

***ABBREVIATED PRELIMINARY ASSESMENT***

***MONTE CRISTO CONCENTRATOR***



Mt. Baker-Snoqualmie National Forest  
Snohomish County, WA

October 2002

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## **EXECUTIVE SUMMARY**

The Forest Service performed an Abbreviated Preliminary Assessment for the Monte Cristo Concentrator (Site) to determine the need for further site characterization. The Site is situated on flat to moderate side slopes. A Niton XRF unit was used for In Situ field screening and bench testing of the samples collected around the foundation of the concentrator building as well as from a waste pile for any potential contaminants. Water and sediment samples were not collected.

Five elements exceeded EPA Region IX Preliminary Remediation Goals (PRG) as to acceptable industrial levels in soil. The elements were iron, arsenic, lead, mercury, and antimony. Glacier Creek runs approximately 100 feet from the old concentrator site.

Based on the proximity of the Site to Glacier Creek, the heavy tourist foot traffic in the area, and the presence of Bull Trout in Glacier Creek, it is recommended a Site Inspection (SI) be performed.

## **1.0 INTRODUCTION**

An Abbreviated Preliminary Assessment (APA) was performed by the US Forest Service in accordance with the EPA “Guidance for Performing Preliminary Assessments Under CERCLA”, EPA “Improving Site Assessment: Abbreviated Preliminary Assessments” of 1999, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the 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 determine 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 Monte Cristo Concentrator, also known as the United Companies Concentrator, (Site) is located approximately 40 miles east of Everett, WA, on an old Forest Service road 4710. The legal description for the Site is; Latitude: 47° 59' 09"N, Longitude: 121° 23' 34"W, Sec 21, T 29 N, R 11 E, USGS Quadrangle Map – Monte Cristo. The Site is situated on flat to moderate hillsides adjacent to Glacier Creek. The Site is located in the mining district of Monte Cristo.

The Site consists of foundations and portions of flooring. It is expected that there may be some tailings/waste material still in the area (an AIM Discovery Form states the presence of 14,000 cy of tailings at the Site), which needs to be verified. The property is heavily overgrown with vegetation in most places. There are no other structures in the area. Access to the Site can be easily accomplished by way of the old Forest Service road except for the last 100 yards. The road and bridge have been washed out by Glacier Creek. Approximately 5 acres are disturbed on the Site.

It appears that the five-story, 300-ton-per-day ore concentrator was under construction in 1893 and began operation in 1894. It served all of the mines in the Monte Cristo area. Ore was shipped on a regular basis until 1896, when a massive flood destroyed the railroad in the area. The railroad was rebuilt and ore was shipped in 1897 and then in November, the railroad was once again washed out. John D. Rockefeller gained control of all of the properties in the area and rebuilt the railroad in 1900 and the mines operated until their sale to the Smelter Trust (then Guggenheims, now ASARCO), which promptly ceased all its operations at Monte Cristo. The concentrator facility was dismantled in 1917.

Mining was carried out by vastly reduced levels by small companies and individuals until 1920, when the last major mining attempt in the area, Boston-American Mine, was shut down.

Production records indicate that at least 280,000 tons of ore were extracted from the Mystery, New Discovery, Pride of Mountains, Pride of Woods, Golden Chord, Comet, Justice, and Rainy mines. Ore was transported from the mines in the district via a series of aerial tramways for processing at the Monte Cristo concentrator.

The primary ore minerals shipped to the concentrator were chalcopyrite, galena, sphalerite,

jamesonite, and realgar; gangue minerals included arsenopyrite, pyrite, quartz, calcite, epidote, and amphibole. Ores from the district were treated at the Monte Cristo concentrator to produce gold, silver, lead, zinc, and copper concentrates that were subsequently shipped to the smelter in Everett, WA.

Currently, the Site is inactive.

### **3.0 SITE SAMPLING AND TEST RESULTS**

A Niton XRF, XL-722S was used to assess the material from around the concentrator building and waste pile for potential contamination. In Situ testing was performed on the Site 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. Rocks, debris and other deleterious materials were removed. The soil was worked to gain a flat surface area on which to set the Niton. In addition to In Situ sampling, samples were collected, dried, and prepared for bench top sampling. The results from this effort are provided below.

No surface water, or sediment samples were collected and analyzed.

The following constituents exceeded EPA Region IX PRG industrial levels:

<u>Location</u>	<u>Constituent</u>	<u>Result (mg/kg)</u>	<u>PRG (mg/kg)</u>
Material from the concentrator foundation area.	Iron	746,000	100,000
	Arsenic*	290,000	2.7
	Lead	7,480	750
	Antimony	4,140	820
	Mercury	1,040	610

\*Arsenic – for noncancer endpoint, the PRG is 440 mg/kg. For cancer endpoints, the PRG is 2.7 mg/kg.

This material is readily accessible to the public who tour the area.

### **4.0 SUMMARY**

The material at and around the old concentrator facility is highly contaminated. The remains of this facility is heavily visited by tourists and during this assessment, it was apparent that people had been digging into the material at the Site, probably in hopes of finding rock specimens. This area is being promoted for various tourist attractions in several printed sources, of which one is *Discovering Washington's Historic Mines*.

