gangue minerals. (Grant, 1982. p9)

Assay analysis of material of the mine were:

- Zinc – 2.10%
- Lead – 0.6%
- Copper – 0.027% (Grant, 1982. p9)

Currently, the Site is inactive.

3.0 SITE SAMPLING AND TEST RESULTS

A Niton XRF, XL-722S was used to assess the material from the waste rock dumps for potential contamination. Bench testing was performed per EPA Method 6200. Surface soils were removed to approximately 4 to 6 inches below grade in order to get below highly oxidized surface layers to collect samples. Rocks, debris and other deleterious materials were removed. The soil was worked by drying, crushing and sieving to gain a uniform texture for sampling with the Niton.

Refer to Appendix A for a listing of elements that were detected as well as those that exceeded regulatory requirements.

4.0 SUMMARY

The constituents of concern that exceeded EPA Region IX industrial levels in soil were antimony and lead. Appendix A shows all Niton testing results along with associated State and Federal screening values and guidelines for all elements detected.

The Site poses a physical hazard to the general public recreating at the Site in that the portal is not sealed, ever though the adit is on steep terrain, requiring skilled climbing to gain access.

5.0 RECOMMENDATION

Based on the bench testing of the waste rock with the Niton XRF unit, physical hazards associated with the Site, and EPA's APA Checklist (Appendix B), it is recommended that a Site Inspection (SI) be completed. A more thorough search of the area is required over that done during the site reconnaissance performed for the APA. As part of this inspection, a thorough study of the area to determine the extent of contamination is warranted. The area should be sampled to determine the presence of all waste material and sampled at depth and a determination of volumes should be calculated. Acid base accounting (ABA) is required of the waste rock material. Acid drainage should be assessed of the water in Blue Jay, since it flows beneath the waste rock material. Drainage from the adit needs to be sampled as well as sediment, surface and pore water from the streams, and benthic organisms.

Appendix C contains additional photos of the Site.

6.0 DISCLAIMER

This abandoned mine/mill site was created under the General Mining Law of 1872 and is located solely on National Forest System (NFS) lands administered by the USDA Forest Service. The United States has taken the position and courts have held that the United States is not liable as an "owner" under CERCLA Section 107 for mine contamination left behind on NFS lands by miners operating under the 1872 Mining Law. Therefore, USDA Forest Service believes that this site should not be considered a "federal facility" within the meaning of CERCLA Section 120 and should not be listed on the Federal Agency Hazardous Waste Compliance Docket. Instead, this site should be included on EPA's CERCLIS database. Consistent with the June 24, 2003 OECA/FFEO "Policy on Listing Mixed Ownership Mine or Mill Sites Created as a Result of the General Mining Law of 1872 on the Federal Agency Hazardous Waste Compliance Docket," we respectfully request that the EPA Regional Docket Coordinator consult with the Forest Service and EPA Headquarters before making a determination to include this site on the Federal Agency Hazardous Waste Compliance Docket.

REFERENCES

Webber, Bert, 1995, *Gold Mining in Oregon,* Webb Research Group Publishers. (288 and 290 p)

Grant, A. Robert; 1982; Report of Mineral Examination Case No. 1070 for 6 Lode Claims In Little North Santiam Mining District; U.S.D.A. Forest Service; unpublished report

Appendix A

NITON ANALYTICAL RESULTS

SAMPLE LOCATION	TEST RESULTS Element	mg/kg	STATE GUIDELINES Receptor	mg/kg	EPA Standard	mg/kg
Sample # 1 - Waste Pile:	Antimony	616	Plants	5.0	Industrial	410
middle of pile	Barium	296	Birds	85.0	Industrial	67,000
	Cadmium	144	Plants	4.0	Industrial	450
	Iron	71,270	Plants	10.0	Industrial	100,000
	Lead	3920	Birds	16.0	Industrial	750
	Manganese	8544	Invertebrates	100.0	Industrial	19,000
	Nickel	16,691	Plants	30.0	Industrial	20,000
	Zinc	41,190	Plants	50.0	Industrial	100,000
Sample # 2 - Waste Pile:	Antimony	463	Plants	5.0	Industrial	410
next to drainage.	Barium	315	Birds	85.0	Industrial	67,000
	Cadmium	173	Plants	4.0	Industrial	450
	Iron	71,578	Plants	10.0	Industrial	100,000
	Lead	4160	Birds	16.0	Industrial	750
	Manganese	5709	Invertebrates	100.0	Industrial	19,000
	Nickel	13,299	Plants	30.0	Industrial	20,000
	Zinc	43,776	Plants	50.0	Industrial	100,000

Appendix B

ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

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 assessment process are required under CERCLA. Use additional sheets, if necessary.

Checklist Preparer:

Dennis Boles, Environmental Engineer — June 28, 2005
(Name/Title) (Date)

Ochoco NF, 3160 NE 3rd St, Prineville, OR 97754 — 541.923.0393
(Address) (Phone)

djboles@fs.fed.us
(E-Mail Address)

Site Name: Morning Star Mine

Previous Names (if any):

Site Location: The Site is located approximately 8.5 aerial miles northeast of Elkhorn, OR.

Legal Description: Willamette Meridian, T8S, R5E, NE ¼, SE ¼,S27

Latitude: N44° 51' 14" Longitude: W122° 10' 33"

Describe the release (or potential release) and its probable nature: Highest levels of contamination are located in the waste rock material. Antimony (616 mg/kg) and lead (4160 mg/kg), exceed EPA Region IX PRGs for industrial soils.

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 (i.e., 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 exist (i.e., comprehensive remedial investigation equivalent data showing no release above ARAR's, completed removal action, documentation showing that no hazardous substance release 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 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 (i.e., 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 (i.e., 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:

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.		Yes	No	No	**No**
2. No uncontained sources with CERCLA-eligible substances are present on site.		Yes	No	No	**No**
3. There are no on-site, adjacent, or nearby targets		Yes	No	No	**No**
4. There is documentation indicating that a target (i.e., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	**No**
5. There is an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	Yes	No	No	**Yes**
	Option 2: PA/SI	No	No	Yes	N/A
6. There is an apparent release and no documented on-site targets and no documented 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 migrating from the site.		No	Yes	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.		No	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:

( ) NFRAP
(X) Higher Priority SI
( ) Lower Priority SI
( ) Defer to RCRA Subtitle C
( ) Defer to NRC
( ) Refer to Removal Program – further site assessment needed
( ) Refer to Removal Program – NFRAP
( ) Site is being addressed as part of another CERCLIS site
( ) Other: _____

Regional EPA Reviewer: N/A _____ _____
Print Name/Signature Date

PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:

Appendix C

SITE PHOTOS

Photo 1. Morning Star Portal (photo by D. Boles).

Photo 2. Looking Upgradient in Blue Jay Tributary. Waste rock material on left side of photo is remnant of waste rock that apparently filled this drainage. (photo by D. Boles)

Photo 3. Waste Rock Material Below Adit. (photo by D. Boles)

Photo 4. Waste Rock Material Looking up Blue Jay Tributary from Old Road. Note Waste Rock pile Upper Center of Photo. (photo by D. Boles)

Photo 5. From Old Road Looking Towards Battle Axe
(photo by D. Boles).

Photo 6. Sample # 1 Location in Waste Rock Pile (photo by D. Boles)