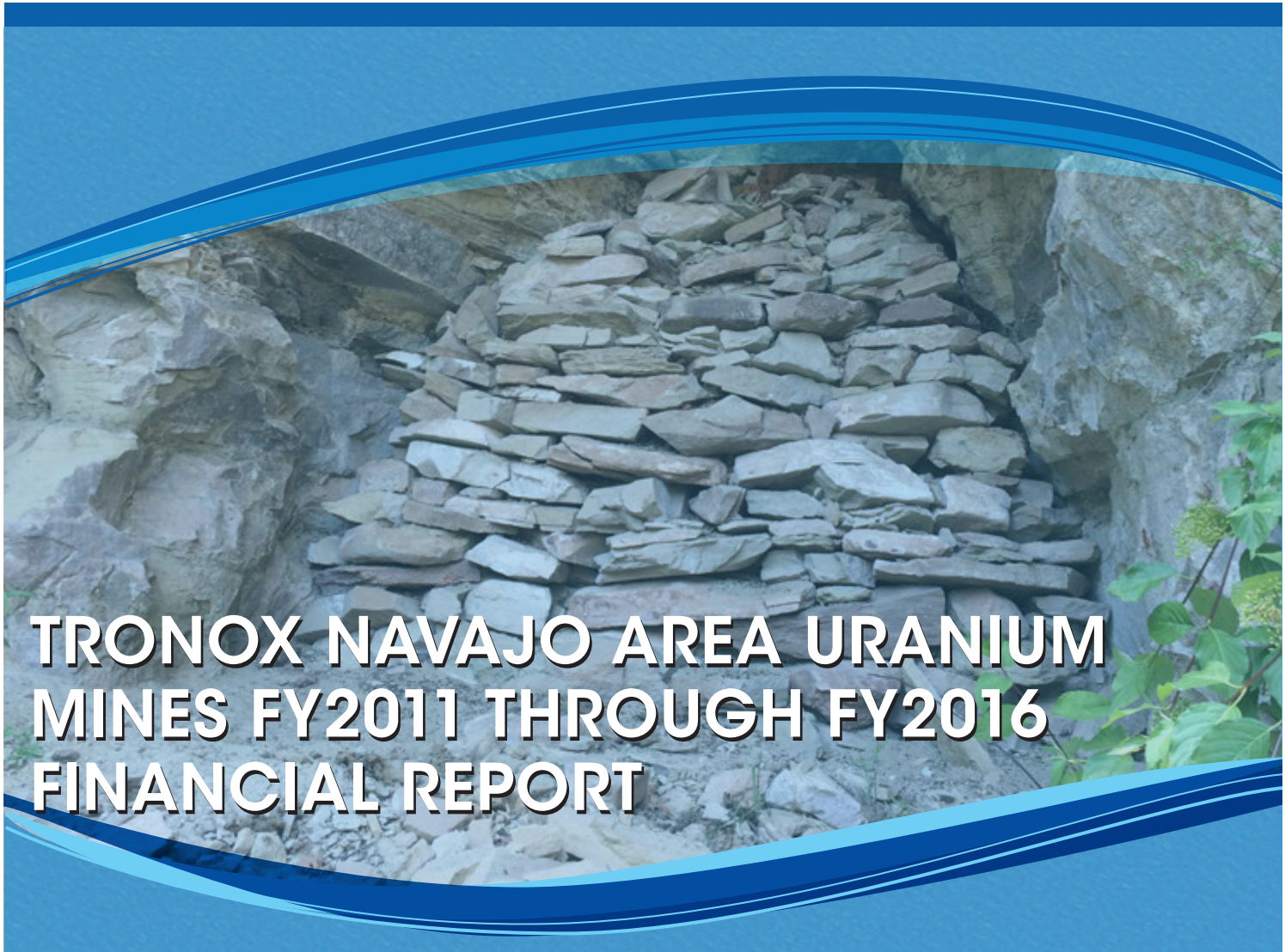


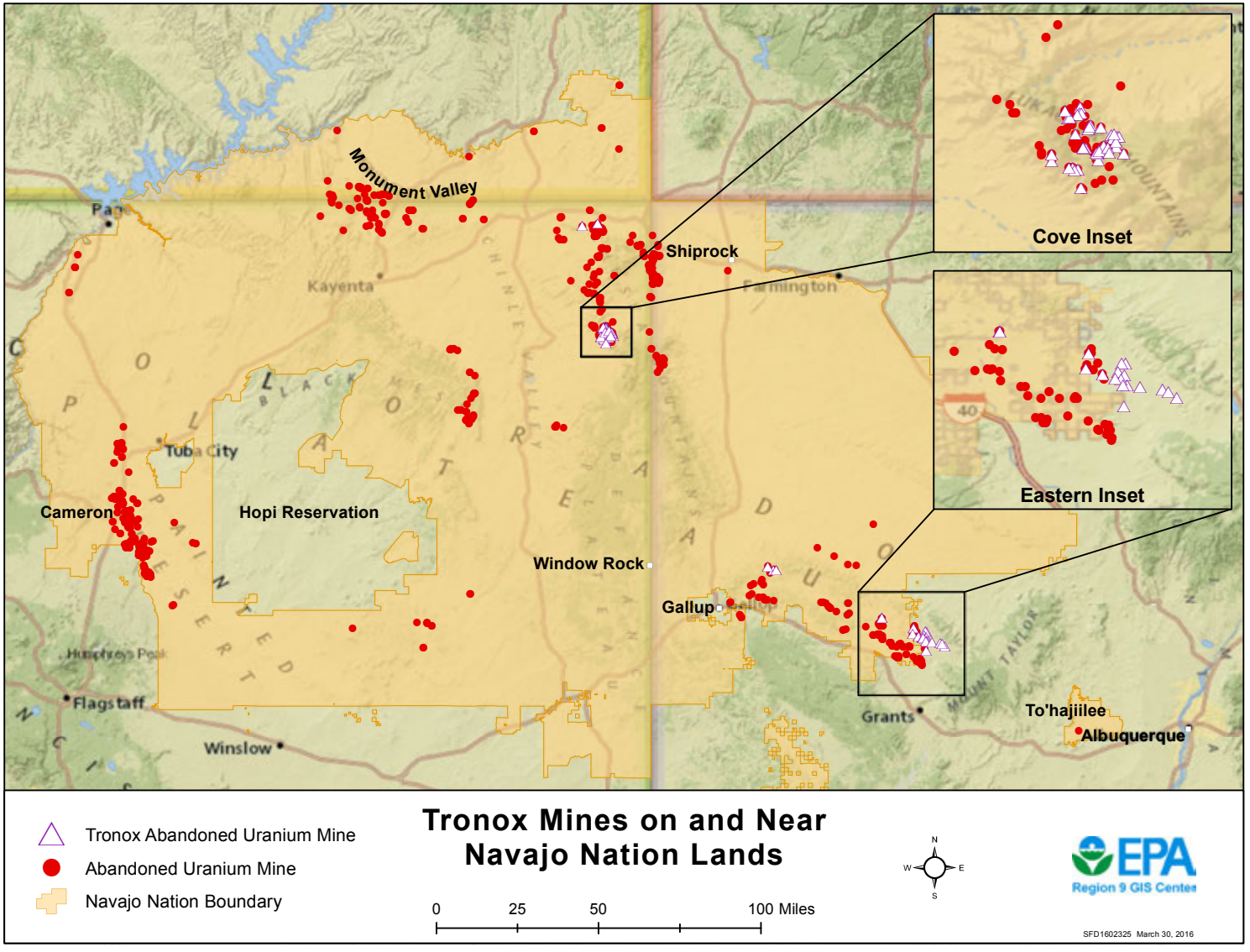
TRONOX NAVAJO AREA URANIUM MINES FY2011 THROUGH FY2016 FINANCIAL REPORT

