

U.S. ENVIRONMENTAL PROTECTION AGENCY  
POLLUTION/SITUATION REPORT  
Skyline Abandoned Uranium Mine (AUM) - Removal Polrep



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region IX

**Subject:** POLREP #3  
Completion of Repository Excavation  
Skyline Abandoned Uranium Mine (AUM)  
09SY  
Monument Valley, UT  
Latitude: 37.0205530 Longitude: -110.2308250

**To:**  
**From:** Jason Musante, OSC  
**Date:** 5/23/2011  
**Reporting Period:** 05/09/11 - 05/21/11

## 1. Introduction

### 1.1 Background

<b>Site Number:</b>	09SY	<b>Contract Number:</b>	EP-W-07-022
<b>D.O. Number:</b>	022-9075	<b>Action Memo Date:</b>	9/27/2010
<b>Response Authority:</b>	CERCLA	<b>Response Type:</b>	Time-Critical
<b>Response Lead:</b>	EPA	<b>Incident Category:</b>	Removal Action
<b>NPL Status:</b>	Non NPL	<b>Operable Unit:</b>	
<b>Mobilization Date:</b>	3/28/2011	<b>Start Date:</b>	11/1/2010
<b>Demob Date:</b>		<b>Completion Date:</b>	
<b>CERCLIS ID:</b>		<b>RCRIS ID:</b>	
<b>ERNS No.:</b>		<b>State Notification:</b>	
<b>FPN#:</b>		<b>Reimbursable Account #:</b>	

Portions of the Navajo Nation are on geologic formations rich in radioactive uranium ores. Beginning in the 1940s, widespread mining and milling of uranium ore for national defense and energy purposes on Navajo tribal lands led to a legacy of abandoned uranium mines. The Site is one of approximately 520 abandoned uranium mines (AUM) located on the Navajo Nation. Nearby residents have expressed concern to the Navajo Nation Environmental Protection Agency (NN EPA) regarding the potential for wind-blown and water-borne radioactive particles to migrate from the Site and impact their health as well as the health of their livestock and the environment. During a site inspection performed by the NN EPA in July 2005, gamma radiation activity greater than two times the background level was detected in approximately 80 locations at the Site. NN EPA requested assistance from the EPA in performing an investigation to determine the nature and extent of the contamination and to mitigate any potential impacts to human health and/or the environment.

#### 1.1.1 Incident Category

CERCLA incident category: Inactive production facility (abandoned uranium mine)  
Time-Critical removal action

#### 1.1.2 Site Description

The Site encompasses the former Skyline Mine on top of Oljato Mesa (the Mesa), mine wastes on the eastern edge of the Mesa directly below the mine, mine wastes in the Skyline AUM Waste Piles (SMWP), and associated residential and pastoral areas east and down gradient from the foot of the Mesa. The SMWP are located approximately 700 feet below the former mine at the eastern base of the Mesa and are characterized by talus slopes covered with waste rock and/or waste ore that was pushed over or fell from the top of the Mesa where the mine was located. Portions of the cliff directly below the mine are visibly stained a grey-green color from this activity. As part of regular mine operations, a gondola was used to transport ore down to the foot of the Mesa where it was loaded into trucks for transport to an offsite mill. Portions of the gondola, including steel cables, remain at the foot of the Mesa.

Approximately five home sites with residential structures are located between 1,490 and 1,800 feet east and northeast of the SMWP. Land use in the project area is characterized by low density of single-family residences surrounded by open grazing land. The top of the Mesa and the SMWP area are used seasonally during the spring, summer, and fall by local residents as pastureland for grazing sheep and cattle and for gathering traditional herbs and plants. The road to the top of the Mesa is in extremely poor condition and therefore access to the top of the Mesa is limited to 4-wheel drive vehicles, all terrain vehicles, or foot traffic. There is no known permanent infrastructure on the top of the Mesa.

##### 1.1.2.1 Location

The Site is located in the Ojato Chapter on the Navajo Nation Indian Reservation, Township 43 South, Range 15 East, Section 26, NW ¼ (Latitude: 37.0205530°, Longitude: -110.2308250°), near Monument Valley, San Juan County, Utah. See Figure 1 for a Site Location Map.

