

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Bonanza Mine and Mill - Removal Polrep
Final Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region X

Subject: POLREP #8
Bonanza Mine and Mill

Sutherlin, OR
Latitude: 43.3899870 Longitude: -123.1845630

To: Brooks Stanfield, EPA Region 10

From: Daniel Heister, On-Scene Coordinator

Date: 10/28/2016

Reporting Period: 9/12/16 to 10/28/16

1. Introduction

1.1 Background

Site Number:	10NE	Contract Number:	START 14-06-0006
D.O. Number:	ERRS 0013/030309.0013	Action Memo Date:	6/4/2014
Response Authority:	CERCLA	Response Type:	Time-Critical
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	8/4/2014	Start Date:	8/4/2014
Demob Date:	9/12/2016	Completion Date:	10/31/2016
CERCLIS ID:	ORN001001174	RCRIS ID:	
ERNS No.:		State Notification:	6/4/14
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Abandoned historical mercury mine and mill.

1.1.2 Site Description

1.1.2.1 Location

The Bonanza Mine and Mill Site is located 6 miles east of Sutherlin, Douglas County, Oregon.

1.1.2.2 Description of Threat

Elevated concentrations of mercury, arsenic, and other metals from historical mercury mining operations. For additional information and details, please see PolReps 1 through 7. This Polrep (Polrep 8) covers the 2016 repair of the site repository which had a slide in February of 2016.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

In February 2016 site inspections revealed that a cover material slide had occurred at different locations on the repository cover that exposed the underlying linear low-density polyethylene (LLDPE) liner. The geosynthetic drainage layer (GDC), a component of the overall cover design, was also observed along the edge of many areas of the slide just above the LLDPE liner. The GDC had separated at seams in some areas while in others it had sheared. In the sheared areas, the shears left long strands of plastic from the Geonet mesh and ripped through the geotextile fabric. The GDC has also folded over onto itself in several areas along the edges of the slide.

The intended function of the GDC was to allow water infiltrating the cover soil to enter the GDC to readily flow to a toe drain at the base of the repository slope. It appears that a portion of the cover soil that was used in the repository had a higher permeability than the off-site sourced material proposed for the cover and considered in the repository design. While the fast-draining cover soil allows for water to readily drain to the GDC layer, the high flow and pressure within the GDC during a heavy precipitation event may exceed the modeled conditions considered for the design, resulting in shear forces exceeding the factor of safety of the repository design. If conditions are not improved, there is a risk of further cover movement during heavy precipitation events and possibly tearing or other damage to the LLDPE liner. To date no damage has been observed to the underlying LLDPE liner. If repairs are delayed and the LLDPE is damaged, repairs will become more complicated and costly. Also, it is critical to implement the repairs prior to potential impacts from the upcoming rainy season in order to prevent releases of waste from the repository which could threaten the public and the environment. Proposed repairs to the repository cover include re-covering exposed LLDPE with appropriate cover material. Repairs and modifications also include slope drains to

improve drainage from the repository cover, and rock-filled gabion baskets along a portion of the toe of the repository slope to provide a higher factor of safety, and higher resistance to slope movement.

Data regarding the nature and extent of the contaminants of concern found at the Site include elevated levels of mercury, arsenic, and other metals in soils, mill tailings, road surfaces, and other media. For additional information and details please refer to PolReps 1 through 6.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

2.1.2 Response Actions to Date

2.1.2.a Removal actions were undertaken by the Oregon Department of Environmental Quality (ODEQ) in 2000 and 2014. For additional information and details please see PolReps 1 through 7.

2.1.2.b. The following removal actions have been undertaken by EPA as part of this ongoing removal action for the current reporting period: September 17 - October 21, 2016.

The primary activities during this period included the following tasks:

9/17-9/20

ERRS worked on the approximate one mile gravel segment of Bonanza Mill Rd. which was in serious disrepair. The segment connects the paved road from Sutherlin to the Mine and is the only access to the site. Photo documentation of the road prior to the repair work was done. Equipment, trailers, and materials for the repository repair were also mobilized to the site and set up occurred in preparation to begin on site.

On 9/19 and 9/20 FOSCs Stanfield and Heister walked the repository with the ERRS PM (Jason Coury) and two START engineers (Vince Gee and Tom Campbell) to ensure all parties were on the same page. START also physically laid out and marked the areas where drainage pipe would be placed on the repository. START also used a Jerome Hg Vapor Analyzer across the repository to ensure levels were safe for crews to work in Level D protection. The Jerome results gave the crew an all clear.

