U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Ore Knob Mine Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV

Subject: **POLREP #18**
Progress Update
Ore Knob Mine Site
A4ND
Ore Knob, NC
Latitude: 36.4086670 Longitude: -81.3238890

To:
From: Terrence Byrd, On-Scene Coordinator
Date: 12/17/2009
Reporting Period: October 1, 2009 - December 19, 2009

1. Introduction

1.1 Background

Site Number:	A4ND	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	11/3/2008
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:		**Incident Category:**	Removal Action
NPL Status:	NPL	**Operable Unit:**	
Mobilization Date:	10/20/2008	**Start Date:**	10/20/2008
Demob Date:		**Completion Date:**	
CERCLIS ID:	NCN000409895	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

Time-Critical Removal

1.1.2 Site Description

The Site contains areas affected by mining, including three principal areas that were directly affected by mining along with other areas, primarily downstream, where hazardous substances have come to be located. The three principal areas include the 1950s Mine and Mill Area, the 19th Century Operations Area and a Main Tailings Impoundment. The Action memo recommends response actions to address threats from the main tailings impoundment.

The 1950's Mine and Mill Area comprises 15 acres and is located northwest of the intersection of Ore Knob Road and Little Peak Creek Road, just north of Highway 88. This area contains derelict ore bins, concrete mill foundations, a transformer building, other ruins, a small sawmill currently in operation, two acres with about 10,000 cubic yards of tailings - now mostly covered with stumps, and a two acre former pond where process water was stored. Little Peak Creek starts just upstream of the former pond, flows through the former pond, and discharges into Peak Creek 2.5 miles downstream.

The 19th Century Operations Area and the Main Tailings Impoundment are located across Little Peak Creek Road, at the end of Ore Knob Mine Road. The 19th Century Operations Area includes a series of barren and nearly barren stretches of land (totaling about 5 acres) near the top of Ore Knob that contain waste rock dumps from at least 11 mine shafts as well as locations where ore was roasted to drive off sulfur and smelted to recover copper.

1.1.2.1 Location

Ore Knob, Ashe County, North Carolina

1.1.2.2 Description of Threat

The site is impacted by Acid Mine Drainage (AMD), causing several creeks and rivers to become sterile.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

See Site Stability Analysis and Tailings Dam Inspection Report for removal assessment information.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

2.1.2 Response Actions to Date

1. Diversion Channel

Excavation of the half mile channel is near completion. The south end (entrance) of the channel is complete; a rock layer covers the base and extends approximately 4- feet along the side slopes and the 450-foot length has been re-vegetated. There is waterflow through the entire channel, exiting into the sediment pond.

The next 300-foot section enters into the first tailings section of channel. The weak tailings material would not support a slope; therefore, the channel was over-dug and refilled with subsurface soils recycled from throughout the Site. The bottom of the channel was excavated to native material, hence tailings are no longer at the base of the channel. The side slopes were backfilled with at least four feet of soil separating tailings from water in the channel.

The next 900-foot section is still being graded. Quarrying in this area has produced enough shale and granite to complete the diversion channel and shear keys.

The following 500-foot section is again in tailings. It has been over-dug and covered with a six to eight inch buffer of wood ash. Tailings were completely excavated from the base of the channel. The side slopes were then covered with a minimum of four feet of soil.

The final 500 feet was blasted through the mountainside. It is the deepest and steepest portion of the channel. It has sheer sides and depths of approximately 50-feet in sections. This section is complete.

Construction of the water diffuser at the end of the channel will begin after all rock has been segregated and screened.

2. Site Ponds

There were four ponds holding water on the Site. Ponds 1 and 4—the two northernmost water bodies—have been completely filled. Tailings were used as a base fill. It was then covered with a 3 to 12 inch lime buffer. The depth of the lime buffer varied depending on the reactivity of the tailings. Approximately two feet of subsoil was then added, followed by a thin layer of topsoil. The area was then re-vegetated. Pond 3 has been filled and covered with lime, capped and re-seeded. A rock drain was constructed at the rear of the pond to allow continuous flow from a stream to enter into the diversion channel. Pond 2—by far the largest—is still being filled with tailings.

3. Tailings Dam

A. Sediment Pond

The sediment pond is still functioning as engineered. The temporary piping in the outlet pipe has been replaced by a 22" in HDPE pipe. It was slid into the existing pipe and the void spaces were filled with grout to make water tight.

B. Starter Dam

Ditches were dug in the starter dam for two purposes: to allow the dam to drain freely and to confirm the composition of the starter dam as described in the Tailings Dam Inspection Report. The anticipated colluvium layer was not found; instead, the dam appears to have been constructed with mostly tailings and a thin clay cap. Water flows continuously in the ditches and channels that have been dug for relief throughout the starter dam.

C. Shear Key

The key rises to 30-feet at its apex and stretches the length of the starter dam. It is placed at the toe of the starter dam and is being constructed in three sections: the first made of granite, rising 30-feet high and 30-feet wide; the second is a sand filter with the same height and two feet thick; the third section is constructed exactly as the first. The first section of the shear key is completed. The second section section is currently under construction. The key must be built in 6-foot lifts in so that the sand filter can be properly placed between the two rock sections.

D. Main Tailings Impoundment

Currently, the impoundment is being used as a staging area for all material generated during the project.

4. Other/Miscellaneous

Constant rainfall has greatly hampered Site activities, increasing site costs and extending the project schedule. This—along with additional site quarrying for rock—is anticipated to increase the Site ceiling. An additional 3,300 cubic yards of rock may be needed to complete the diversion channel per engineering specifications.

15,000 cy were blasted during our quarrying efforts. Of that approximately 12,000 cy of rock was generated. The rest of the material is being re-used as a road base throughout the Site.

A railing will be built along the final 500 feet of the diversion channel as a safety measure.

Recycling
In an effort to reduce the carbon footprint of the Ore Knob Mine Site, all paper and plastics are being recycled and no construction waste is being generated on-site. All soils, rock and water is recycled for use onsite—thus eliminating transportation and disposal costs.

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

PRPs have been identified and enforcement activities are underway.

2.1.4 Progress Metrics

Waste Stream	*Quantity*
Soil	
Tailings	
Rock	
Recycled Paper	
Recycled Plastics	

2.2 Planning Section

2.2.1 Anticipated Activities

The construction crew will demob for Holiday break from December 19, 2009 until January 4, 2010.

2.2.1.1 Planned Response Activities

Crews continue to screen rock for placement in the diversion channel and shear key. Shear key construction continues. Crew will continue to fill and raise Pond 2 to its proper grade.

2.2.1.2 Next Steps

2.2.2 Issues

Constant rainfall has greatly hampered Site activities, increasing site costs and extending the project schedule.

Quarrying rock from the Site has resulted in great cost savings compared to purchasing and transporting material from a vendor.

The sand filter in the shear key is being constructed with gravel and clean, uniform, evenly-sized specialty sand. Special care has been taken not to contaminate any portion of the key with any other material than granite and sand. Introduction of material such as tailings and clay would clog the structure, thus reducing its effectiveness as a filter.

A railing will be built along the final 500 feet of the diversion channel as a safety measure.

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2.3 Logistics Section

No information available at this time.

2.4 Finance Section

No information available at this time.

2.5 Other Command Staff

2.5.1 Safety Officer

2.6 Liaison Officer

2.7 Information Officer

2.7.1 Public Information Officer

2.7.2 Community Involvement Coordinator

3. Participating Entities

No information available at this time.

4. Personnel On Site

No information available at this time.

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.