

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Quivira Mines - Red Water Pond Road - Removal Polrep
Initial Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IX

Subject: POLREP #1
Interim Removal
Quivira Mines - Red Water Pond Road
NNSFN0905492/ QM
Coyote Canyon, NM
Latitude: 35.6660000 Longitude: -108.5025000

To:
From: Andrew Bain
Date: 3/31/2011
Reporting Period: 10/05/2010 - 11/19/2010

1. Introduction

1.1 Background

Site Number:	09QM	Contract Number:	
D.O. Number:		Action Memo Date:	8/24/2010
Response Authority:	CERCLA	Response Type:	PRP Oversight
Response Lead:	PRP	Incident Category:	Removal Action
NPL Status:	Non NPL	Operable Unit:	
Mobilization Date:	10/5/2010	Start Date:	10/5/2010
Demob Date:		Completion Date:	
CERCLIS ID:	NNSFN0905492	RCRIS ID:	
ERNS No.:		State Notification:	Navajo Nation
FPN#:		Reimbursable Account #:	

1.1.1 Incident Category

Time Critical Removal Action - Interim Actions

1.1.2 Site Description

The Quivira Church Rock Mines 1 (CR1) and 1 East (CR1E) are located approximately 16 miles northeast of Gallup, New Mexico, in McKinley County. The reclaimed and closed uranium mine sites are located within the Navajo Nation.

The mine sites were operated by Kerr-McGee and Quivira Mining Company. Rio Algom Mining LLC (RAML) is responsible for conducting the removal action. Operations included exploration and development of two underground mines. Ore was transported to the Quivira Ambrosia Lake facility for milling approximately 43 miles southeast of CR1 and CR1E. Production operations ceased in 1983, and all surface structures were subsequently demolished and removed. Sediment from on-site ponds was excavated and disposed in mine shafts and ventilation raises. Waste piles at each site were covered with a minimum of 1 foot of soil and seeded with a local seed mix recommended by BIA.

Under an EPA administrative order on consent (AOC), Rio Algom initiated an interim removal action to secure the two mine sites and prevent migration of contaminants off site on October 5, 2010.

1.1.2.1 Location

Church Rock, NM on Navajo Nation Reservation – EPA Region IX

1.1.2.2 Description of Threat

During the past 20 years, lack of site maintenance, intrusion by livestock, and local resident trespassing has led to overgrazing and a need for maintenance at the site. The poor coverage of vegetation at the CR1 site has contributed to the formation of deep erosion rills in the soil cap. Existing storm water control structures at both sites were identified as needing maintenance during the April 2010 inspection, and a need for additional storm water BMPs was identified. At the initiation of this interim remedial action, exposed soil material with elevated gamma activity was present at both sites and along RWPR north, south, and east of the bridge over the unnamed arroyo that borders the southern perimeter of the CR1 site. It is likely that some discharge of impacted material has also occurred to the adjacent unnamed arroyo.

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

Recent characterization work associated with the nearby former North East Church Rock Mine suggests that the former mine access road and portions of the adjacent Red Water Pond Road (RWPR) were

originally constructed using mine waste and or soils with elevated concentrations of radium -226 (Ra-226). Additional site characterization work performed by Weston Solutions Inc (Weston) in 2008 and 2009 on behalf of USEPA Region 6, and gamma activity levels measured during a site inspection in April 2010, suggest that the clean soil caps on the CR1 and CR1E waste piles are either failing or were constructed using material that does not meet the current USEPA action levels for Ra-226. Gamma readings ranging from below background to more than six times background were observed in the project area, with the west and southwest portions of CR1 along Red Water Pond Road being generally the most elevated.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

2.1.2 Response Actions to Date

RAML, their construction contractor Conestoga Rovers Associates (CRA), and the START contractor Ecology and Environment, Inc. (E & E) mobilized to site on October 5, 2010.

Characterization Work: Between September 27 and October 8, 2010 RAML and SENES personnel performed gamma activity scans and collected soil samples in areas within and adjacent to RWPR. The purpose of the work was to characterize the nature and extent of areas with elevated concentrations of radioisotopes. A report of the characterization work will be submitted to the USEPA.

Vegetation Survey: Between October 12 and 14, 2010, RAML's agronomist consultant, S. Lynn Bamberg, LLC, led by Samuel Bamberg, PhD, conducted vegetation surveys and soil sample collection at both mine sites. He noted much better vegetation coverage and species diversity at CR1E compared to CR1. Dr. Bamberg expects a report to be submitted about a month after the site work.