#### 1.1.2.2 Description of Threat

Current Site conditions pose ongoing releases and the threat of future releases of hazardous substances, namely: uranium and its progeny (i.e., radium-226 and radon) and ionizing gamma and alpha radiation associated with those progeny. The likelihood of direct human exposure, via ingestion and/or inhalation of hazardous substances, and the threat of future releases and migration of those substances, pose an imminent and substantial endangerment to the public health or welfare or the environment based on the factors set forth in the NCP, 40 CFR § 300.415(b)(2).

#### 1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

In November 2008, EPA and the START Contractor conducted radiation assessments at the Site in coordination with NN EPA. A background area was established 1.35 miles east-southeast of the SMWP in an area with no suspected impacts from mining. First, 1-second total gamma radiation activity measurements using a GPS integrated ratemeter were collected in the background and SMWP areas. Two areas were identified as having elevated gamma activity, and designated the talus slope decision area (TSDA) and the trans-loading decision area (TLDA). Next, sampling grids were established that encompassed the TSDA, TLDA, and the background area respectively. The grid size and number of samples to be collected within each grid were determined using the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) version of Visual Sample Plan software and were the same relative number, orientation, and spacing in each case. A total of 42 surface soil samples were collected as grab samples and analyzed by GEL Laboratories, LLC for Ra-226 (Gamma Spec with In-growth) by EML HASL 300.4.5.2.3.

From July 2009 to March 2010, additional soil sampling and total gamma activity surveys were conducted to further delineate the lateral and vertical extent of contamination in the TLDA, the TSDA, and the unnamed arroyo that receives runoff from the Skyline AUM and the north side of the TSDA. See Figure 2 for a Site Features Map. Based on the assessment results EPA determined that a removal action was necessary.

## 2. Current Activities

### 2.1 Operations Section

#### 2.1.1 Narrative

May 9 – 14, 2011

OSC Musante onsite this week.

This week ERRS:

- Continued screening plant operations.
- Continued water conveyance system operations.
- Continued site-wide road improvements and maintenance.
- Continued dust control program using water for dust suppression.
- Continued excavation of the drainage diversion swale on the northwest side of the repository.
- Continued excavation of the liner anchor trench.
- Began placement of 1.5"- liner bedding material in repository excavation.
- Began compaction testing of bedding material.
- Set up dust suppression water tank and pump near AML repository.
- Began construction of access roads on north side of mesa to the TLDA, TSDA, and Arroyo areas.

START provided engineering design implementation support, performed air sampling as part of the effluent dust sampling program, and performed radiation surveys as needed to delineate work zones.

May 16 – 21, 2011

OSC Dunkelmann onsite this week to cover for OSC Musante.

This week ERRS:

- Continued screening plant operations.
- Continued water conveyance system operations.
- Continued site-wide road improvements and maintenance.
- Continued dust control program using water for dust suppression.
- Continued construction of access roads on north side of mesa to the TLDA, TSDA, and Arroyo areas.
- Completed excavation of the drainage diversion swale on the northwest side of the repository.
- Completed placement of 1.5"- liner bedding material in repository excavation.
- Completed excavation of the liner anchor trench.
- Completed installation of leachate collection piping in repository excavation.
- Constructed an earthen berm around the toe of the TSDA to catch material dislodged from upper slopes.
- Began installation of liner materials in repository.

START provided engineering design implementation support, performed air sampling as part of the effluent dust sampling program, and performed radiation surveys as needed to delineate work zones.

#### 2.1.2 Response Actions to Date

In April 2010, the ERRS contractor was mobilized to stabilize unconsolidated radioactive tailings at the site. A soil sealant was applied over the waste piles to prevent wind and water erosion, and fencing was erected around the piles to restrict access. An Action Memorandum for a time-critical removal action at the site was approved in September 2010. In November 2010, the ERRS contractor was mobilized to the site to improve the access road up to the top of Ojato Mesa. Between November 2010 and March 2011, archaeological and biological surveys were performed across all areas expected to be impacted by removal activities. The START contractor developed engineering design plans for the repository. OSC Musante

participated in Oljato Chapter meetings to provide updates on site progress to the community. Mobilization for removal activities and site setup began the week of March 28, 2011. Excavation of the repository began the week of April 4, 2011, and has been the main work activity to date.

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

EPA to date has been unable to identify any existing PRPs. EPA will continue to analyze the voluminous responses to the information requests it sent to numerous parties associated with mining in general on the Navajo Reservation. Because of the urgency of this removal, EPA is proceeding with a fund-lead action. EPA will continue to review the information referenced above to determine whether viable and liable parties may be identified, and will pursue recovery of the removal costs if appropriate.