United States Environmental Protection Agency

Tronox Navajo Area Uranium Mines
April 2017

Contents


CLEANUP
OF TRONOX
NAVAJO AREA
URANIUM
MINES
DANGER
HUMANS SHOULD
NOT DRINK FROM
THIS WATER SOURCE


Monument Valley
Shiprock
Kayenta
Farmington
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SFD1602325 March 30, 2016

1.0 Tronox Settlement Background and Acquisition Strategy

Background

On January 21, 2015, the Tronox Settlement agreement resolving fraudulent conveyance claims against Kerr-McGee Corporation and related subsidiaries of Anadarko Petroleum Corporation went into effect. Pursuant to the settlement agreement, Anadarko paid $5.15 billion plus interest to the litigation trust on January 23, 2015.

As a Result of the Tronox Settlement:

- USEPA received a distribution of 20% (~$917 million) for the cleanup of approximately 55 uranium mines that were operated, and subsequently abandoned, by Kerr-McGee in and near the Navajo Nation territory;
- USEPA also received a distribution of 2% (~$92 million) for the cleanup of Northeast Church Rock Quivira Mine Site; and
- Navajo Nation also received a distribution of 1% (~$45 million) in connection with the Shiprock Uranium Mill Site.

From the late 1940s to the 1980s, Kerr-McGee Corporation mined more than seven million tons of uranium ore on or near the Navajo Nation, About 32 of these mines are located in the Cove and Lukachukai Chapters. Other mines are located in the Teec Nos Pos, Coyote Canyon, Casamero Lake, and Baca/Prewitt Chapters. There are also several former Kerr-McGee mine that are located in the Ambrosia Lake area that have impacted to the Navajo Nation.

USEPA Tronox funds can be used to support activities related to the assessment and cleanup of the 55 Tronox Settlement mines and contamination caused by the mines. Examples of these activities include:

- Informing and involving the community
- Investigating radiation levels in water, soil, sediment, and air
- Putting up fences and signs to warn people about dangerous areas
- Protecting cultural and biological resources in the mine areas
- Constructing access roads to the mines for cleanup operations
- Closing mine openings and address other physical hazards

USEPA Tronox funds cannot be used for these activities:

- Paying people who worked at the mines or lived nearby (some compensation for mine workers is available through the Radiation Exposure Compensation Act of 1990)
- Projects not related to Tronox mine cleanup or mine impacts

Tronox Settlement Acquisition Strategy

USEPA's contracting strategy includes promoting the use of Navajo-owned contractors and/or local resources when possible; identifying ideal contract types based on products and services; identifying appropriate outreach mechanisms to notify companies of contracting opportunities; and identifying contracting training needs/opportunities for Navajo and Tribal owned businesses.

In 2015 and 2016, USEPA held NAUM industry workshops on and off the Navajo Nation. The purpose of these workshops was to increase the awareness and participation from tribal-owned businesses, and to provide them with the information and tools necessary to do business with the federal government. In addition to the industry workshops, USEPA representatives participated in other outreach events in an effort to further increase awareness among local small businesses about the upcoming contract opportunities associated with the Tronox Settlement. Events included two industry days sponsored by the Bureau of Reclamation (BOR) in Albuquerque and Gallup, NM; Reservation Economic Summit (RES) conference in Santa Fe, NM; and the Navajo Nation Economic Summit at Twin Arrows Casino, AZ.

September 2015 Industry Days - Window Rock

In the Fall of 2016, USEPA issued a Request for Proposal (RFP) for an upcoming Navajo Area Uranium Mines (NAUM) Response, Assessment, and Evaluation Services Contract, a vital step in the Agency's long-term strategy to clean up abandoned mines on the Navajo Nation. Also in the Fall of 2017 USEPA issued a Request for information (RFI) for an upcoming Navajo Area Abandoned Mines Response and Construction Services (AMRCS) contract. The purpose of the RI was to gain information about capability and industry best practices, and to identify small and Tribal-owned businesses qualified to conduct and/or participate in construction relative work.

USEPA has and will continue to provide outreach to Navajo communities on contracting opportunities, and coordinate with the Navajo Nation Workforce Development Agency, Diné College, Navajo Technical University, and other tribal colleges to build a Navajo workforce capacity.