9/21 to 9/26

Work began in earnest on the repository. An ERRS work crew of seven (now nine) assembled gabion baskets, excavated two roads at the base of the repository in preparation to place the gabions, began work on excavating the drainage system, and cleaned out all culverts on site that may have been impacted by sediment created when the repository cover failed. START has been placing dust monitors daily and although it has been hot and dry at the site, the levels have been well below levels of concern as a result of dust management measures employed by the ERRS crew.

On 9/20 FOSCs Stanfield and Heister spoke with one of the property residents about evidence that her children have been playing on the repository fairly regularly. She denied that her boys were playing in the area. On 9/21 FOSC Heister was radioed by ERRS that the boys were playing on the repository. Heister went directly to the repository where he found the two boys playing with large (4' to 5') pointed sticks. Heister got the boys off the repository and asked them why they were playing on it. They said no one ever told them that they could not. Heister sent them back to their house and asked them to stay in their yard. Their mother was not home at the time.

On 9/23 I spoke with the property owner, who is also a resident and the boys' grandfather. I explained the incident with the boys, but more importantly the evidence that the children had been playing on the repository on a routine basis. I explained the risks and dangers of this, especially while construction is ongoing. The property owner assured me that he would speak to the boys and their mother and make sure they do not leave the yard and stay off the repository in the future. FOSC Stanfield and Heister discussed the situation and agreed more in depth discussions with both the property residents and ODEQ after this repair is concluded.

As of end of work on 9/26, the SE corner of the repository were reinforced with gabions and backfilled. An additional twenty, 12' by 6' by 4' gabions have been placed, filled, and closed at the south base of the repository.

9/27 to 10/5

ERRS crews continued building the gabion buttress during the time period stopping on Sunday 10/2 for a scheduled day off, resuming work on Monday 10/3. As of EOB 10/4, 95% of the buttress was completed. Additionally crews worked during this time period installing the drainage system on the west side of the repository. By EOB 10/4, 40% of the drainage system was installed. Heavy rain showers began around lunch time on 10/4 making work difficult for the crew, but they were able to close up all open trenches and button up the site for a forecast of heavy rain on 10/5. The rain came in the evening of 10/4 and continued through the early morning hours, dropping over one inch of rain. ERRS PM, ERRS Crew Foreman, and OSC Heister went to the site early and made the determination that the continuing rain made work conditions impossible for 10/5 and gave the crew the day off. Fortunately the weather forecast has no rain and warmer temperatures through 10/11. As a result the crew will plan to work on Sunday 10/8 to make up for taking 10/5 off. The ERRS project manager also sent three crew members home on 10/5 because progress made on the site has made decreasing the crew size possible.

Punctures to Liner Discovered

On 10/3 eight punctures in the exposed liner were discovered while crews were sweeping off the exposed

liner to prep it for sand and capping. Six are small (less than a pencil diameter), but two are roughly quarter size. We scanned all of them with the Jerome Hg detector and did not detect anything above background with some "non-detects". Three punctures were on the upper bare area, with the remaining five located on the longer downhill portion of the exposed liner where scratches are visible. ERRS and OSC Heister did a thorough walk of all the exposed liner and are confident that the total number of punctures is eight.

Northwest Liners will be coming to the site on Friday 10/7 to perform necessary repairs, which are estimated to take one day. Estimated cost of the repairs will be approximately \$4.5 K.

10/6

ERRS installed the top-tier 3x3x12 foot gabion baskets on the southwestern end of the toe, completing the gabion installation except for a short gap near the center of the toe of the slope. The gap was left to allow equipment access to the lower portion of the repository. Gabions would be installed in the gap at a later date after completing drain lines and slope restoration activities.

To date dust monitoring results show average concentrations and maximum concentrations well below particulate action levels.

10/7

Technicians from Northwest Liners (NWL) were on site and began reparations to the eight punctures previously identified. The NWL crew repaired the LLDPE punctures with plug welds. Most of the punctures were pencil-diameter or smaller holes; tears larger than 2 to 3 inches were repaired with patches laid on the LLDPE and welded in place. All puncture locations were cleaned prior to repair, and all of the repairs were tested with a vacuum box to ensure repairs were adequate.

The ERRS crew continued repairing liner cover, covering the areas after LLDPE repairs were completed.

Because approximately six new punctures were discovered as the remainder of the liner were swept in preparation for capping, the contractor remained on site for an additional day of repair.