Sediment and Erosion Controls: On October 14, 2010, CRA began reshaping the western slope of the CR1 waste pile using a bull dozer, pushing sediment up the slope that had deposited along RWPR. This helped to re-establish the desired drainage along the road. Plans to reshape the other pile slopes were placed on hold, pending establishment of stormwater controls. Due to concerns about the re-use of existing cap material and the need to consolidate and cap waste materials from other impacted areas of the site prior to grading, the USEPA requested that RAML halt grading on the slope until such time as these issues were addressed. Instead, the USEPA requested that RAML focus on implementing near-term sediment and erosion controls that would focus on preventing the continued discharge of impacted or potentially impacted materials to the arroyo or other off site areas. As part of this work, fiber rolls (also known as wattle) were installed on the areas of the CR1 pile that had been graded and the slopes were sprayed with a mulch/tackifier mixture to temporarily prevent erosion. Two sediment basins were constructed to reduce sediment migration. Also to prevent the off-site migration of impacted materials, fiber rolls and silt fence were placed in drainage swales, at the entrance to culverts, in areas downgradient from disturbed or impacted areas of the CR1 and CR1E sites. The berm on the southern perimeter of the CR1 site was repaired in several locations. A smaller berm was installed in the northwestern portion of the CR1 site to route storm water run-on away from impacted areas at the site. Approximately 1 cubic yard of impacted material was excavated from the channel bottom in this area. The excavated material was buried under existing cap material and clean fill was used to re-establish the channel bottom.

Ajax Engineering was contracted to identify any additionally needed best management practices (BMPs) and to prepare a storm water pollutant prevention plan (SWPPP) for the sites. As part of preparing the SWPPP, Ajax personnel inspected the sites on November 2 and 3, 2010.

Chip sealing and Soil Tacifier: Chip sealing of Red Water Pond Road was selected as an interim measure to prevent road dust contaminated with radionuclides from the mine from becoming airborne. The chip seal contractor, GM Emulsion, began road grading operations on October 18, 2010. Chip sealing operations were completed on October 20, 2010.

Due to concerns regarding the structural integrity of the RWPR bridge that spans the unnamed arroyo near entrance to the CR1 site, no heavy loads or equipment were permitted to cross the bridge. This bridge is the only means of egress from many homesites, and so the decision was made not to risk damaging it. Therefore, no chip sealing was conducted on the bridge or north of it. An alternative dust control method for the road north of the bridge was suggested and approved by USEPA. On November 8, 2010 Dura-Soil™, a commercially available soil stabilizer was applied to the CR1 access road, RWPR, and the adjacent shoulders at an approximate rate of 1-gallon per 30 square feet.

Fencing: The site perimeter fence was inspected and was determined to be in need of repair in several areas. Approximately 50 feet of fence was missing near the southeast corner, and erosion had washed out large areas of fence on the north and west portions of the perimeter fence at CR1. Due to the rough, uneven terrain and the numerous washed out or undermined areas in the existing fence line, RAML proposed moving the perimeter fence inward from its current alignment in several locations, and moving it out from the existing location for approximately 200 feet in the northern portion of the CR1 site. USEPA concurred with this suggestion. Fence repairs, realignment and reinstallation were initiated on October 25 and were nearing completion when START left the site on November 9, 2010. Fencing work was expected to be complete on or before November 12, 2010. The fence at CR1E was mostly intact and only minor repairs were performed at that site.

Cultural Resources Survey: On October 26 and 27, Mr. Clifford Werito of Dinetahdoo cultural resources Management was onsite to inspect areas on the exterior perimeter of the site that might be subject to intrusive earthwork such as grading, clearing, grubbing, and/or the installation of fence posts. Mr. Werito specifically inspected the proposed realignment of the fence in the northern portion of the site and an existing two-track road adjacent to the eastern perimeter of the site. Mr. Werito also conducted interviews with local residents. No significant cultural resources were identified during the physical survey. However, during the interview portion of the assessment a local resident identified areas on or near the proposed access road as being part of an area sacred to the Navajo Tribe. The use of this road for access was

subsequently denied.

Air monitoring: Perimeter and personnel air sampling were conducted during all activities that included actual or potential dust generation. Samplers operated during all grading operations and the initial two days of chip-seal work. Based on preliminary reports by SENES and RAML personnel and made verbally to START, concentrations of airborne radioisotopes were much less than established action levels.

