

Alder Gold and Copper Co. (Twisp WA) Action Memo Check-off Sheet

Coordination with:	Point of contact	Copy
1) ORC	Cyndy Mackey	
2) ATSDR	Richard Kauffman	
3) State	Rick Roeder -WDOE	
4) Ops Office	NA	
5) Hanford Office	NA	
6) DOI	NA	
7) NOAA	NA	
8) PRP Search	NA	
9) Acct No/CERCLIS	See Action Memo	
10) Comm. Relations	Debra Sherbina	
11) NPL Coordination	NA	
12) ERRs/START DPOs	Michael Sibley	
13) Record Center	Craig Conant	
14) IGCE	Yes for this action	
15) Tribal Office	NA	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: ECL-116

ACTION MEMORANDUM

DATE: September 6, 2002

SUBJECT: Request for a Removal Action at the Alder Gold and Copper Co. Mill

FROM: Sean Sheldrake
On-Scene Coordinator

THRU: Chris Field, Unit Manager
Emergency Response and Site Cleanup Unit

TO: Michael F. Gearheard, Director
Environmental Cleanup Office

SITE ID #: 109G

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed removal action described herein at the Alder Gold and Copper Co. Mill site ("the site") located in the Okanogan County, just outside of Twisp, Washington. This action is related to the mill and mill pond only and does not address groundwater or the upper tailings pile, which are still under investigation. Bottled water is being provided to residents (as of January 18, 2002) with arsenic levels above 10 ppb pending the outcome of this investigation.

II. SITE CONDITIONS AND BACKGROUND

The Environmental Protection Agency (EPA) identification number for the Site is: WAD980722847. This is a time critical removal action.

Alder Gold and Copper Co. Mill
ACTION MEMORANDUM

The Alder Mill site was an ore concentrating mill for gold and copper. The site is situated on a 75 acre plot located in Okanogan County approximately 0.5 miles from the City of Twisp, Washington and is adjacent to the Methow River. The Alder Gold and Copper Company is responsible for the site. The site was operated from 1949 to 1952. Historically, two unlined and undiked ponds (upper and lower) were used to store wastewater and silt from the mill's operation. The tailings ponds occupy approximately 10 acres of the site (upper pond is approximately 0.25-mile long and three to five-feet deep). The lower, smaller pond is located approximately 100 feet from an irrigation ditch and is completely unvegetated. The upper, larger pond is somewhat vegetated and is partially submerged throughout much of the year. This disposal practice occurred since 1949. Runoff events caused by heavy rainfall have sporadically occurred at the site and transported contaminants of concern to nearby domestic wells. The contaminated water infiltrated down the sides of the well casings.

A. **Site Description**

1. **Removal Site Assessment**

Previous investigations performed by the Washington State Department of Ecology (WDOE) (March 1986; April 1991) have little data concerning the mill building and mill pond. However, XRF data obtained by WDOE in 2001 (9/12/2001 transmittal from Simmons/WSU to Roeder/WDOE) shows concentrations in the mill and mill pond areas. Recent investigations conducted by the Alder Gold and Copper Co show data consistent with the WDOE findings.

2. **Physical Location**

The site is located 0.5 mile outside the City of Twisp, Washington in Okanogan County (Take Twisp-Carlton road off of State Highway 20. The mill site is located at latitude 48 21' 16" longitude 120 7' 17". The mill is situated between two plateaus upon which the tailings ponds lie on a slope (approximately 15 percent), upgradient of the Methow River approximately 0.5 mile. Elevation at the mill site is 1860 feet above mean sea level. The surrounding area is comprised rural residential and light commercial uses.

3. **Site Characteristics**

Across the site, trespassers are common in both the tailings pile area, and in the mill buildings. Evidence of ore processing residue is present on the concrete flooring of the Mill Buildings, Assay Building, and surrounding these structures. The nearest home is approximately 1/8 of a mile from the upper tailings pond and 1/4 mile from the mill buildings. Due to the lack of vegetation and predominantly dusty conditions on the Mill Pond, these materials are also highly accessible to trespassers and may present a windblown dust hazard. Access to the site is completely unrestricted.