**2.1.4 Progress Metrics**

**There are no progress metrics to report at this time. Off-site disposal is not planned for this removal. Uranium tailing wastes at the Site will be transferred to the on-site repository. Total volumes of waste moved into the repository may be reported in future POLREPs.**

<i>Waste Stream</i>	<i>Medium</i>	<i>Quantity</i>	<i>Manifest #</i>	<i>Treatment</i>	<i>Disposal</i>

**2.2 Planning Section**

**2.2.1 Anticipated Activities**

**2.2.1.1 Planned Response Activities**

- 1) Archeological clearance of all areas impacted by removal activities;
- 2) Construction/improvement of limited access road on southern side of Oljato Mesa;
- 3) Secure a water supply for dust suppression activities, including the potential development of a groundwater well near the Site;
- 4) Development and implementation of an effluent dust monitoring program to prevent offsite release of contaminated particulate;
- 5) Construction of a subsurface repository on top of Oljato Mesa near the Skyline AUM;
- 6) Relocation of contaminated soils from the existing NN AML Skyline AUM repository to allow access to mine tailings on the edge of Oljato Mesa;
- 7) Excavation and internment of contaminated soils from the TLDA, TSDA, and unnamed arroyo in the onsite repository;
- 8) Development and implementation of a confirmation survey and sampling plan.

**2.2.1.2 Next Steps**

- The repository area will be covered with finely-graded soil to provide a cushion for the plastic liner and prevent punctures from the bottom rock foundation.
- The plastic liner will be installed over the repository area and covered with finely-graded soils to prevent punctures from sharp tailings rocks placed in the repository.
- Uranium tailings from the slope below the mine and the foot of the mesa will be moved into the repository, starting in late May/early June. A high-line yarder, like the old Skyline, will be used to transport the tailings up to the top of the mesa. Water will be used to control dust and make sure the uranium tailings don't spread from the site. Air sampling will be conducted around the work areas to check for any radioactive dust.
- Once all the tailings have been placed in the repository, another plastic liner will be installed over the top. Then a soil cap will be placed over the top liner to protect it from sun and wind.
- Areas impacted by removal activities will be seeded with native plant species to help restore the land.

**2.2.2 Issues**

- Repository excavation has slowed due to hard rock formations underlying surface soils. This delay has resulted in an extended project schedule and additional project costs. OSC Musante will submit a request to increase the Action Memo ceiling.
- Periods of gusty, high winds have made for difficulty working conditions and increased the need for maintenance on heavy equipment.
- Prior to excavation/transport of radioactive tailings, EPA is providing temporary relocation for residents within approximately 0.5 miles of the site. This due to the nuisance associated with heavy equipment operations and to eliminate the exposure potential to any effluent dust.
- EPA has derived site-specific clean-up action levels for the different areas at the site based on an excess cancer risk range of  $1 \times 10^{-4}$ . These action levels will be proposed to NNEPA for concurrence.

**2.3 Logistics Section**

N/A

**2.4 Finance Section**

No information available at this time.

**2.5 Other Command Staff**

### **2.5.1 Safety Officer**

All site personnel attended a site-specific radiation training on 5/2. The training was delivered by the radiation specialty subcontractor.

### **2.6 Liaison Officer**

N/A

### **2.7 Information Officer**

#### **2.7.1 Public Information Officer**

#### **2.7.2 Community Involvement Coordinator**

OSC Musante attended the Oljato Chapter meeting on 5/8 to provide updates on project progress/schedule and answer question from the community. OSC Musante is also working with CIC Brian Davidson to develop a written CIP that documents community outreach to date.

## **3. Participating Entities**

### **3.1 Unified Command**

N/A

### **3.2 Cooperating Agencies**

Navajo Nation EPA Superfund (NN EPA)

Navajo Nation Abandoned Mine Lands Reclamation Program (AML)

Navajo Nation Department of Water Resources

## **4. Personnel On Site**

1 EPA OSC

1 USCG PST

2 START – E&E

20 ERRS – EQM and H2O

## **5. Definition of Terms**

No information available at this time.

## **6. Additional sources of information**

### **6.1 Internet location of additional information/report**

website: [www.epaosc.org/SkylineAUM](http://www.epaosc.org/SkylineAUM)

### **6.2 Reporting Schedule**

The next POLREP will be submitted on 6/6/11.

## **7. Situational Reference Materials**

-maps: Skyline Fig 1 Site Location, Skyline Fig 2 Site Features