

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Pennsylvania Mine - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region VIII

Subject: POLREP #4
Pennsylvania Mine

Montezuma, CO
Latitude: 39.5810980 Longitude: -105.8672337

To:
From: Kerry Guy, OSC
Date: 10/19/2013
Reporting Period: September 16-October 19, 2013

1. Introduction

1.1 Background

Site Number:	08WQ	Contract Number:	various
D.O. Number:	various	Action Memo Date:	6/19/2013
Response Authority:	CERCLA	Response Type:	Time-Critical
Response Lead:	EPA	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	n/a
Mobilization Date:	7/18/2013	Start Date:	7/18/2013
Demob Date:	10/5/2013	Completion Date:	10/1/2016
CERCLIS ID:	08WQ	RCRIS ID:	n/a
ERNS No.:	n/a	State Notification:	Yes
FPN#:	n/a	Reimbursable Account #:	n/a

1.1.1 Incident Category

Mining and Mineral Processing / Smelting.

1.1.2 Site Description

1.1.2.1 Location

The Pennsylvania Mine is located in Summit County, Colorado, roughly 8 miles east of the Keystone Ski Resort in the Front Range of the Rocky Mountains. The mine is approximately one-quarter mile south of Peru Creek on the northwest slope of Decatur Mountain and on the south side of the east-west trending Argentine Valley. It is roughly 3.5 miles upstream of the confluence of Peru Creek with the Snake River. The Snake River flows into Dillon Reservoir approximately 9 miles downstream of its confluence with Peru Creek. Dillon reservoir is a major municipal water supply for the Denver metropolitan area.

The mine is located in alpine terrain characterized by steep-sided glaciated valleys and unvegetated, rocky upland ridges and peaks. Elevations range from 10,900 feet at the lowest level of the mine workings, to 11,130 feet at the level F adit and 11,450 feet at the level C adit. The mine is at timberline and weather conditions are characterized by short summers and long, snowy winters. The average snowfall at the nearby Keystone Ski Resort is approximately 230 inches.

The historic workings of the Pennsylvania Mine are found on both public and private land. Public land at the Site is managed by the United States Forest Service (USFS) and is part of the White River National Forest. There are several mining claims and other unimproved private property at and near the Site. The nearest private residence is located approximately two miles west of the Pennsylvania Mine Site.

In 2010, EPA delineated and prioritized the waste piles located near the level C and F adits based on the concentration of heavy metals in the soil. Approximately 9,200 ft³ or 2% of the waste at Level F and 124,000 ft³ or 48% of the waste near Level C are located on property owned by the USFS. Highly contaminated sediments can also be found both in Peru Creek and in several washes that drain the Site into the creek.

The area is a popular year-round recreational destination. Recreational activities include off-highway driving, camping, hiking, biking, running, cross-country skiing and back-country skiing.

1.1.2.2 Description of Threat

Extensive sampling and monitoring data have been collected at the Pennsylvania Mine since the 1980s.

These data show that the mine is one of the largest, if not the largest, anthropogenic source of dissolved heavy metals in the Snake River watershed. Exceedances of Colorado's water quality standards in the vicinity range from 20 to 50-fold for cadmium, manganese, lead, and zinc, 120-fold for iron and 300-fold for aluminum.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

The Pennsylvania Mine was initially developed in 1879. It produced gold, silver, lead, copper and zinc and had its biggest production year in 1893 when it shipped 7,000 tons of ore. The mine was developed on six levels, known as A, B, C, D, E and F with F being the lowest level. Adits were constructed at levels C and F. The mine continued regular operations until 1908 and was then worked intermittently until the mid-1940s when it was abandoned.

Since the mine was abandoned, metals-laden effluent has flowed from the level F adit, down a steep channel and directly into nearby Peru Creek. In addition to this acid mine drainage, significant waste and tailing deposits remain on the surface near both the level C and level F adits. These deposits are often eroded into the creek during large runoff events.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

EPA's removal action addresses issues above and below ground and will be carried out in partnership with the Colorado Department of Reclamation and Mining Safety (DRMS) under EPA's time-critical removal authorities as defined in the 40 CFR 300.

Due to the complexity of the project and the typically short summer construction season, Site work will be sequenced over several years of construction, hence the estimated completion date of October 2016. The following major activities will take place on Site during the 2013 construction season:

- improving Peru Creek Road up to the mine (EPA)
- managing drainage at the portal (EPA)
- consolidating mine waste (EPA)
- underground rehabilitation and investigation (DRMS)

2.1.2 Response Actions to Date

Reporting Period September 16 - October 19, 2013

1. Penn Mine waste rock pile consolidation and grading

ERRS consolidated the east knob of the waste rock pile into the main waste rock pile, then graded and shaped the pile to a more uniform shape with slightly less slope. The face of the underlying native soils where the waste rock knob was removed was tiered to reduce erosion.