4. **Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant**

The primary contaminants of concern identified to date at the mill and mill pond include arsenic, lead, and cadmium for human health, and zinc for ecological receptors. All of these substances originated from the processing of ore into concentrates at the mill. Recent WDOE sampling illustrates these elevated concentrations of metals. By area, these elevated levels include: lead, arsenic, and cadmium in the mill buildings and lead and arsenic in the mill pond. Recent sampling conducted by the Alder Gold and Copper Co. confirm these findings. See the table below for the range of results by area:

Table 1: WDOE XRF Data from Mill Buildings and Mill Pond in parts per million (ppm)

	High	Low
Mill Buildings		
Lead	4678	366
Arsenic	554	Non-Detect
Cadmium	390	Non-Detect
Assay Building		
Lead	336,896	2640
Arsenic	26,778	282
Mill Pond		
Lead	2080	335
Arsenic	232	Non-Detect

Data obtained by the PRP are generally consistent with this data. In addition, both sets of data indicate that zinc is present in concentrations which are above WDOE ecological criteria up to concentrations of 20 percent.

Reconnaissance of the buildings indicate they are in general disrepair and may have areas that are structurally unsound.

5. **NPL Status**

The Alder Gold and Copper Co. Mill site is currently in the process of being scored in the hazard ranking system. The Washington State Department of Ecology requested EPA assistance with the provision of alternate drinking water in December, 2001. As of March, 2002, WDOE has requested that EPA take the lead on this site, including any necessary NPL assessment/scoring.

6. **Maps, Pictures, and other Graphic Representations**

See attached Mill and Twisp Figures. Note that the mill pond is referred to as the "Lower Pond."

B. **Other Actions To Date**

1. **Previous Actions**

a) **Investigations**

Previous investigations performed by the Washington State Department of Ecology (WDOE) (March 1986; April 1991) have little data concerning the mill building and mill pond. However, XRF data obtained by WDOE in 2001 (9/12/2001 transmittal from Simmons/WSU to Roeder/WDOE) give metals concentrations in the mill and mill pond areas.

b) **Spill History**

In 1952, approximately six months prior to the shut down of the facility, the south end of the upper tailings pond was washed out due to heavy rain. The wastewater and tailings came down the canyon and spread out around a nearby well and irrigation ditch. Trees and brush in the canyon died as a result of the release. Although not well documented, several releases from the upper and lower tailings ponds have reportedly occurred in addition to the 1952 event (SAIC, 1993).

2. **Current Actions**

Recent investigations have been conducted by the Alder Gold and Copper Co. in the mill and mill pond areas. EPA investigations are ongoing to determine the extent and origins of arsenic in groundwater.

C. **State and Local Authorities' Roles:**

1. **State and Local Action to Date:**

The Alder Gold and Copper Co. Mill site has not been proposed to the NPL. The Washington State Department of Ecology requested EPA assistance with the site in December, 2001. As of March, 2002, WDOE has requested that EPA take the lead on this site, including any necessary NPL assessment/scoring for the site. In WDOE's March 6, 2002 letter asking EPA to take over the site, they characterized the site as a first priority under their MTCA cleanup standards. The Okanogan Health District through a grant from WDOE has been conducting drinking water well sampling over the past year which has greatly assisted the EPA groundwater assessment.

2. **Potential for Continued State and Local Response:**

At this time, WDOE has asked the EPA for any emergency or time critical actions required at this site. The Health District has continued to support EPA's drinking water sampling needs.