September 2015 Industry Days - Albuquerque

2.0 USEPA Tronox Settlement Financial Expenditure Breakout FY2011 through FY2016

The approximately $1 billion in funds USEPA received for the cleanups at 55 Tronox Navajo Area Uranium Mines has been deposited into a USEPA Superfund Special Account. In accordance with Section 122(b)(3) of CERCLA, the Agency may establish a special account when USEPA receives funds pursuant to an agreement with a Potentially Responsible Party (PRP). Special accounts are site-specific, interest-bearing sub-accounts housed within USEPA's Hazardous Substances Superfund (Superfund Trust Fund). Charges to a special account must be consistent with the terms of the settlement pursuant to which the funds are received.

The USEPA (Regions 6 and 9), the Navajo Nation, and the state New Mexico meet several times a year to discuss prioritizing response actions and the funding of projects at each Tronox NAUM site. Other agency stakeholders may also be invited to these meeting. The agencies strive to develop a coordinated prioritized project list along with estimated funding requirements for the following calendar year. Once information about individual project proposals have been presented and discussed in the USEPA, Navajo Nation, and New Mexico annual prioritization meeting, this project list is memorialized in an annual "Approval and Annual Funding Projections for Implementation of Tronox Settlement Memo." The memo is presented to the USEPA Region 6's Branch Chief, Technical and Enforcement Brach, Superfund Division, for concurrence and then to the approving official, USEPA Region 9's Assistant Director, Superfund Division, for signature. Once projects are approved, a special account name/number is created for that project to track expenditures. Table 2.1 summarizes approved Tronox projects by special account name, budget, expenditures, and balance.

These expenditures are further broken out into the following expenditure categories.

Labor: Labor cost associated with the assessment and cleanup of the mine / mine areas specified in the Tronox Settlement.

- **On Scene Coordinator** – directing cleanup contractors
- **Remedial Project Manager** – overseeing cleanup
- **Legal** – reviewing documents and attending meetings
- **Technical Enforcement** – PRP search activities
- **Community Involvement** – fact sheets; CIP; public meetings
- **Contracting** – issuing contracts and developing cost packages
- **Administrative Assistant** – site related travel; mailings; meetings coordination
- **Management** – conducting meetings with counsel, program, enforcement, community relations, contracts, and/or finance; reviewing site related documents; management briefings

Travel: Travel cost associated with the management assessment and cleanup of the mine / mine areas specified in the Tronox Settlement.

Contracts: Contracting costs associated with the assessment and cleanup of the mine / mine areas specified in the Tronox Settlement.

Expenses: Expense costs for equipment, property, supplies, and materials associated with the assessment and cleanup of the mine / mine areas specified in the Tronox Settlement.

Grants: Grants associated with the management assessment and cleanup of the mine / mine areas specified in the Tronox Settlement.

Figure 2.1 is a graphical representation of Tronox Expenditures by Category FY2011 through FY2016 and Table 2.2 that follows is a further breakdown of those expenditures categories by approved project.

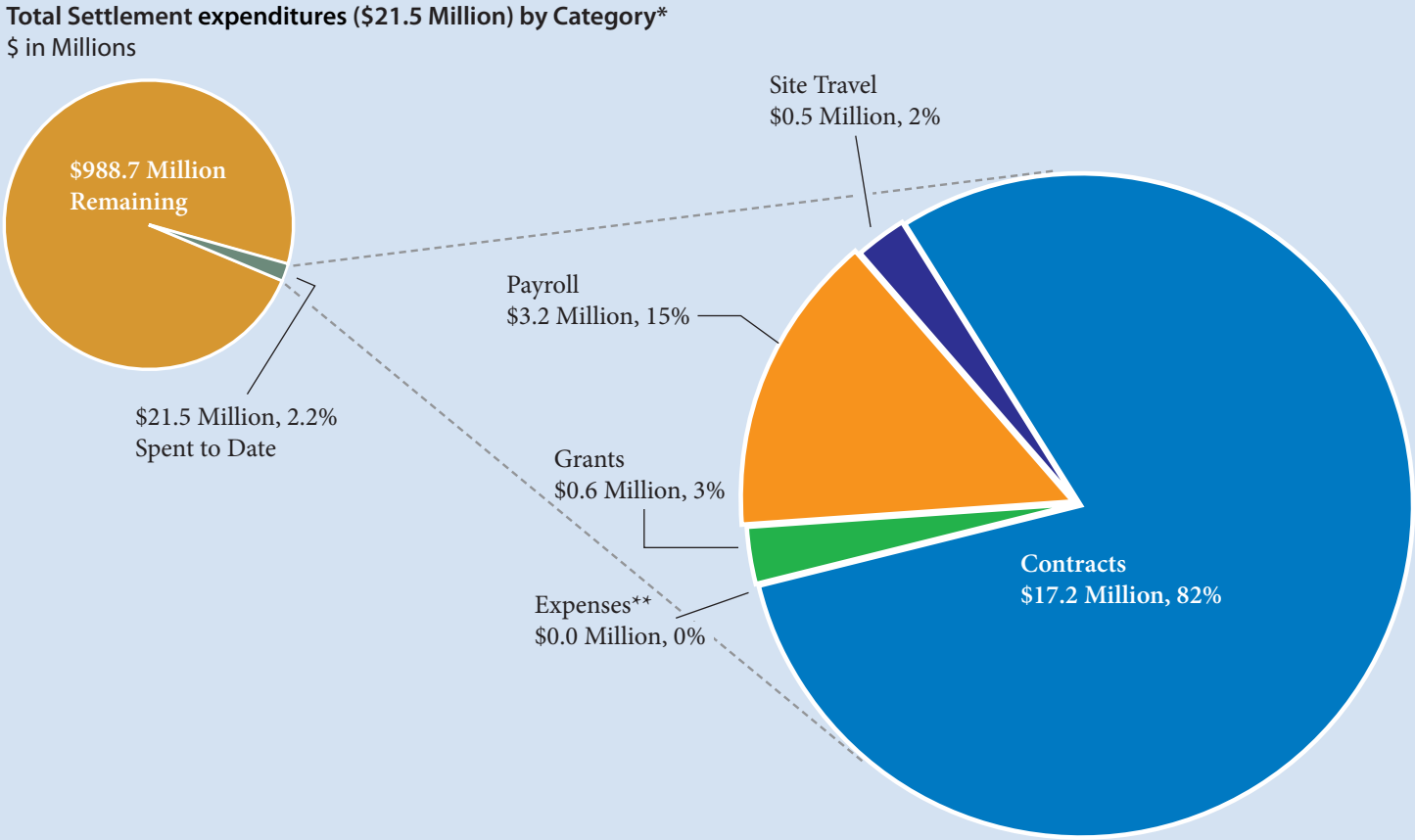
Table 2.1: USEPA Tronox and Quivira Approved Projects, Budgets, and Expenditures FY2011 – FY2016

An overview of the approved projects and activities associated with these expenditures is located in Section 3.