10/8 – 10/12

Several days of favorable weather allowed crews to make significant strides in installing the drain line system and cover the exposed sections of liner with new sand and soil. As the forecast became clear that the season's first major storm was due to arrive Thursday, workdays were extended to maximize daylight hours and complete the capping of the liner and all work involving heavy equipment on the repository. The last reaches of the drain system and the final section of exposed liner was completed in the early afternoon of 10/12 and the crew was able to put back in place slash material that served as one of the main erosion control measures. The crew also began securing stockpiles and putting in place straw bales anticipating severe stormwater.

10/13

Moderate rain allowed crews to remove the access road constructed at the bottom of the repository and re-contour the area to its desirable natural grade terminating at the gabion baskets. Because of the accomplishments of the previous day ERRS was able to arrange for demobilization of the 5-yard dump truck and the "water buffalo" water tank. Crews continued to repair trenches and drainage ditches installing erosion control features as needed and will look for opportunities to demobilize additional equipment.

OSC Stanfield and one START engineer (Petersen) visited the two adits and collected GPS coordinates using the Trimble GPS unit. Geographic coordinates are being used to determine the location of the adits and their respective property owners. We were made aware that the children living on the Bonanza Mine property were accessing the adits, likely with no adult supervision. With no restrictions to adit access the adits pose physical safety hazards to children living on the property as well as potential trespassers.

10/14 – 10/16

Rainy conditions continued at the project site. In spite of the wet conditions the ERRS contractor installed the remaining gabion baskets in the gap located near the center of the gabion wall that had been left to allow access to the lower repository slope. Eight additional gabion baskets were installed, and were filled with 6" - 8" gabion rock. Backfill material was placed behind the gabions, and blended to the repository slope to provide positive drainage off the repository. The repository slopes and other areas of the site disturbed during the removal action were stabilized by spreading weed-free straw. Because of heavy rain and wet site conditions, the site was shut down mid-day on Saturday 10/15, and remained shut down until Monday morning 10/17.

10/17 – 10/19

The contractor crew completed the slope infill behind the gabion wall. Several truckloads of approximately 2-foot diameter boulders were brought on site and placed in an evenly spaced row along the top of the repository. The boulders will help restrict access and protect the repository cover. The removal contractor placed boulders along the western portion of the gabion wall. Other activities during this period included stabilizing soil in disturbed areas of the site, building a rock-lined ditch from the western end of the gabion wall to the drainage channel, installing sedimentation basins in ditches and drainage channels, placing slash material (obtained from neighboring timber harvest areas with permission of the Lone Rock Timber Company), and cleaning and preparing equipment for demobilization which is scheduled to begin Friday 10/21. Hydroseeder subcontractor representatives visited the site; they will return and apply hydroseed mulch mixture to the repository and other disturbed areas October 21-22.

10/21-10/24

Hydroseeding was conducted from 10/21- 10/24 (Sunday 10/23 no work was done) and ERRS completely demobilized from the site on 10/26.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

EPA has initiated a PRP search for this Site.

2.1.4 Progress Metrics* (as of 12/6/14)

Waste Stream	Medium	Quantity	Manifest #	Treatment	Disposal
Mercury, soil waste	Soil and other debris	One 55-gallon drum (150 lbs)	007851712FLE	Retirement via sulfide treatment	Bethlehem Apparatus Co., Hellertown, PA
Mercury, wood debris	Soil, wood, and other debris	Two 55-gallon drums (1000 lbs)	007851711FLE	Macro-encapsulation	Clean Harbors Grassy Mountain, Grantsville, UT
*No waste was generated or released during the 2016 action					

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

No planned response activities anticipated.

2.2.1.2 Next Steps

No additional steps anticipated.

2.2.2.1 Issues

N/A

2.3 Logistics Section

2.3 Logistics Section

N/A

2.5.1 Safety Officer

N/A

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer

Daily safety meetings were held at the beginning of each day. During the reporting period, site personnel were in Level D PPE based on the results of previous air monitoring and/or sampling.

2.5.2 Liaison Officer

Outreach activities were addressed by key project personnel on an as needed basis.

2.5.3 Information Officer

See 2.5.2. Additionally, a Community Involvement Coordinator (CIC) was assigned to the project and available to assist with outreach activities on an as needed basis.

3. Participating Entities

3.1 Unified Command

While UC was not established, ODEQ was integrated into the project organization, as appropriate.

3.2 Cooperating Agencies

N/A

4. Personnel On Site

EPA – 1

START – 1

ERRS – 11

5. Definition of Terms

N/A

6. Additional sources of information

6.1 Internet location of additional information/report

www.epaosc.org/BonanzaMineandMill

6.2 Reporting Schedule

No additional PolReps anticipated.

7. Situational Reference Materials

No information available at this time.