III. THREATS TO PUBLIC HEALTH OR WELFARE OF THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES:

Conditions at the site meet the criteria for a removal action as stated in the National Contingency Plan (NCP), 40 CFR Section 300.415 as follows:

A. **Threats to Public Health or Welfare**

Contamination at the site creates an imminent and substantial endangerment to the public health and welfare through actual or potential exposure of trespassers to high levels of hazardous substances and pollutants or contaminants in soils largely at or near the surface. The human health effects of the primary contaminants identified at the Site may be summarized as follows:

Arsenic (excerpted from ATSDR Toxicological Profile, September 2000)

Inorganic arsenic occurs naturally in soil and in many kinds of rock, especially in minerals and ores that contain copper or lead. You may be exposed to arsenic by eating food, drinking water, or breathing air. Children may also be exposed to arsenic by eating dirt. You may also be exposed by skin contact

with soil or water that contains arsenic. Inorganic arsenic has been recognized as a human poison since ancient times, and large oral doses (above 60,000 ppb in food or water) can produce death. If you swallow lower levels of inorganic arsenic (ranging from about 300 to 30,000 ppb in food or water), you may experience irritation of your stomach and intestines, with symptoms such as stomach ache, nausea, vomiting, and diarrhea. Other effects you might experience from swallowing inorganic arsenic include decreased production of red and white blood cells which may cause fatigue, abnormal heart rhythm, blood-vessel damage resulting in bruising, and impaired nerve function causing a "pins and needles" sensation in your hands and feet.

Perhaps the single most characteristic effect of long-term oral exposure to inorganic arsenic is a pattern of skin changes. These include a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso. A small number of the corns may ultimately develop into skin cancer. Swallowing arsenic has also been reported to increase the risk of cancer in the liver, bladder, kidneys, prostate, and lungs. The Department of Health and Human Services (DHHS) has determined that inorganic arsenic is a known carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic arsenic is carcinogenic to humans. Both the EPA and the National Toxicology Program (NTP) have classified inorganic arsenic as a known human carcinogen. If you breathe high levels of inorganic arsenic, you are likely to experience a sore throat and irritated lungs. You may also develop some of the skin effects mentioned above. The exposure level that produces these effects is uncertain, but it is probably above 100 micrograms of arsenic per cubic meter (g/m³) for a brief exposure. Longer exposure at lower concentrations can lead to skin effects, and also to circulatory and peripheral nervous disorders. There are some data suggesting that inhalation of inorganic arsenic may also interfere with normal fetal development, although this is not certain. An important concern is the ability of inhaled inorganic arsenic to increase the risk of lung cancer. This has been seen mostly in workers exposed to arsenic at smelters, mines, and chemical factories, but also in residents living near smelters and arsenical chemical factories. People who live near waste sites with arsenic may have an increased risk of lung cancer as well.

If you have direct skin contact with inorganic arsenic compounds, your skin may become irritated, with some redness and swelling. However, it does not appear that skin contact is likely to lead to any serious internal effects.

Cadmium (excerpted from ATSDR Toxicological Profile, July 1999)

Cadmium is a natural element in the earth's crust. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium can enter your body from the food you eat, the water you drink, from particles it may be attached to in the air you breathe. Breathing high levels of cadmium severely damages the lungs and can cause death. Eating food or drinking water with very high levels severely irritates the stomach, leading to vomiting and diarrhea. Long-term exposure to lower levels of cadmium in air, food, or water leads to a

buildup of cadmium in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones. Animals given cadmium in food or water had high blood pressure, iron-poor blood, liver disease, and nerve or brain damage.

Skin contact with cadmium is not known to cause health effects in humans or animals.

The Department of Health and Human Services (DHHS) has determined that cadmium and cadmium compounds may reasonably be anticipated to be carcinogens.

Lead (excerpted from ATSDR Toxicological Profile, July 1999)

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. People may be exposed to lead and chemicals that contain lead by breathing air, drinking water, eating foods, or swallowing or touching dust or dirt that contains lead. Shortly after lead gets into your body, it travels in the blood to the "soft tissues" (such as the liver, kidneys, lungs, brain, spleen, muscles, and heart). After several weeks, most of the lead moves into your bones and teeth. In adults, about 94% of the total amount of lead in the body is contained in the bones and teeth. About 73% of the lead in children's bodies is stored in their bones. Some of the lead can stay in your bones for decades; however, some lead can leave your bones and reenter your blood and organs under certain circumstances, for example, during pregnancy and periods of breast feeding, after a bone is broken, and during advancing age.