Approved Projects / Special Account Names	Total Budget	Total Expenditures	Remaining Balance
USEPA Region 6			
Tronox NAUM San Mateo Creek Basin / GW Invest.	$3.8	$2.2	$1.6
Tronox NAUM East Geographic Sub-Area (GSA)	$2.3	$1.8	$0.5
Tronox NAUM West GSA	$1.9	$1.6	$0.3
Subtotal Region 6 NAUM Special Accounts	*$8.0*	*$5.6*	*$2.3*
USEPA Region 9			
Tronox - Cove Transfer Station	$4.1	$3.6	$0.5
Tronox - Mesa I Mines	$0.0	$0.0	$0.0
Abandoned Uranium Mines on the Navajo Nation	$3.4	$3.4	$0.0
Tronox - Section 32 AUM Site	$1.5	$1.5	$0.0
Tronox - Section 33 AUM Site	$0.1	$0.1	$0.0
Tronox NAUM Cove Wash Regional Assessment	$3.0	$2.8	$0.2
Tronox Navajo Area Uranium Mines (Settlement Funds)	$897.6	$1.3	$896.3
Tronox Cove Chapter Area Tronox Mines Remedial Investigation / Feasibility Study Activities Conceptual Site Model	$1.0	$0.5	$0.5
Subtotal Region 9 NAUM Special Accounts	*$910.7*	*$13.2*	*$897.5*
NE Church Rock Quivira Mines			
NE Church Rock Quivira Mines	$91.6	$2.7	$88.9
Total	**$1,010.2**	**$21.5**	**$988.7**

- Totals are rounded to the nearest million. (Number may not add due to rounding)
- Values are in millions.

Figure 2.1: Tronox and Quivira Approved Projects Expenditures by Cost Category FY2011 through FY2016



*Totals are rounded to the nearest million. (Number may not add due to rounding)
**Expenses do not appear on the chart due to the small amount ($11,012.81)

Table 2.2: Breakout of Tronox and Quivira Expenditures Category by Approved Projects FY2011 through FY2016

Approved Projects / Special Account Names	Contracts	Expenses	Grants	Payroll	Site Travel	Total Expenditures
USEPA Region 6						
Tronox NAUM San Mateo Creek Basin / GW Invest.	$1,753,506.74	$0.0	$221,811.00	$218,882.86	$54,142.90	$2,248,343.50
Tronox NAUM East Geographic Sub-Area (GSA)	$1,596,049.44	$0.0	$0.0	$164,652.62	$46,183.85	$1,806,885.91
Tronox NAUM West GSA	$1,451,719.00	$0.0	$0.0	$98,988.39	$38,035.24	$1,588,742.63
Total Region 6	**$4,801,275.18**	**$0.0**	**$221,811.00**	**$482,523.87**	**$138,361.99**	**$5,643,972.04**
USEPA Region 9						
Tronox - Cove Transfer Station	$3,526,457.21	$69.66	$20,788.00	$54,337.82	$32,135.89	$3,633,788.58
Tronox - Mesa I Mines	$0.00	$0.00	$0.00	$7,376.05	$2,037.54	$9,413.59
Abandoned Uranium Mines on the Navajo Nation	$1,830,727.68	$5,995.46	$191,951.00	$1,213,622.76	$116,214.08	$3,358,510.98
Tronox - Section 32 AUM Site	$1,435,925.60	$167.69	$0.0	$19,975.57	$5,133.58	$1,461,202.44
Tronox - Section 33 AUM Site	$69,068.13	$0.0	$0.0	$241.90	$472.35	$69,782.38
Tronox NAUM Cove Wash Regional Assessment	$2,337,181.93	$3,213.53	$31,182.00	$371,033.95	$67,595.96	$2,810,207.37
Tronox Navajo Area Uranium Mines (Settlement Funds)	$433,289.00	$1,566.47	$31,182.00	$741,215.77	$112,927.64	$1,320,180.88
Tronox Cove Chapter Area Tronox Mines Remedial Investigation / Feasibility Study Activities (CSM)	$497,000.00	$0.0	$0.0	$0.0	$0.0	$497,000.00
NE Church Rock Quivira Mines	$2,272,267.33	$0.0	$62,810.00	$315,413.72	$31,362.89	$2,681,853.94
Total Region 9	**$12,401,916.88**	**$11,012.81**	**$337,913.00**	**$2,723,217.54**	**$367,879.93**	**$15,841,940.16**
Total	**$17,203,192.06**	**$11,012.81**	**$559,724.00**	**$3,205,741.41**	**$506,241.92**	**$21,485,912.20**

Tronox and Quivira Contracting Expenditures (FY2011 through FY2016) ($17.6 Million) by USEPA Region, Approval Projects, and Contract Type

Since the Tronox settlement in 2011, USEPA has been utilizing existing contracts to conduct cleanup activities, which allowed us to expeditiously achieve our goal of protecting human health and the environment on the Navajo Nation. These existing contracts include:

- **START Contract** - Superfund Technical Assessment and Response Team - provides scientific/technical support for chemical, biological, radiological and nuclear events as well as site assessment, Brownfields, and remedial support activities.
- **ERRS Contract** - Emergency and Rapid Response Services – provides management, field personnel, and equipment resources to execute decontamination and demolition, containment measures, and removal services.
- **RAC Contract** - Remedial Action Contracts – provides remedial response, enforcement oversight, non-time critical removal activities, engineering support, and assessment services.
- **TASC Contract** - Technical Assistance Services for Communities - provides independent assistance through an USEPA HQ contract to help communities better understand the science, regulations and policies of environmental issues and USEPA actions.
- **USEPA Records Services Contract** - provides technical management services for the management of project documents.
- **SERAS Contract** - Scientific, Engineering, Response & Analytical Services - provides technical assistance the U.S. Environmental Protection Agency's Environmental Response Team (ERT).
- **ASPECT** - Airborne Spectral Photometric Environmental Collection Technology - nation's only airborne real-time chemical and radiological detection, infrared and photographic imagery platform.
- **HQ Environmental Management Services Contract** - provides technical management services for the USEPA NAUM Program Management Plan.

Table 2.3 breaks out $16.2 million of the $17.2 million FY2011 through FY2017 contract expenditures by contract and approved projects. Since the final Tronox settlement in 2015, USEPA has been working to establish Tronox specific contracts, which will be used for all future, non-emergency, assessments and construction actions. These contracts will support the utilization and workforce development of Navajo owned business.

In addition to the contracts listed in Table 2.3, USEPA has entered into interagency technical services agreements with US Army Corps of Engineers (USACE) and US Geological Society (USGS), Navajo specific agreements, and miscellaneous field equipment contracts. Table 2.4 breaks out the $1 million of the $17.2 million FY2011 through FY2017 contract expenditures by agreement / miscellaneous contract by approved projects.

Table 2.3: Tronox and Quivira Contract Expenditures Breakout by Approved Projects for FY2011 – FY2016

Approved Projects / Special Account Names	Total Contracts	Start Contract	ERRS Contract	RAC Contract	TASC HQ Community Involvement Contract	USEPA Records Services Contract	SERAS Technical Services Contract*	USEPA ASPECT Asset	HQ EMS Services PMP Services Contract
USEPA Region 6									
Tronox NAUM San Mateo Creek Basin / GW Invest.	**$1,753,506.74**	$1,753,506.74	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox NAUM East Geographic Sub-Area (GSA)	**$1,596,049.44**	$1,596,049.44	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox NAUM West GSA	**$1,451,719.00**	$1,451,719.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Region 6	**$4,801,275.18**	**$4,801,275.18**	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
USEPA Region 9									
Tronox - Cove Transfer Station	**$3,526,457.21**	$689,957.73	$2,786,799.48	$0.00	$0.00	$0.00	$49,700.00	$0.00	$0.00
Tronox - Mesa I Mines	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Abandoned Uranium Mines on the Navajo Nation	**$1,824,230.68**	$1,251,371.75	$0.00	$0.00	$0.00	$358,511.21	$50,000.00	$164,347.72	$0.00
Tronox - Section 32 AUM Site	**$1,435,925.60**	$1,435,925.60	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox - Section 33 AUM Site	**$69,068.13**	$69,068.13	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox NAUM Cove Wash Regional Assessment	**$2,052,489.93**	$1,943,321.53	$0.00	$0.00	$109,168.40	$0.00	$0.00	$0.00	$0.00
Tronox Navajo Area Uranium Mines (Settlement Funds)	**$426,981**	$0.00	$50,000.00	$0.00	$30,000.00	$0.00	$0.00	$0.00	$346,981.00
Tronox Cove Chapter Area Tronox Mines Remedial Investigation / Feasibility Study Activities (CSM)	**$20,000**	$0.00	$0.00	$0.00	$20,000.00	$0.00	$0.00	$0.00	$0.00
NE Church Rock Quivira Mines	**$1,994,769.89**	$1,133,294.84	$0.00	$742,041.05	$119,434.00	$0.00	$0.00	$0.00	$0.00
Total Region 9	**$11,349,922.49**	**$6,522,939.58**	**$2,836,799.48**	**$742,041.05**	**$278,602.40**	**$358,511.21**	**$99,700.00**	**$164,347.72**	**$346,981.00**
Total	**$16,151,197.62**	**$11,324,214.76**	**$2,836,799.48**	**$742,041.05**	**$278,602.40**	**$358,511.21**	**$99,700.00**	**$164,347.72**	**$346,981.00**

Table 2.4: Tronox and Quivira Interagency Agreements and Other Contracts Expenditures by Approved Projects for FY2011 – FY2016

Approved Projects / Special Account Names	Total Interagency Agreements / Other Contracts	USACE Interagency Agreement	USGS Interagency Agreement	Misc. Navajo Service[1]	Navajo Nation Red Water Pond	Misc. USEPA Field Equipment Contracts
USEPA Region 6						
Tronox NAUM San Mateo Creek Basin / GW Invest.	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox NAUM East Geographic Sub-Area (GSA)	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox NAUM West GSA	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Total Region 6	**$0.00**	$0.00	$0.00	**$0.00**	**$0.00**	$0.00
USEPA Region 9						
Tronox - Cove Transfer Station	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox - Mesa I Mines	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Abandoned Uranium Mines on the Navajo Nation	**$6,497.00**	$0.00	$0.00	$0.00	$0.00	$6,497.00
Tronox - Section 32 AUM Site	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox - Section 33 AUM Site	**$0.00**	$0.00	$0.00	$0.00	$0.00	$0.00
Tronox NAUM Cove Wash Regional Assessment	**$284,692.00**	$0.00	$284,692.00	$0.00	$0.00	$0.00
Tronox Navajo Area Uranium Mines (Settlement Funds)	**$6,308.00**	$0.00	$0.00	$6,308.00	$0.00	$0.00
Tronox Cove Chapter Area Tronox Mines Remedial Investigation / Feasibility Study Activities (CSM)	**$477,000.00**	$477,000.00	$0.00	$0.00	$0.00	$0.00
NE Church Rock Quivira Mines	**$277,497.44**	$266,023.19	$0.00	$0.00	$11,474.25	$0.00
Total Region 9	**$1,051,994.44**	**$743,023.19**	**$284,692.00**	**$6,308.00**	**$11,474.25**	**$6,497.00**
Total	**$1,051,994.44**	**$743,023.19**	**$284,692.00**	**$6,308.00**	**$11,474.25**	**$6,497.00**

[1]Services include costs associated with outreach events and having Navajo legal experts attend quarterly meetings.