The constituents of concern that exceeded EPA Region IX industrial levels in soil were iron, arsenic, lead, antimony, and mercury.

## **5.0 RECOMMENDATION**

Based on the In Situ screening and bench sampling of the material around the foundation of the  
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concentrator and waste pile with the Niton XRF unit, the proximity of potential waste piles to Glacier Creek, presence of tourists in the area, presence of Bull Trout in Glacier Creek, and EPA's APA Checklist (Appendix A), it is recommended that a Site Inspection (SI) be completed. As part of this inspection, a thorough study of the area to determine the extent of contamination is warranted as well as sampling water from pore spaces of the stream gravels immediately above and below the Site. Sampling of the benthic macroinvertebrates are also required. In addition to testing water samples from the pore spaces of the gravels for the presence of metallic elements, water parameters such as pH, conductivity, turbidity, dissolved oxygen, temperature, total dissolved solids, hardness, and oxygen reduction potential are required. The area should be sampled to determine the presence of waste material, and if present, the potential waste piles should be sampled at depth and a determination of volumes should be calculated. Acid base accounting (ABA) is required if waste material is present besides what had been observed during this assessment. Sediment samples are to be collected from transects of the stream and preferably at depth and analyzed for total as well as for available metals. Surface water samples are also required for analyses of both total and dissolved metal concentrations in Glacier Creek as well as in any other seeps and/or tributaries that may be present in the concentrator area.

Appendix B contains additional photos of the Site.

## **Appendix A**

### **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.

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**Site Name:** Monte Cristo Concentrator

**Previous Names (if any):** None

**Site Location:** The Site is located approximately 40 miles east of Everett, WA on FS Road 4710.

**Legal Description:** Latitude: 47°59'09"N Longitude: 121°23'34"W

**Describe the release (or potential release) and its probable nature:** The material around the foundation of the old concentrator facility is heavily contaminated. The following elements exceed industrial levels of the PRGs, and the results and relevant PRG industrial levels are listed in parentheses:

Iron – 746,000 (100,000 mg/kg), Arsenic – 290,000 (2.7 or 440 mg/kg), Lead – 7,480 (750 mg/kg), Antimony – 4,140 (820 mg/kg), Mercury – 1040 (610 mg/kg).

### **Part 1 - Superfund Eligibility Evaluation**

<b>If All answers are “no” go on to Part 2, otherwise proceed to Part 3</b>	<b>YES</b>	<b>NO</b>
1. Is the site currently in CERCLIS or an “alias” of another site?		<b>X</b>
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		<b>X</b>
3. Are the hazardous substances 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)?		<b>X</b>
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		<b>X</b>
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)?		<b>X</b>

**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.

<b>If the answer is “no” to any questions 1, 2, or 3, proceed directly to Part 3.</b>	<b>YES</b>	<b>NO</b>
1. Does the site have a release or a potential to release?	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	

<b>If the answers to questions 1, 2, and 3 above were all “yes” then answer the questions below before proceeding to Part 3.</b>	<b>YES</b>	<b>NO</b>
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.

<b>Suspected/Documented Site Conditions</b>		<b>APA</b>	<b>FULL PA</b>	<b>PA/SI</b>	<b>SI</b>
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.

<b>Check the box that applies based on the conclusions of the APA:</b>	
<input type="checkbox"/> NFRAP	<input type="checkbox"/> Refer to Removal Program – further site assessment needed
<input checked="" type="checkbox"/> Higher Priority SI	<input type="checkbox"/> Refer to Removal Program – NFRAP
<input type="checkbox"/> Lower Priority SI	<input type="checkbox"/> Site is being addressed as part of another CERCLIS site
<input type="checkbox"/> Defer to RCRA Subtitle C	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Defer to NRC	
Regional EPA Reviewer: <u>  N/A  </u>	
Print Name/Signature	Date

**PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:**

The area is heavily impacted with tourists. In many areas, it was obvious that tourists are looking for rock specimens. Rock hounding is promoted in *Discovering Washington's Historical Mines*. It would also appear, based on an AIM report, that 14,000 cy of waste material may be present in the area, however, this needs to be confirmed. Because of the proximity of the site to Glacier Creek and the fact that Bull Trout are present in the area, it is recommended that an SI be implemented.

**NOTES:**

The Site sits on flat to moderate side slopes and getting drilling equipment on the potential waste piles is possible. However, Glacier Creek has taken out the bridge and part of the road, so a dozer is required in order to be able to cross the stream. One 10-foot embankment will need to be excavated and reshaped in order to get equipment across the stream. It appears that a track drill and 4x4 vehicles can cross the gravel and rock material in the stream. The dozer may have to smooth out a few places. A D-5 or 6 would be adequate for this work.

## **Appendix B**

### **ADDITIONAL SITE PHOTOS**



*Side View of The Concentrator Foundation*



*Waste Pile Behind Sign*