ERRS has completed approximately 10 percent of the erosion control armoring of the tier faces.

2. Waste rock pile swale construction (run on controls)

ERRS has completed construction of the run-on control swale including erosion control rock armoring.

3. Rehabilitation of Level C Adit

DRMS continued rehabilitation of the Level C adit for the purpose of installing up to two bulkheads (plugs): bulkhead 1 (past the ore body drift) planned for summer 2014 and bulkhead 2 (before the ore body drift) planned for summer 2015. DRMS has completed several steel sets to support unconsolidated material at the interface of the adit entrance culvert (installed last year by DRMS) and the remaining 25 feet or so of overlying unconsolidated material leading up to bedrock. DRMS is currently removing muck (sediments), approximately 1 foot in depth, along a 120 foot reach leading up to the ore body drift. DRMS plans several more steel sets at the ore body drift to address a collapse. From there, DRMS will remove another 120-150 feet of muck (saturated sediments), approximately 2 feet in depth, after which the adit becomes dry for the remaining 400 feet or so that DRMS plans to work in. Because the adit is too narrow for a mucker, DRMS currently plans to remove the muck with a vac truck. DRMS has asked EPA to support this operation by managing the contents of the vac truck at the entrance to the adit.

ERRS backfilled the excavation above the 100 foot culvert entrance to provide positive drainage during the winter.

4. Mine drainage treatment and storage pond operation

ERRS continued throughout the reporting period to treat and buffer large surges of contaminated water coming from the Level C mine adit. DRMS's work is resulting in heavy loads of iron rich sediments being re-suspended and carried out with the mine drainage. The large surge pond (pond #4) is being brought on-line during the day to capture and buffer the significant loads during day operations. ERRS continues to operate the treatment system ahead of the retention ponds which includes adding NaOH and flocculent. ERRS continues to remove sediment from the initial mixing pond on a weekly basis.

5. Forest Service Road 260 repairs

Minor maintenance as needed is ongoing to maintain the service road.

6. Bridge Installation at Peru Crossing

The bridge installation is complete. On September 8, Tom Brunner, HP Geotech, was on-site to conduct bridge approach compaction tests. Tom conducted roller test with the front end loader. He identified a soft spot on the south side of the bridge. ERRS removed soils at this location and hauled in 8-16 inch dredge rock for backfill. Tom observed the backfilling operations and concluded the soft spot was adequately taken care of. ERRS completed welding the abutment and bridge slab metal plates (from underneath) on September 9th. On September 10, Doug Jateico, bridge supplier, brought the guardrail bolts and ERRS installed the guardrails.

7. Borrow pit for armoring rock

ERRS closed borrow operations due to snow.

7. Weather

Weather has been steadily cooling with an occasional inch or two of snow each day. Morning temperatures are in mid-teens with typical warming to between 40-50 degrees by mid-afternoon.

Reporting Period September 9-14, 2013

1. **Swale Construction:** ERRS completed hauling and stockpiling rock for drainage swale construction on Saturday afternoon (Sept 14). Approximately 35-40 rock loads were loaded with an excavator and hauled down from a rock field located approximately 1/2 mile above the Level C portal. The rock is to be used for construction of the run-on control swale for the waste rock pile and the drainage swale to replace the treatment pond drainage pipe to the first pond.

2. **Penn Mine Waste Rock Pile:** ERRS brought the grade up outside of the northwest side of waste rock pile in order to prepare for construction of the run-on control swale which will run above the pile, extend down the west side of the pile, and then wrap around the northeast end of the pile. In order to get grade, ERRS pulled back some of the northwest end of the waste rock pile.

ERRS began shaping the waste rock pile which will include consolidation of the east knob into the waste rock pile and reduction of the face slope by extending the toe of the pile out several feet on a bench constructed in front of the existing pile toe.

3. **EPA Water Treatment Ponds:** ERRS continued to operate the water treatment system during working hours when DRMS was working in the mine. The treatment system received a significant surge of mine water on September 11 when DRMS removed a blockage from the previous day collapse. During this reporting period, 200 gallons of 25% NaOH solution (sodium hydroxide) was used and another tote and 2 drums (410 gallons) were brought for continuing operations. Approximately 100 gallons each of flocculant and polymer have been used.

ERRS cleaned out the treatment pond on October 12.

4. **Repairing of Forest Service Road 260:** With the exception of widening the road at the first culvert crossing, ERRS has completed restoration of the forest service Road (Peru Creek Road) from Montezuma Road to the Penn Mine.