Tronox and Quivira Grant Expenditures for FY2011 through FY2016 by USEPA Region, Approved Projects and Grant

USEPA provides grants associated with the assessment and cleanup of the mine / mine areas specified in the Tronox Settlement. The following is a breakout of the grant funding from FY2011 through FY2016:

Approved Projects / Special Account Names	State of NM	Navajo Nation Superfund/AML	Total Grants
USEPA Region 6			
Tronox NAUM San Mateo Creek Basin / GW Invest.	$221,811.00	NA	**$221,811.00**
Tronox NAUM East Geographic Sub-Area (GSA)	$0.00	NA	**$0.00**
Tronox NAUM West GSA	$0.00	NA	**$0.00**
Total Region 6	**$221,811.00**	$0.00	**$221,811.00**
USEPA Region 9			
Tronox - Cove Transfer Station	NA	$20,788.00	**$20,788.00**
Tronox - Mesa I Mines	NA	$0.00	**$0.00**
Abandoned Uranium Mines on the Navajo Nation	NA	$191,951.00	**$191,951.00**
Tronox - Section 32 AUM Site	NA	$0.00	**$0.00**
Tronox - Section 33 AUM Site	NA	$0.00	**$0.00**
Tronox NAUM Cove Wash Regional Assessment	NA	$31,182.00	**$31,182.00**
Tronox Navajo Area Uranium Mines (Settlement Funds)	NA	$31,182.00	**$31,182.00**
Tronox Cove Chapter Area Tronox Mines Remedial Investigation / Feasibility Study Activities (CSM)	NA	$0.00	**$0.00**
NE Church Rock Quivira Mines	NA	$62,810.00	**$62,810.00**
Total Region 9	NA	$337,913.00	**$337,913.00**
Total	**$221,811.00**	**$337,913.00**	**$559,724.00**

3.0 Tronox and Quivira NAUM Approved Projects Descriptions for FY2011 – FY2016

This section describes USEPA Region 6 approved projects activities in New Mexico that may impact the Navajo Nation and USEPA Region 9 approved project activities on the Navajo Nation.

3.1 USEPA Region 6

SAN MATEO CREEK BASIN AND TRONOX NAUM AMBROSIA LAKE IMPACT AREA GROUND WATER INVESTIGATION

USEPA Region 6 continues work on the multi-phased ground water investigation for the San Mateo Creek Basin, including the Tronox NAUM Ambrosia Lake Impact Area, in 2016. The first phase of the investigation (Phase 1), which focused on the alluvial ground water, was completed in September 2016 with the release of a ground water report documenting the findings of Phase 1. Copies of the report were provided to the Navajo and the results presented to the Navajo Nation at the Tronox Quarterly Meeting in Albuquerque in October 2016. The results were also presented to other stakeholders in November 2016 via community meetings held in Grants and at the Cross Roads Area (near the intersection of State Highways 509 and 605) and separate meetings with the Bluewater Valley Downstream Alliance (BVDA) and the Acoma Pueblo Council. A webinar session was held for Laguna Pueblo Environmental and Natural Resources Department.

Work on the second phase (Phase 2) of the ground water investigation also continued in 2016. With drilling and well installation activities mostly completed by the end of 2015, the remaining field work for 2016 consisted of developing and sampling new bedrock and alluvial wells. The collected ground water samples were sent to laboratories for various chemical analyses, including isotopic

USEPA Conducting Soil and Groundwater Sampling Activities

Sonic Drill Rig used for the Ambrosia Lake Groundwater Investigation

analysis, to help characterize the types of formation waters and the extent of impacts from mine water discharge operations. The laboratory analytical results were received in the summer of 2016 and the data evaluation and preparation of a Phase 2 ground water report were initiated in the fall of 2016. This work is ongoing and will continue into early 2017. Additionally, USEPA Region 6 prepared several basin-wide hydrogeological cross sections to aid in the understanding of the stratigraphy and structural geology of the basin, hydraulic flow paths of the mine water discharges and the extent of the discharges impact to ground water. This work included a comparison of historic water levels within the alluvial aquifer from the early 1960s and mid-1970s (a period of peak mine water discharge operations) to current water levels. This work helped USEPA to understand the degree and magnitude of the saturation caused by the mine water discharge operations at the Tronox wet mines and other wet mines within the Tronox NAUM Ambrosia Lake area and the subsequent drain down after the cessation of mine discharge operations.

The ground water investigation work completed in 2016 is helping USEPA delineate the extent of the impacts from the Tronox NAUM Ambrosia Lake mines discharge operations to ground water that could present a current or future health threat to the Navajo as well as other local communities that use the ground water as a water supply for drinking and other domestic or agricultural purposes. Understanding and predicting the future flow path of this impacted ground water as it continues to move through the shallow alluvium and underlying bedrock formations will be critical to protecting the Navajo Nation and other users from legacy ground water contamination in the Tronox NAUM Ambrosia Lake area for generations to come. Data gathered and analyzed under Phase 1 and Phase 2 work will support the Conceptual Site Model for the basin that will be useful to the Navajo and other stakeholders that rely on this vital water resource.

TRONOX NAUM EAST GEOGRAPHIC SUB-AREA (GSA)

In FY2016 Region 6 completed the removal site evaluation activities on the East Geographic Sub-Area (GSA) (Section 35 and 36 mines). Region 6 has prepared a "draft" engineering evaluation and cost (EE/CA) for the East GSA which is currently undergoing internal review. In addition to internal review, Region 6 is in the process of preparing a detailed presentation for the USEPA national

USEPA Region 6 Community Outreach

remedy review board (NRRB). Pending approval of the NRRB, Region 6 plans on releasing the "draft" for the East GSA for stake holder review and comment in late 2017.