Radiation monitoring: All equipment and personnel that entered the site boundary were scanned prior to leaving the site daily. Additionally, personnel were scanned prior to taking breaks or entering their vehicles. All chip seal and grading equipment was scanned and swipe tested prior to being demobilized. Other than one vendor from a local equipment company, the results of all scans and wipe samples were less than applicable action levels. It is unclear whether the source of the elevated activity originated from the CR1 site. However, the one vendor who exhibited elevated alpha radiation activity levels was asked to clean his hands and the handles of the equipment (a mechanical trencher) that he operated, which reduced the activity to acceptable levels.

Bridge structural evaluation: Due to concerns about the structural integrity of the bridge, the USEPA requested that START procure the services of a structural engineer to evaluate the bridge and adjacent abutments. The USEPA START subcontracted with Chavez-Grieves Consulting Engineers (Victor Chavez, PE) to perform the work. The inspection was conducted on October 20, 2010. Preliminary findings described in the engineering report suggest that the bridge has adequate capacity to support a normal highway load of 80,000 pounds. However, this conclusion was based on several assumptions, including: 1) That structural steel members were not corroded; 2) That wooden deck stringers were not rotted; and, 3) That embedded members were of sufficient design and capacity to support the visible portions. The report recommended further evaluation of the above listed components and noted that the wing walls and other measures installed to protect the bridge from erosion and hydraulic forces were failing.

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

Under an EPA administrative order on consent (AOC), Rio Algom initiated an interim removal action to secure the two mine sites and prevent migration of contaminants off site on October 5, 2010.

2.1.4 Progress Metrics

Waste Stream	Medium	Quantity	Manifest #	Treatment	Disposal
uranium mine waste	road	1,800 ft		chip seal	n/a
uranium mine waste	cover			tackifier	n/a

2.2 Planning Section

2.2.1 Anticipated Activities

Characterization - Removal Site Evaluation to determine nature and extent. CR1 and CR1 E, drainages and adjacent land.

2.2.1.1 Planned Response Activities

Additional Characterization Work: Phase 2 Removal Assessment work is tentatively scheduled to begin on November 29 and last through the Spring 2011. The work is intended to characterize the lateral and vertical extent of selected potential contaminants of concern, including radioisotopes, petroleum hydrocarbons, and dioxins and PCBs. Additional characterization work will occur at the CR1 and CR1E sites, and in areas adjacent to and downgradient from the sites, including in arroyos where process mine water and/or impacted sediments may have been discharged and/or wind-blown deposition of impacted dusts may have occurred.

Sediment and erosion controls: Additional storm water BMPs are considered necessary. USEPA is considering the need for additional sediment basins and other BMPs will be installed during the spring and summer of 2011.

2.2.1.2 Next Steps

A Phase II removal site evaluation investigation began in 1 November 2010. Pending the results of the characterization work USEPA expects that RAML will need to excavate at least some impacted areas at and near the CR1 and CR1E sites and consolidate them into existing waste piles. USEPA expects that clean fill material will be required to re-cap the existing waste piles. Regrading, additional erosion controls, and reseeding will likely be necessary to stabilize the sites.

2.2.2 Issues

USEPA expects that the measures discussed herein are interim in nature and that, pursuant to requests from the Navajo Nation Tribal Government, all associated mine wastes will eventually need to be permanently addressed.

The structural integrity of the RWPR Bridge remains a key issue. This is the shortest and easiest route for heavy equipment to enter the CR1 site.

Implementation of a SWPPP BMP installation, inspection, and maintenance plan is a key issue at the site.

Excavation, removal, and consolidation of impacted soils from offsite areas, and recapping of existing soils as part of an interim remedial action to stabilize the waste pile and prevent continued discharge of impacted materials to the environment is considered necessary if final removal actions would not occur in 2011.

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

No information available at this time.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

NNEPA

BIA

NHPO

4. Personnel On Site

EPA 1, NNEPA – 1, START – 1, RAML – 3, Conestoga Rover Associates – 2-3, Senes – 1, S. L. Bamberg, LLC – 2, American Fence contractors 2-3

5. Definition of Terms

NNEPA - Navajo Nation Environmental Protection Agency

RAML - Rio Algom Mining Limited

BIA - Bureau of Indian Affairs

NHPO - Navajo Historic Preservation Office

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.