5. **DRMS Work inside Penn Mine:** DRMS's contractor, Harrison Western, has completed spiraling installation work and has begun steel set installation along a 25 foot run of unconsolidated rock. DRMS has installed 3 steel sets at approximately 3-foot intervals. A minor collapse around one of the steel sets occurred on Sept. 10th.

6. **Bridge Installation at Peru Crossing:** ERRS began stockpiling rip rap material and road base in anticipation of installation of the bridge the first week of October.

7. **Weather:** The Site has received constant rain events during the reporting period. Soils are becoming saturated along the dirt roads at the site and require constant maintenance. The surface of waste rock pile is becoming saturated.

Reporting Period August 4 - 18

Road Improvement

- ERRS has improved Peru Creek Road.

Monitoring

- START developed documents to support the collection of pH and XRF measurements. EPA's Environmental Response Team deployed a Viper monitoring network to collect pH measurements in the settling zone. The locations associated with this monitoring effort are described in the attached Site sketch.
- START assessed the quality of the soil in the drainage below the waste piles using XRF technology. EPA's OSC determined that the levels of contamination do not warrant the disturbance to the vegetation that will be caused by their removal. Topsoil will be applied to the area and the drainage will be re-vegetated.

Site Preparation

- ERRS prepared the area around the level F portal for underground activities by diverting the portal's

effluent around the waste pile, preparing a pad for the underground team and a staging area for water treatment, and creating a water treatment pit and three settling ponds. These Site preparation activities are described in the following table and the attached Site sketch. A 20' conex box to support water treatment was delivered to the Site on August 16.

Activity	Task ID	Task
	Pad	Created level pad to support underground activities.
	Portal	Diverted effluent from the level F portal into a settling pond.
	Muck	Collected muck in a shallow pit which drains towards the waste pile.
Site Preparation	Treatment	Created segmented pond to precipitate metals using sodium hydroxide, polymers and flocculant.
	Staging	Created a pad and access to support treatment of mine effluent.
	Diversion	Diverted water from the settling pit around the waste pile.
	Settling	Channeled water through three settling ponds.

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

See the Enforcement Addendum found in the Action Memorandum.

2.1.4 Progress Metrics

To date, approximately 3.0 of 3.8 miles (or ~80%) of Peru Creek Road have been improved. This work has utilized 80 tons of 2" rock and 2400 tons of road base.

2.2 Planning Section

2.2.1 Anticipated Activities

2.2.1.1 Planned Response Activities

DRMS will begin clearing debris underground on August 19. ERRS will manage the muck and effluent that DRMS generates while underground.

A powerplant trailer and a Cat D5 LGP bulldozer configured with LGP for high altitude operation will arrive on-Site on August 20. The dozer will be used to move the conex box into its final position next at the portal and begin consolidation of the waste piles outside the level F portal.

ERRS will finish improving Peru Creek Road up to where it crosses Peru Creek just below the mine.

START will continue developing a site-specific XRF calibration curve.

2.2.1.2 Next Steps

As of Sept. 14:

Next week ERRS will begin construction of the drainage swale to replace the pipe between the first and second treatment ponds. Once this is completed, ERRS will begin consolidating the east waste pile knob within the main waste pile. Installation of the bridge will occur first week of October.

Current schedule is attached.

2.2.2 Issues

The OSC plans to remove a ore loading structure that is resting on the main waste pile outside the level F portal. The USFS informed the OSC of an existing MOU that they had developed with the State Historical Preservation Officer (SHPO) and offered to provide their assistance.

2.3 Logistics Section

Not Applicable.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer

Not Applicable.

2.5.2 Liaison Officer

Not Applicable.

2.5.3 Information Officer

OSC McComb gave an interview to the Summit Daily News on August 16, 2013.

3. Participating Entities

3.1 Unified Command

Not Applicable.

3.2 Cooperating Agencies

Colorado Department of Reclamation and Mining Safety
Colorado Department of Public Health and Environment
Summit County
United States Forest Service

4. Personnel On Site

2 OSCs (rotating on-Site coverage during this operating period)
7 ERRS Contractors
2 START Contractors (on-Site for 1-day during this operating period)
1 SERAS Contractor (on-Site for 1-day during this operating period)

5. Definition of Terms

DRMS: Colorado Department of Reclamation and Mining Safety
ERRS: Emergency and Rapid Response Services (EPA Contract)
ERT: Environmental Response Team (EPA Division)
SERAS: Scientific, Engineering, Response and Analytical Services (EPA Contract)
SHPO: State Historical Preservation Officer
START: Superfund Technical Assistance and Response Team (EPA Contract)

6. Additional sources of information

6.1 Internet location of additional information/report

http://www.epaossc.org/site/site_profile.aspx?site_id=8722

6.2 Reporting Schedule

The next PolRep will be distributed the week of Aug 26, 2013.

7. Situational Reference Materials

Not Applicable.