TRONOX NAUM WEST GEOGRAPHIC SUB-AREA

In FY2016 Region 6 focused on initiation of a Removal Site Evaluations (RSE) on the West Geographic Sub-Area (GSA) (Section 10, 22, 24, and 30 West mines). Mining activities began in the West GSA in 1959 and ceased in 1970, with approximately 3.9 million tons of uranium ore produced. In addition to conventional underground mining, solution or leachate mining occurred on Sections 22 and 24. Data on solution mining is limited and may have continued after the conventional mining operations were closed. Since the depth of uranium-containing ore body varies from 400 to over 800 feet below ground surface, millions of gallons of groundwater were pumped from the mine shafts associated with Section 22, 24, 30 West and discharged to arroyos and streams, thus increasing the acreage affected by mining activities. The Section 10 mine was considered dry with no to very minimal groundwater pumping associated with the mining operation. The total affected area impacted at the West GSA site is approximately 1,895 acres, and radiation has been measured at more than 100 times site specific background levels. It should be noted that at least 30 of the 1,895 impacted acres are located on Navajo allotment land. In order to conduct the RSE in this allotment area, Region 6 coordinated closely with Navajo Nation EPA and the allotees as appropriate. This contamination appears to be due to migration of contaminated materials from the Section 22 mining operations, since there is no visible or historic evidence of uranium mining on these allotments. Region plans on completing the RSE and initiating the EE/CA process for the West GSA during FY2017.

Student Training - Region 6 Grants Field Office

3.2 USEPA Region 9

TRONOX-COVE TRANSFER STATION

On October 5, 2016, USEPA Region 9 completed construction activities to mitigate surface erosion at the former transfer area located in the Cove Chapter of the Navajo Nation, in eastern Arizona. The former Cove Transfer Station is located in Cove Chapter, Apache County, Arizona (within the Navajo Nation), off of Bureau of Indian Affairs (BIA) Route 33, approximately 40 miles southwest of the community of Shiprock, New Mexico. Since the completion of a site removal action in November 2012, sections of the site slope and other adjoining areas had become highly eroded due to intense rain storms that occur seasonally, creating small channels and gullies (up to two feet in depth) throughout much of the site. The erosion repair at the former Cove Transfer Station site included: stabilizing the affected slopes and constructing slope diversion channels; restoring the

Before: Eroded soil at the base of the slope

After: Slope stabilized

roadside ditch with rock material; removing dead or dying vegetation; vegetating the affected slope with seeds and young plants (Spring 2017); and providing irrigation with an on-site water tank to feed a drip irrigation system (Spring 2017), until plants are established.

TRONOX MESA MINE I

Mesa Mine I Preliminary Site Assessment has been conducted to determine risk to human health and the environment. A RSE will be conducted in FY2017.

ABANDONED URANIUM MINES ON THE NAVAJO NATION

Activities included quarterly meetings with Navajo Nation; settlement records review; settlement implementation planning; Navajo Nation Mines Portal Database; Northern Agency ASPECT Gamma survey, community involvement; and Navajo Nation grants.

Navajo Nation Mines Portal Database

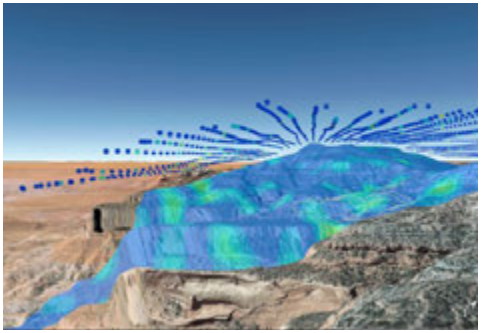
USEPA recognizes that data management is a critical element for implementing the Tronox work, given the multiple jurisdictions involved (USEPA Regions 6 and 9; Navajo Nation EPA, AML and other relevant Navajo Departments; the New Mexico Environment Department; the New Mexico Mining and Minerals Division; and non-governmental organizations).

USEPA is developing a data management portal for the Tronox sites. To date, a site-wide data management plan and a requirements document were developed to provide a uniform data management approach for all involved parties and stakeholders. The Tribal Lands Cleanup Portal will provide complete transparency into the data and documentation collected in support of the overall Tribal Lands Cleanup activities. It will also facilitate communication and collaboration between the various project stakeholders.

Northern Agency ASPECT Gamma Survey

Airborne Spectral Photometric Environmental Collection Technology (ASPECT) Program conducted an aerial radiological survey in the Northern Agency of the Navajo Nation. The purpose was to identify areas where uranium radioactivity is out of balance with radioactivity from other naturally occurring isotopes, and identify areas in need of further assessment to determine if the sources are attributable to the historic mining operations.

The surveys covered nearly 180 square miles of land, and collected over 70,000 data points. A ground-based characterization effort was organized to collect in-situ gamma spectroscopy measurements at select locations to develop flight-specific sensitivity coefficients to convert ASPECT net eU count-rates to uranium soil concentrations when possible. Finally, approximately 600 high resolution digital aerial photographs were taken over the survey areas, and approximately 450 oblique photographs were taken surrounding the AUMs.



ASPECT 3D flight path and the rough terrain of the survey area

It was determined that approximately 2 percent of the surveyed area contains potentially elevated uranium concentrations. The findings of the survey have led to the development of the Mine Category Assessment Protocol (MCAP) project target list in which Tronox AUMs and areas of concern identified by the ASPECT findings were evaluated.

ASPECT aircraft provides infrared and photographic images with geospatial chemical and radiological information to the customer within minutes to hours, depending on the mission.

TRONOX - SECTION 32 / SECTION 33

USEPA Region 9 is working to protect residents of Casamero Lake Chapter by cleaning up waste from past uranium mining operations. Uranium mining operations occurred throughout the Navajo Nation from the 1940s to the 1980s.

Over time, the contaminated soils in the Section 32 mine area have migrated due to wind and rain. USEPA also found that areas outside the Section 32 mine area contain contaminated soils. Because of the health risks, USEPA Region 9 removed the contaminated soil from the area around the Section 32 Mine site, including the former transfer area to the south of the Section 32 mine area, and built temporary stockpile on top of the Section 32 Mine.

The stockpile has been temporarily established and sealed using soil tackifier to stabilize and prevent the contaminated soil from moving. After the soil was sealed at Section 32 Mine to prevent exposure to people and livestock, a fence was placed around the pile with signs warning people to keep out.

This removal action is a temporary measure to stabilize the contaminated soil. USEPA and Navajo Nation Environmental Protection Agency (NNEPA) will discuss the final disposal options and timeframe with the community before making any decisions about permanent disposal.

TRONOX NAUM COVE WASH REGIONAL ASSESSMENT

In FY2016, the USEPA, in coordination with Navajo Nation EPA (NNEPA) and the Diné College Environmental Institute, continued to sample soil, sediment and water across the Cove Wash watershed. The goal was to identify potential areas of concern and sources of contamination, as well as determine the baseline contaminant levels in the Cove Wash. These areas are locations of historical uranium mining activities and have elevated uranium concentrations in surface water and ground water. The Cove Wash watershed is

Section 32/33 Interim Action

approximately 47 square miles, and includes 50 of the 70 AUMs within the Lukachukai Mountains. Year-round water is found in peaks and canyons above 7000 foot elevation, where springs and seeps emerge. Developed springs and wells are also part of the watershed assessment. In addition to the above activities, a crop and irrigation study, wetland delineation, and Mexican spotted owl survey were conducted.

Mine Category Assessment Protocol Reconnaissance (MCAP)

The objective of Mine Category Assessment Protocol Reconnaissance (MCAP) was to develop and implement a systematic method for assessing and surveying 32 Tronox mines and mines within a half mile radius of the Tronox mines located within the Northern

Agency of the Navajo Nation. This systematic approach included ranking each mine claim area based on a historical review as well as creating a Target List, made up of the Tronox mine sites and other nearby mines sites. MCAP next steps include: take interim action at Mesa II and Mesa V; conduct road assessments and improvements necessary to access mine areas; and perform Removal Site Evaluations and Engineering Evaluation/ Cost Analysis to determine waste volumes and evaluate cleanup options.

TRONOX NAVAJO AREA URANIUM MINES (SETTLEMENT FUNDS)

Activities include quarterly meetings with Navajo Nation; settlement implementation planning; Program Management Plan; financial reporting (i.e. Tronox Annual and Quarterly Reports and grants management).

USEPA Program Management Plan

The objective of the Program Management Plan is to perform a strategic assessment of the USEPA's NAUM Program and prepare a Program Management Plan to assure a program that is effective, efficient, accountable, transparent, and capable of achieving the goals laid out in the Five Year Strategic Plans.

Dine' College Interns Sampling Cove Watershed

The following will be a part of the Program Management Plan:

- Interviews with USEPA and Navajo Nation
- Navajo workforce development (Acquisition Plan)
- Resource management (Workforce Assessment Plan)
- Field office options (Field Office Options Report)
- Reporting and documents (Records Management Plan)

MCAP Team Assessing Cove Mine Waste Pile

Sampling a Cove Field used for Farming

COVE CHAPTER AREA TRONOX MINES REMEDIAL INVESTIGATION / FEASIBILITY STUDY ACTIVITIES

In late June of 2016, the USEPA entered into an interagency agreement (IA) with the Albuquerque District of the U.S. Army Corps of Engineers (Corps) to develop a conceptual site model (CSM) and conduct a data gaps assessment for the Cove Chapter AUMs. As part of the project, the Corps and its contractor will assimilate information from previous studies and actions of the site; research, gather and analyze other existing data and documents that could be used to develop the conceptual site model; break the site out into investigation areas based on known information; provide pictorial representations of the site; depict exposure pathways and receptors; provide recommendations for paths forward for each of the investigation areas; and, suggest general areas for data gap investigations. The resulting document will form the baseline for the USEPA to determine which areas need further study (remedial investigation/feasibility study and removal site evaluations), and which areas will move straight into the response phase (removal actions).

NORTHEAST CHURCH ROCK QUIVIRA MINES

In 2016, USEPA worked with the community and NNEPA to finish a Community Involvement Plan. The plan describes the issues facing the community and outlines the ways that the community, USEPA and NNEPA will communicate as we work towards a final solution at the mine site. USEPA is working towards awarding a construction contract with a Navajo owned company (Priority #1) to perform a removal action of contaminated soil and to repair a bridge. Future activities at the Northeast Church Rock Quivira Mines include:

- Repair roads and bridges to allow access to removal sites. This will also improve road safety for the local community;
- Perform interim removal actions;
- Work with NTUA to re-route power lines off of the mine site;

Soil Sampling near Vent Hole - Quivira Mine

- USEPA plans to release the Engineering Evaluation/Cost Analysis which presents an analysis of all the removal options in 2018;
- Discuss the removal options with Navajo Nation, community members, and other stakeholders.

Cove Watershed Sampling

4.0 Tronox and Quivira NAUM – Workforce Development Opportunities

Cleaning up abandoned uranium mines on the Navajo Nation creates jobs for Navajo workers and provides opportunities for Navajo businesses. These opportunities will increase as cleanup work at the mines accelerates. The following provides a summary of Navajo workers that have supported Tronox Mine Cleanup work:

Navajo Workers Supporting Tronox Cleanup Work Within the Past 4 Years

Project/Activity	Job Duties	Total #
Cove Tronox Mines	Botanist, geologist, Navajo language interpreters, community liaison	6
Cove Watershed Sampling	21 Diné College interns, 2 Navajo Technical University interns, 1 New Mexico State University intern, 1 Eastern New Mexico University intern, and 3 Diné College faculty member	28
Cove Transfer Station	Construction Workers	2
Total Navajo Workers Supporting Tronox Mine Cleanup Work		**36**

USEPA and NNFWS walking former Transfer Station #2, Cove Arizona

USEPA Team conducting Cove watershed Assessment

For More Information (USEPA Contacts)

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