Your body does not change lead into any other form. Once it is taken in and distributed to your organs, the lead that is not stored in your bones leaves your body in your urine or your feces. About 99% of the amount of lead taken into the body of an adult will leave in the waste within a couple of weeks, but only about 32% of the lead taken into the body of a child will leave in the waste. Under conditions of continued exposure, not all the lead that enters the body will be eliminated, and this may result in accumulation of lead in body tissues, notably bone. The main target for lead toxicity is the nervous system, both in adults and in children. Long-term exposure of adults to lead at work has resulted in decreased performance in some tests that measure functions of the nervous system. Lead exposure may also cause weakness in fingers, wrists, or ankles. Some studies in humans have suggested that lead exposure may increase blood pressure, but the evidence is inconclusive. Lead exposure may also cause anemia, a low number of blood cells. The connection between the occurrence of some of these effects (e.g., increased blood pressure, altered function of the nervous system) and low levels of exposure to lead is not certain. At high levels of exposure, lead can severely damage the brain and kidneys in adults or children. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

B. Threats to the Environment

The contamination at the site creates an imminent and substantial endangerment to the

environment in part through the actual or potential exposure of plant and animal life immediately adjacent to the mill and ponds, through direct contact to contaminants shown in Table 1. The nearest irrigation channel is 100 feet from the mill and mill pond area, which could present a pathway for contaminants to migrate to the Methow River. The Methow River is heavily used for recreation including swimming and sport fishing and is habitat for a number of avian and waterborne species.

IV. ENDANGERMENT DETERMINATION

Actual and threatened release of hazardous substances, pollutants and contaminants from this site may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

The objective of the actions outlined below is to achieve reductions in potential exposures to humans and the ecological receptors in the areas with the potentially most mobile and highest levels of contamination. These proposed actions are based on the information known to date regarding the conditions at the site. As additional information is gathered, further actions may be necessary.

1. Proposed Action Description

a) Mill Buildings

The mill buildings will be demolished after materials have been removed. Soils surrounding the mill buildings will be removed or removed and capped (such that positive drainage is maintained) to meet MTCA method A levels, as deemed practical. Soils from the building may be placed in an on-site repository, or taken to an acceptable off-site landfill, as deemed appropriate. Materials from the building may be recycled, if materials such as wood or steel can be decontaminated to MTCA method A levels through cleaning and/or planing. Intermediate process materials and concentrates will be sent to smelters if materials are recoverable. If not, these materials will be disposed of appropriately in an offsite landfill. The foundation of buildings will be evaluated to determine if they may be adequate caps to prevent migration of any contaminants that may be located below it. If it is deemed adequate, it will be left in place after decontamination to meet MTCA method A levels, as deemed practical. If foundations are inadequate to serve as caps or are nonexistent, underlying soil will be removed as above. Disturbed areas will be seeded with native grasses.

b) Mill Pond (also known as the lower tailings pond)

The mill pond located immediately adjacent to the mill buildings will permanently fenced to preclude access or be removed to an onsite or offsite repository to meet MTCA method A levels, as deemed practical. If removed, the site will be graded to maintain positive drainage and seeded with native grasses.

c) Tailings Pond (also known as the upper tailings pond)

The tailings pond encompasses approximately 10 acres of the site. The evaluation of whether this area poses a threat to area groundwater is ongoing. If action is warranted, this will be addressed in an Amendment to this Action Memorandum.

d) Other Activities

The site including the mill buildings, mill pond, and upper tailings pile, will be fenced to preclude access. This will prevent unauthorized access while the mill buildings are still standing and prevent direct contact hazards with the ponds for trespassers and some terrestrial wildlife. This will also control access during construction activities.

2. Contribution to Remedial Performance

This site has not been proposed to the NPL. Activities proposed, however, will not preclude further activities at the site, if deemed necessary by ongoing groundwater data collection.

3. Description of Alternative Technologies

Although no alternative technologies have been evaluated at this time for this site, re-use and recycling will be conducted to the extent possible for demolition debris.

4. ARARs

The proposed removal action will attain or exceed applicable or relevant and appropriate requirements (ARARs) to the extent practicable. Three factors will be applied to determine whether the identification and attainment of ARARs is practicable: (1) the exigencies of the situation; (2) the scope of the removal action to be taken; and (3) the effect of ARAR attainment on the statutory limits for removal action duration and cost.

The following is a summary of state and federal ARARs identified to date that may be applicable to the proposed removal action:

Federal

Clean Water Act Section 404; Safe Drinking Water Act; Endangered Species Act (16 USC 1531); RCRA; Fish and Wildlife Coordination Act.

State

Model Toxic Substances Control Act (MTCA).

5. Project Schedule

The following is an estimated schedule for this time critical removal action:

Mobilization	9/20/2002
Fence Site	9/30/2002
Asbestos Survey	10/15/2002
Demolition	11/15/2002
Tailings (if applicable), Soil Removal	10/15/2002
Demobilization	11/30/2002

B. Estimated Costs

This action is expected to be PRP lead, however, the following are estimates of costs if the project would need to be undertaken by EPA.

<u>Extramural Costs</u>	<u>Project Ceiling</u>
Access	
Access	
Rough grade road & portable bridge	\$31,489
Demolition	
Remove slab, roof, siding, equipment	\$65,264
Asbestos Abatement	
Remove asbestos pipe and wall insulation	\$180,077
Disposal (off-site, no reuse, partial haul to Arlington, OR)	
Excavate bldg perimeter soil, tailings; dispose of spoils and bldg	\$654,823
Restore excavations	
Grade, backfill, and vegetate	\$23,095

Subtotal		\$954,800
<i>Localization factor (zip: 98856):</i>	0.98	\$935,800
<i>Design and/or PRP Oversight</i>		\$100,000
<i>Contingency¹</i>	40%	\$374,400
Total Extramural		\$1,410,200

<u>Intramural Costs</u>	<u>Project Ceiling</u>
EPA Direct	\$ 50,000
EPA Indirect	<u>\$ 150,000</u>
TOTAL INTRAMURAL	<u>\$ 200,000</u>
<u>TOTAL ESTIMATED PROJECT CEILING</u>	<u>\$ 1,610,200</u>

IV. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delay or disapproval of the proposed action will allow continued contact with and potential leaching of contamination into soils, surface water, and groundwater. Failure to act will increase/prolong the threat to human health and the environment described above.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

See enforcement addendum.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Alder Gold and Copper Co. Mill near Twisp, Okanogan County, Washington, developed in accordance with CERCLA as amended, and not inconsistent with the National Contingency Plan (NCP). This decision is based on the Administrative Record for the Site.

Site conditions meet the NCP section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action. The total project ceiling, if approved, will be **\$1,510,200**. A total of **\$100,000.00** would be from the removal program Advice of Allowance if the project is PRP lead.

APPROVAL

(signature) Date
Michael F. Gearheard, Director
Office Of Environmental Cleanup

DISAPPROVAL

(signature) Date
Michael F. Gearheard, Director
Office Of Environmental Cleanup

Reason(s) for Disapproval:

Alder Gold and Copper Co. (Twisp WA) Mill/Mill Pond Action Memo Concurrence

Sheldrake Mackey Kowalski Field

Initial

Date

ENFORCEMENT CONFIDENTIAL
FOIA EXEMPT

ENFORCEMENT ADDENDUM:

Site: Alder Gold and Copper Co. Mill, Twisp, WA

A. PRP Search:

The Alder Gold and Copper Company is the owner of the Alder Mill site.

B. Notification of PRPs of Potential Liability and of the Required Removal Action:

The Alder Gold and Copper Company has expressed an interest in conducting the work required by this Removal Action.

C. Decision Whether to Issue an Unilateral Order:

EPA has communicated with The Alder Gold and Copper Company the intent to issue an Unilateral Administrative Order (UAO) if negotiations on the AOC or work plan are not successful in reaching a position acceptable to EPA.

D. Negotiation and Order Issuance Actions to Date:

E. State Notification of Intent to Issue an UAO:

