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August 22, 2008

Mr. Jeff Inglis
c/o Ms. Joan Simmons
U.S. Environmental Protection Agency
75 Hawthorne Street, SFD 9-1
San Francisco, CA 94105

Subject: Billy the Kid Mine, Preliminary Assessment Report

Attached is the Preliminary Assessment report for the Billy the Kid Mine (EPA ID: NNN000908584) site, prepared by Weston Solutions, Inc. (WESTON). Also included are the Report Package Checklist, Transmittal List, Site Reconnaissance Interview and Observation Report/Photographic Documentation, Contact Reports, Latitude and Longitude Calculation Worksheet, photocopies of references, EPA Quick Reference Fact Sheet, and HRS Scoresheets and Rationale.

If the EPA has comments regarding this report, they should be received by WESTON within one month of this submittal. WESTON will address these comments and resubmit the report within 2 weeks. If you have any questions regarding this report, please do not hesitate to contact me at a.reilly@westonsolutions.com.

Respectfully submitted,

Amanda K.C. Reilly
Site Leader

Attachments

# COMPONENTS FOR SITE ASSESSMENT REPORT PACKAGES

******Applicable to APA, PA, PA/SI ,SI and ESI report packages******
**(to be submitted to EPA by the contractor, state agency, or tribe)**

**Site Name:** Billy the Kid Mine
**EPA ID No:** NNN000908584

☒ 1. Cover Letter

☒ 2. Site Assessment Report (Including table of contents and list of appendices, tables, and figures)

☒ 3. Appendix A, Transmittal List

☒ 4. Appendix B, Site Reconnaissance Interview and Observation Report/Photographic Documentation

☒ 5. Appendix C, Contact Log and Contact Reports

☒ 6. Appendix D, Latitude and Longitude Calculations Worksheet

☒ 7. Appendix E, References

☒ 8. Appendix F, EPA Quick Reference Fact Sheet: (*Site Assessment: Evaluating Risks at Superfund Sites*)

☐ 9. Appendix G, Sampling and Analysis Plan

☒ **Not applicable to non-sampling sites**

☐ 10. Appendix H, Analytical Results (From EPA-sponsored sampling event only)

☒ **Not applicable to non-sampling sites**

☐ 11. Appendix I, EPA Region 9 Remedial Site Assessment Decision Form **(To be completed by EPA)**

☒ 12. Confidential Information Packet - separately bound (Including HRS Scoresheets, HRS Rationale, and GIS Report)

Approved by: Joseph DeFao Digitally signed by Joseph DeFao DN: cn=Joseph DeFao, c=US, o=WCA, ou=1594, email=joe.defao@westonsolutions.com Date: 2008.10.14 14:57:03 -07'00'
Program Manager
Weston Solutions, Inc.

Approved by: _____
USEPA Task Monitor
U.S. Environmental Protection Agency, Region 9

# Preliminary Assessment Report
# Billy the Kid Mine
# McKinley County, New Mexico

**EPA ID No.: NNN000908584**
**USACE Contract No.: W91238-05-F-0052**
**Document Control No.: 12767.063.489**

**August 2008**

**Prepared for:**
**U.S. Environmental Protection Agency**
**Region 9**

**Prepared by:**
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**Walnut Creek, California 94597**

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# LIST OF ACRONYMS

| | |
|---|---|
| bgs | below ground surface |
| BTK Mine | Billy the Kid Mine |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CERCLIS | Comprehensive Environmental Response, Compensation, and Liability Information System |
| cpm | Counts per Minute (divide cpm by 1,000 for a general conversion to µR/hr) |
| EPA | United States Environmental Protection Agency |
| HRS | Hazard Ranking System |
| NMBGMR | New Mexico Bureau of Geology and Mineral Resources |
| NPL | National Priorities List |
| PA | Preliminary Assessment |
| RCRAInfo | Resource Conservation and Recovery Act Information |
| SARA | Superfund Amendments and Reauthorization Act |
| WESTON | Weston Solutions, Inc. |

## 1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Weston Solutions, Inc. (WESTON®) has been tasked to conduct a Preliminary Assessment (PA) of the Billy the Kid Mine (BTK Mine) site, located in McKinley County, New Mexico.

The purpose of the PA is to review existing information on the site and its environs, to assess the threat(s), if any, posed to public health, welfare, or the environment, and to determine if further investigation under CERCLA/SARA is warranted. The scope of the PA includes the review of information available from federal, state, tribal, and local agencies and performance of an on-site reconnaissance visit.

Using the sources of existing information, the site is then evaluated using the U.S. Environmental Protection Agency's (EPA's) Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites at which the EPA may conduct remedial response actions. This report summarizes the findings of these preliminary investigative activities.

The BTK Mine site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on April 14, 2008 (EPA ID No.: NNN000908584) (1).

More information about the Superfund program is available on the EPA web site at http://www.epa.gov/superfund. The attached fact sheet describes EPA's site assessment process (Appendix F).

### 1.1 Apparent Problem

The apparent problems at the BTK Mine site, which contributed to EPA's determination that a PA was necessary, are as follows:

- Between1952 and 1960, the site operated as a uranium mine producing approximately 2,692 pounds of uranium and 4,276 pounds of vanadium (2).

- In July 2008, field screening data collected onsite indicated gamma radiation measurements to be significantly above background measurements (3).

# 2.0 SITE DESCRIPTION

## 2.1 Location

The BTK Mine site is located in the southeastern portion of McKinley County, New Mexico, approximately 39 miles east of the city of Gallup. The site occupies both BLM and Navajo Trust lands. The geographic coordinates for the site are 35˚ 25’ 54" North latitude and 108˚ 02’ 07" West longitude (4). A site location map is presented in Figure 2-1.

## 2.2 Site Description

The BTK Mine site is approximately 85 acres and located in a rural area of northwestern New Mexico. The site is located atop a mesa and surrounded in all directions by sparsely vegetated desert. One residence is located approximately 0.3 mile west of the site. An intermittent stream transects the site along the northern portion and continues to run along the western border. A former limestone rock quarry is located north of the site (4, 5, Appendix B). A site layout map is presented in Figure 2-2.

During operations, the mine consisted of an area approximately 1,000 feet east-west and 300 to 600 feet north-south containing at least 3 open surface pits that were merged together. No deep pits or highwalls existed during mining operations. Instead, the mining operations consisted of broad areas of very shallow stripping at depths of approximately 7 to 20 feet deep. A drainage transected the mine workings on the north and a portion of the mine dump was located along the bank of the drainage. Based on a review of maps and aerial photographs, it appears that this drainage is the intermittent stream running along the northern portion of the site (2, 5).

## 2.3 Operational History

Between 1952 and 1976, multiple mining operations have been conducted on the BTK Mine site. The following table provides a summary of the available operational history information. Current and historic ownership information regarding the BTK Mine site is unknown at this time (2, 6).

| Years of Mining Operations | Mining Operator |
|---|---|
| 1952 | Warren McCormick and W.A. Greer |
| 1953 | Maddox-Teague |
| 1954 | Continental Divide |
| 1958 | Henry Andrews |
| 1960 | Don W. Wright |
| 1976 | Henry Andrews |

During active uranium mining operations between 1952 and 1960, approximately 8,724 tons of ore were mined that contained 2,692 pounds of uranium and 4,276 pounds of vanadium. Additional mining conducted in 1976 was classified under production class "a", defined as producing up to 20,000 pounds of uranium. The uranium deposits were mined from the Todilto Limestone (2, 6).

The BTK Mine site lies within the Grants Uranium Region of the San Juan Basin. Historically, the San Juan Basin has been the most productive uranium mining area in the United States, having produced approximately 40 percent of the nation's uranium ore. Most of the production has been from the Morrison Formation and to a lesser extent the Dakota Sandstone. The Todilto Limestone has accounted for approximately two percent of New Mexico's uranium production (7).

Between August 1979 and May 1980, the New Mexico Bureau of Geology and Mineral Resources (NMBGMR), formerly the New Mexico Bureau of Mines and Mineral Resources, conducted an investigation of approximately 200 abandoned or inactive uranium mines in New Mexico. The BTK Mine site was inspected in December 1979. Gamma ray scintillometer readings collected at the mine indicated a range of 30,000 to 54,000 counts per minute (cpm) and a maximum reading of 60,000 cpm (5).

In July 2008, WESTON conducted a field screening on the BTK Mine site and gamma radiation measurements were collected throughout the site and in the area of the former rock quarry located north of the site. Two background readings were collected from locations that appeared to be undisturbed and not associated with mining activities. The two background readings measured at 10,887 cpm and 11,192 cpm. Gamma radiation measurements collected from the western portion of the site displayed readings at background levels. Elevated readings were detected in the southeastern portion of the site where exposed uranium ore was observed. The maximum reading in this area was 112,387 cpm, more than ten times the averaged background reading. Elevated readings were also detected at the former rock quarry; however the area is not considered to be part of the BTK Mine site (3, 5, App. B). A gamma reading location and measurement map is presented in Figure 2-2.

As of July 2008, the site was vacant and no mining operations were occurring onsite (App. B).

## 2.4 Regulatory Involvement

### 2.4.1 U.S. Environmental Protection Agency

The BTK Mine site is not listed in the Resource Conservation and Recovery Act Information (RCRAInfo) database, as of August 19, 2008 (8).

### 2.4.2 Navajo Abandoned Mine Land Reclamation Program

The BTK Mine site is under review by the Navajo AML Program for possible reclamation work with the New Mexico AML Program. NAMLRP program is discussing with New Mexico the feasibility of undertaking a joint reclamation action as a pilot project between the two agencies (App. C-1).

## 3.0 HAZARD RANKING SYSTEM FACTORS

### 3.1 Sources of Contamination

For HRS purposes, a source is defined as an area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

Potential hazardous substance sources associated with the BTK Mine site include, but may not be limited to:

- Excavated onsite mine workings from previous uranium mining with elevated gamma radiation measurements (2, 3).

### 3.2 Groundwater Pathway

In determining a score for the groundwater migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to groundwater; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on the number of people who regularly obtain their drinking water from wells that are located within 4 miles of the site. The HRS emphasizes drinking water usage over other uses of groundwater (e.g., food crop irrigation and livestock watering), because, as a screening tool, it is designed to give the greatest weight to the most direct and extensively studied exposure routes.

The BTK Mine site lies within the San Juan Hydrologic Basin that has four major underlying aquifers and various smaller shallow alluvial aquifers. These major aquifers in descending order are the San Juan Unit, Dakota (D-), Navajo (N-), and Coconino (C-) aquifers. The San Juan Unit and D-aquifers provide domestic water to a majority of the drinking water wells in the southeastern portions of the Navajo Nation (9).

The depth to groundwater beneath the site is estimated to be 800 feet below ground surface (bgs). The direction of groundwater flow has not been clearly defined, however, based upon regional topography, it is estimated to flow in a southwesterly direction. Geologic materials in the

unsaturated zone between ground surface and the top of the aquifer are unknown; however, the site is underlain by Quaternary-age alluvium and Todilto Limestone, which extends to an unknown depth. The net precipitation in the area is approximately 10.7 inches annually (2, 4, 9, 10).

The closest drinking water well is located approximately 0.3 mile southwest of the BTK Mine site. There are an additional 34 drinking water wells within 4 miles of the site. There are no public water systems within 4 miles of the site. These wells are private domestic drinking water wells likely serving individual households. The county multiplier for McKinley County is 3.44 (2, 11, 12).

### 3.3 Surface Water Pathway

In determining the score for the surface water pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to surface water (e.g., streams, rivers, lakes, and oceans); 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, persistence, bioaccumlulation potential, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on drinking water intakes, fisheries, and sensitive environments associated with surface water bodies within 15 miles downstream of the site.

Surface water runoff from the BTK Mine site runs into the intermittent stream transecting the site along the northern portion. This stream continues to run along the western border of the site and connects with additional unnamed streams downgradient of the site. There are no known drinking water intakes associated with these surface water bodies within 15 miles of the site. It is unknown if these streams are used by local residents for fishing (4, 5, App. B).

### 3.4 Soil Exposure and Air Pathways

In determining the score for the soil exposure pathway, the HRS evaluates: 1) the likelihood that there is surficial contamination associated with the site (e.g., contaminated soil that is not covered by pavement or at least 2 feet of clean soil); 2) the characteristics of the hazardous substances in the surficial contamination (i.e., toxicity and quantity); and 3) the people or sensitive environments (targets) who actually have been or potentially could be, exposed to the contamination. For the targets component of the evaluation, the HRS focuses on populations that are regularly and currently present on or within 200 feet of surficial contamination. The four populations that receive the most weight are residents, students, daycare attendees, and terrestrial sensitive environments.

In determining the score for the air migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to ambient outdoor air; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the

evaluation, the HRS focuses on regularly occupied residences, schools, and workplaces within 4 miles of the site. Transient populations, such as customers and travelers passing through the area, are not counted.

The entire BTK Mine site is unpaved. There are no residences, schools, or daycare facilities on, or within 200 feet, of the site. In addition, there are no terrestrial sensitive environments onsite (App. B).

## 4.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region 9's Emergency Response Office does not appear to be necessary:

- The BTK Mine site is no longer in operation. In addition, the site is located in a very remote and rural area of northwestern New Mexico (App. B).

## 5.0 SUMMARY

The Billy the Kid Mine (BTK Mine) site is located in the southeastern portion of McKinley County, on both Navajo Trust and BLM lands. The site is approximately 85 acres and located in a rural area of northwestern New Mexico. During operations, the mine consisted of an area approximately 1,000 feet east-west and 300 to 600 feet north-south containing at least 3 open surface pits that were merged together. No deep pits or highwalls existed during mining operations. Instead, the mining operations consisted of broad areas of very shallow stripping at depths of approximately 7 to 20 feet deep.

During active uranium mining operations between 1952 and 1960, approximately 8,724 tons of ore were mined that contained 2,692 pounds of uranium and 4,276 pounds of vanadium. Additional mining conducted in 1976 was classified under production class “a”, defined as producing up to 20,000 pounds of uranium.

In July 2008, WESTON conducted a field screening on the BTK Mine site and gamma radiation measurements were collected throughout the site. Two background readings were collected from locations that appeared to be undisturbed and not associated with mining activities. The two background readings measured at 10,887 counts per minute (cpm) and 11,192 cpm. Elevated readings were detected in the southeastern portion of the site where exposed uranium ore was observed. The maximum reading in this area was 112,387 cpm, more than ten times the averaged background reading.

The following pertinent Hazard Ranking System factors are associated with the site:

- The depth to groundwater beneath the site is estimated to be 800 feet below ground surface. Geologic materials in the unsaturated zone between ground surface and the top of the aquifer are unknown; however, the site is underlain by Quaternary-age alluvium and Todilto Limestone, which extends to an unknown depth.

- The closest drinking water well is located approximately 0.3 mile southwest of the BTK Mine site. There are an additional 34 drinking water wells within 4 miles of the site. There are no public water systems within 4 miles of the site. These wells are private domestic drinking water wells likely serving individual households.

- Surface water runoff from the BTK Mine site runs into the intermittent stream transecting the site along the northern portion. This stream continues to run along the western border of the site and connects with additional unnamed streams downgradient of the site. There are no known drinking water intakes associated with these surface water bodies within 15 miles of the site. It is unknown if these streams are used by local residents for fishing.

- The entire BTK Mine site is unpaved. There are no residences, schools, or daycare facilities on, or within 200 feet, of the site. In addition, there are no terrestrial sensitive environments onsite.

## 6.0 REFERENCE LIST

1. U.S. Environmental Protection Agency, Envirofacts Warehouse CERCLIS query results, http://www.epa.gov/enviro/html/multisystem.html, accessed August 19, 2008.

2. New Mexico Bureau of Geology and Mineral Resources, Database of Uranium Mines, Prospects, Occurrences, and Mills in New Mexico, April 3, 2002.

3. Weston Solutions, Inc., Field Screening Data, Billy the Kid Mine site, July 2008.

4. Google Earth, 35° 25' 54" North, -108° 02' 07" West, http://earth.google.com/, accessed August 14, 2008.

5. Anderson, Orin J., New Mexico Bureau of Mines and Mineral Resources, Abandoned or Inactive Uranium Mines in New Mexico, August 1979 through May 1980.

6. McLemore, Virginia T., Chenoweth, William L., New Mexico Bureau of Mines and Mineral Resources, Uranium Mines and Deposits in the Grants district, Cibola and McKinley Counties, New Mexico, December 1991.

7. Holen, Harlen K., Hatchell, William O., New Mexico Bureau of Mines and Mineral Resources, Geological Characterization of New Mexico Uranium Deposits For Extraction By In Situ Leach Recovery, August 1986.

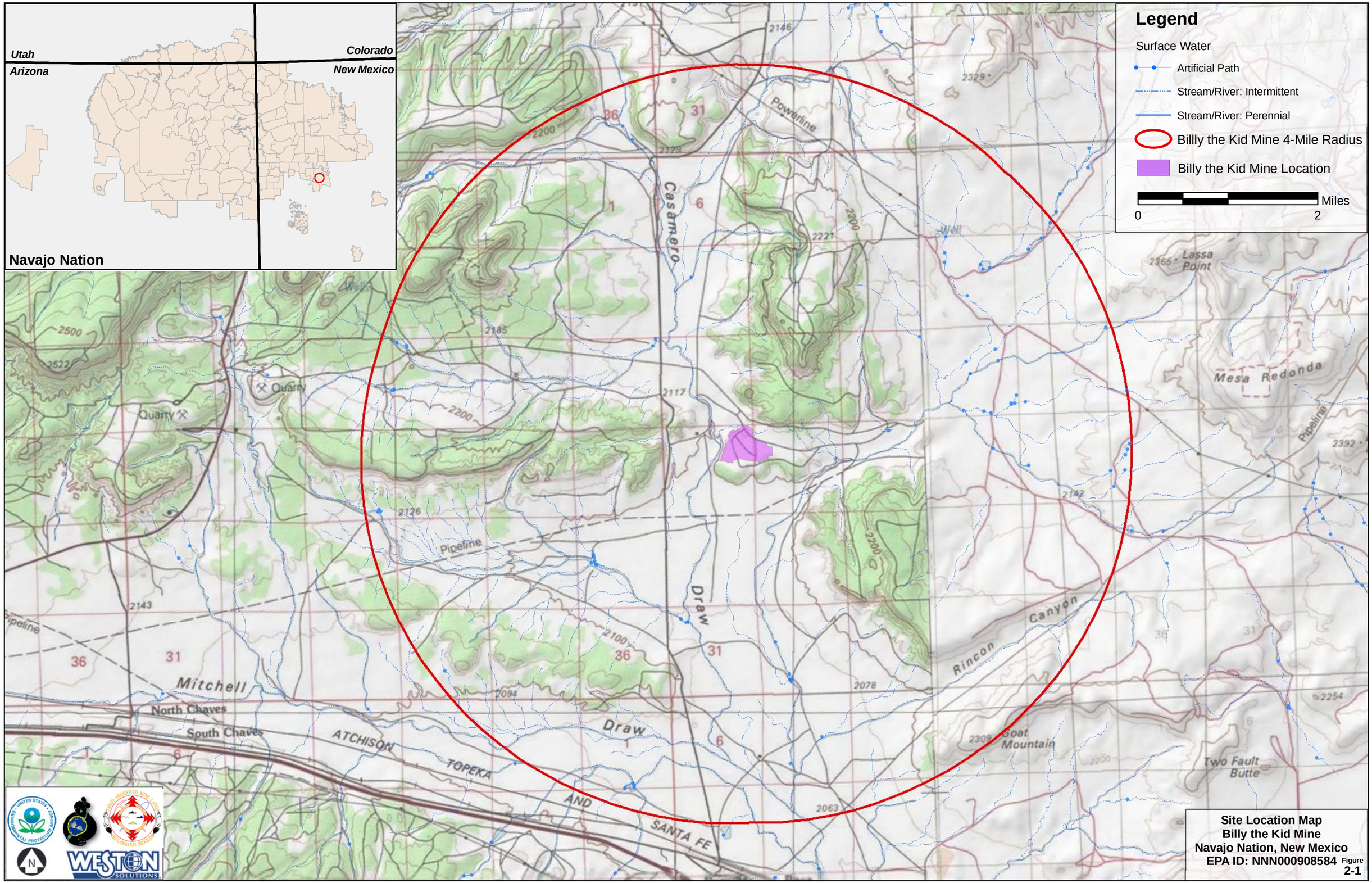
8. U.S. Environmental Protection Agency, Envirofacts Warehouse RCRAInfo query results, http://www.epa.gov/enviro/html/rcris/rcris_query_java.html, accessed August 19, 2008.

9. The Navajo Nation Department of Water Resources, *Water Resource Development Strategy for the Navajo Nation*, July 17, 2000.

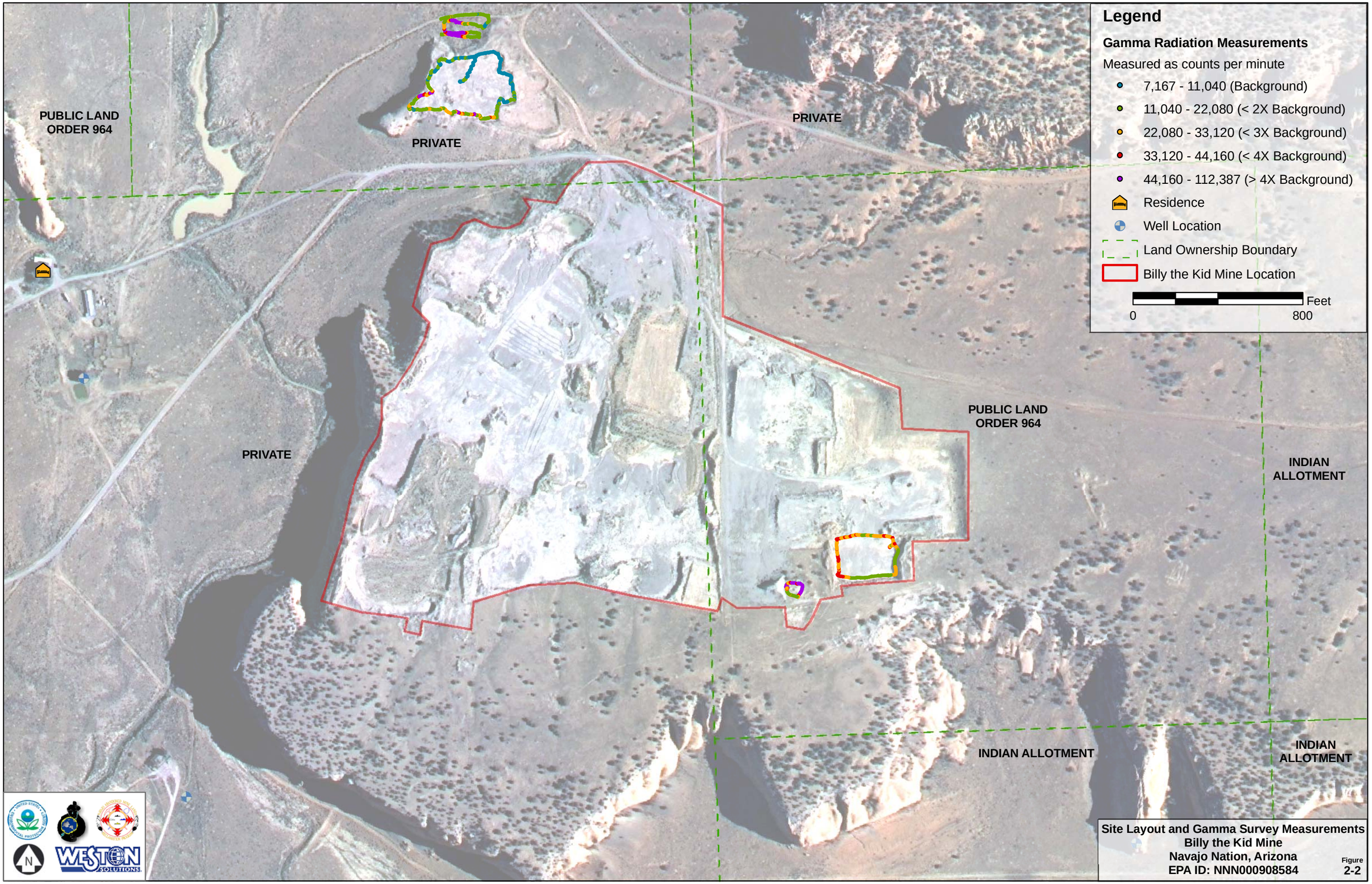
10. Western Regional Climate Center, Thoreau ENE, New Mexico, http://www.wrcc.dri.edu/summary/Climsmnm.html, accessed August 19, 2008.

11. Abandoned Uranium Mines and The Navajo Nation – Navajo Nation AUM Screening Assessment Report and Atlas with Geospacial Data, August 2007.

12. U.S. Census Bureau, State and County Quickfacts, McKinley County, New Mexico, http://quickfacts.census.gov/qfd/states/35/35031.html, accessed August 19, 2008.




Site Location Map
Billy the Kid Mine
Navajo Nation, New Mexico
EPA ID: NNN000908584 Figure 2-1




Site Layout and Gamma Survey Measurements
Billy the Kid Mine
Navajo Nation, Arizona
EPA ID: NNN000908584

Figure 2-2

# APPENDIX A:
# Transmittal List

**TRANSMITTAL LIST**

**Date:** **August 2008**
**Site Name:** **Billy the Kid Mine**
**EPA ID No.:** **NNN000908584**

**********

A copy of the Preliminary Assessment report for the above-referenced site should be sent to the following recipients:

David Martinez
Chapter President
Mariano Lake Chapter
P.O. Box 164
Smith Lake, New Mexico 87365

Stanley Edison
Navajo Nation Environmental Protection Agency
Waste Regulatory Compliance Department
P.O. Box 2946
Window Rock, Arizona 86515

Melvin Yazzie
The Navajo Nation Division of Natural Resources
Navajo Abandoned Mine Lands Reclamation Program
P.O. Box 3605
Shiprock, New Mexico 87420

# APPENDIX B:
# Site Reconnaissance Interview and Observation Report/ Photographic Documentation

**SITE RECONNAISSANCE INTERVIEW AND OBSERVATIONS REPORT/PHOTOGRAPHIC DOCUMENTATION**

**DATE:** July 1, 2008

**OBSERVATIONS MADE BY:** Joseph DeFao

**SITE:** Billy the Kid Mine

**EPA ID:** NNN000908584

A site visit was conducted on July 1, 2008. The following information was obtained and photographs were taken during the site visit:

The weather was hot and sunny. The temperature was approximately 90°F.

Personnel from USEPA, NNEPA, and WESTON conducted a site visit of the Billy the Mine. The following people were present: Jeff Inglis (USEPA), Stanley Edison (NNEPA), and Joe DeFao, Nels Johnson, and Tommy Evans (WESTON). During the visit, gamma radiation readings were collected throughout the site using a combination sodium-iodide scintillation detector and a GPS unit. A stand-alone scintillation detector was used as well. A small ridge of possible native materials extended from the north to the south, separating the site into a smaller eastern section and a larger western section. Background radiation readings were collected with both screening instruments along the ridge line in to the south of the site in an area that appeared to be undisturbed by the mining operations.

Both sections of the site were screened with the stand-alone scintillation detector. Readings in the eastern section were generally greater than two times above the background readings, with higher readings detected in more localized areas. These localized areas were then screened with the combination unit. Both of the localized areas were located in the southeast section of the site. One of the areas was small mound of material, and the other was a small surface mine pit. Readings in the western section of the site were generally less than two times the background readings.

Additionally, gamma readings were collected at a separate mining area located to the north of the main site. At the time of the site visit, it was uncertain if this area was part of the Billy the Kid mine site.

No water runoff was observed during the visit; however, the slope of the site indicated that drainage from the site flows to the north and enters a series of intermittent steams. There were no signs of plant or animal species located on the site. One residence, located approximately 0.3 mile to the west of the site, was observed.

*Photographic Documentation*
*Billy the Kid Mine Site*
*McKinley County, New Mexico*

**Photo 1: Eastern section of the Billy the Kid Mine site.**

**Photo 2: Small ridge separating the eastern and western sections of the site**

*Photographs taken by Joseph DeFao, Weston Solutions, Inc.*

**Photo 3: Western section of the Billy the Kid Mine site.**

**Photo 4: Collecting Gamma readings in the eastern section of the site.**

*Photographs taken by Joseph DeFao, Weston Solutions, Inc.*

**Photo 5: Uranium ore present in waste rock.**

**Photo 6: Mining area located to the north of the Billy the Kid Mine site.**

*Photographs taken by Joseph DeFao, Weston Solutions, Inc.*

**Photo 7: Residence located approximately 0.3 mile to the west of the site**

# APPENDIX C:
# Contact Log and Contact Reports

# CONTACT LOG

## SITE: BILLY THE KID MINE
## EPA ID NO.: NNN000908584

| NAME | AFFILIATION | PHONE | DATE | INFORMATION |
|---|---|---|---|---|
| Levon Benally | Navajo AML | (928) 871-7594 | 07/01/08 | Pilot Project for site |

# CONTACT REPORT 1

| | | |
|---|---|---|
| AGENCY/AFFILIATION: Navajo Abandoned Mine Land Reclamation Program | | |
| DEPARTMENT: UMTRCA Program | | |
| ADDRESS/CITY: P.O. Box 1875 Window Rock, AZ 86515 | | |
| COUNTY/STATE/ZIP: | | |
| CONTACT(S) | TITLE | PHONE |
| Levon Benally | | 928-871-7495 |
| | | |
| PERSON MAKING CONTACT: Jeff Inglis, U.S. EPA | | DATE: July 1, 2008 |
| SUBJECT: Site Reclamation Pilot Project with New Mexico AML Program | | |
| SITE NAME: Billy the Kid Mine | | EPA ID#: NNN 000 908 584 |

# APPENDIX D:
# Latitude and Longitude Calculations Worksheet

# Latitude and Longitude Calculation Worksheet (7.5' quads)
# Using an Engineer's Scale (1/50)

**Site Name** Billy the Kid Mine **CERCLIS #** N N N 0 0 0 9 0 8 5 8 4

**AKA**

**Address**

**City** **State** N M **ZIP**

**Site Reference Point** The approximate center of the site, based on aerial image.

**USGS Quad Name** **Scale** 1:24,000

**Township** **Range** **Section** ¼ ¼ ¼

**Map Datum** 1927 1983 **(Check one)** **Meridian**

**Map coordinates at southeast corner of 7.5' quadrangle (attach photocopy)**

**Latitude** ° ' "N **Longitude** ° ' "W

**Map coordinates at southeast corner of 2.5' grid cell**

**Latitude** ° ' "N **Longitude** ° ' "W

## Calculations

**LATITUDE(x)**

A) Number of ruler graduations between 2.5' (150") grid lines **(a)**

B) Number of ruler graduations between south grid line and the site reference point **(b)**

C) Therefore, a/150 = b/x, where **x= Latitude in decimal seconds, north of the south grid line**

**Expressed as minutes and seconds (1' = 60") =** ° ' "N

**Add to grid cell latitude =** ° ' "N + ° ' "N

**Site latitude =** 3 5 ° 2 5 ' 5 4 "N

**LONGITUDE(y)**

A) Number of ruler graduations between 2.5' (150") grid lines **(a)**

B) Number of ruler graduations between south grid line and the site reference point **(b)**

C) Therefore, a/150 = b/x, where **x= Longitude in decimal seconds, west of the east grid line**

**Expressed as minutes and seconds (1" = 60") =** ° ' "W

**Add to grid cell longitude =** ° ' "N + ° ' "N

**Site longitude =** 1 0 8 ° 0 2 ' 0 7 "W

# APPENDIX E
# References

# APPENDIX F
# EPA Quick Reference Fact Sheet

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
Publication 9345.4-03FS
September 1993

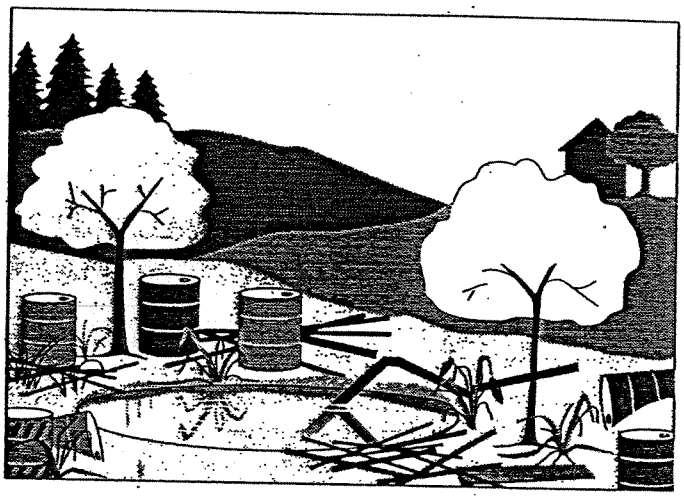
EPA

# SITE ASSESSMENT:
## Evaluating Risks at Superfund Sites

Office of Emergency and Remedial Response
Hazardous Site Evaluation Division 5204G

Quick Reference Fact Sheet

## The Challenge of the Superfund Program



A series of headline-grabbing stories in the late 1970s, such as Love Canal, gave Americans a crash course in the perils of ignoring hazardous waste. At that time, there were no Federal regulations to protect the country against the dangers posed by hazardous substances (mainly industrial chemicals, accumulated pesticides, cleaning solvents, and other chemical products) abandoned at sites throughout the nation. And so, in 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, to address these problems.

The major goal of the Superfund program is to protect human health and the environment by cleaning up areas, known as "sites," where hazardous waste contamination exists. The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Superfund program.

At the time it passed the Superfund law, Congress believed that the problems associated with uncontrolled releases of hazardous waste could be handled in five years with $1.6 billion dollars. However, as more and more sites were identified, it became apparent that the problems were larger than anyone had originally believed. Thus, Congress passed the Superfund Amendments and Reauthorization Act (SARA) in 1986. SARA expanded and strengthened the authorities given to EPA in the original legislation and provided a budget of $8.5 billion over five years. Superfund was extended for another three years in 1991.

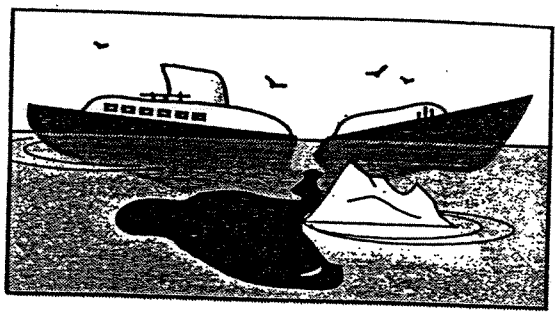
## What is EPA's Job at Superfund Sites?

For more than 10 years, EPA has been implementing the Superfund law by:

- Evaluating potential hazardous waste sites to determine if a problem exists;
- Finding the parties who caused the hazardous waste problems and directing them to address these problems under EPA oversight or requiring them to repay EPA for addressing these problems; and
- Reducing immediate risks and tackling complex hazardous waste problems.

The Superfund site assessment process generally begins with the discovery of contamination at a site and ends with the completion of remediation (i.e., cleaning up the waste at a site) activities. This fact sheet explains the early part of the process, called the *site assessment* phase.

## The National Response Center



The National Response Center (NRC), staffed by Coast Guard personnel, is the primary agency to contact for reporting all oil, chemical, and biological discharges into the environment anywhere in the U.S. and its territories. It is responsible for:

- Maintaining a telephone hotline 365 days a year, 24 hours a day;
- Providing emergency response support in specific incidents; and
- Notifying other Federal agencies of reports of pollution incidents.

To report a pollution incident, such as an oil spill, a pipeline system failure, or a transportation accident involving hazardous material, call the NRC hotline at **800-424-8802.**

## 1 Site Discovery

Hazardous waste sites are discovered in various ways. Sometimes concerned residents find drums filled with unknown substances surrounded by dead vegetation and call the NRC, EPA, or the State environmental agency; or an anonymous caller to the NRC or EPA reports suspicious dumping activities. Many sites come to EPA's attention through routine inspections conducted by other Federal, State, or local government officials. Other sites have resulted from a hazardous waste spill or an explosion. EPA enters these sites into a computer system that tracks any future Superfund activities.

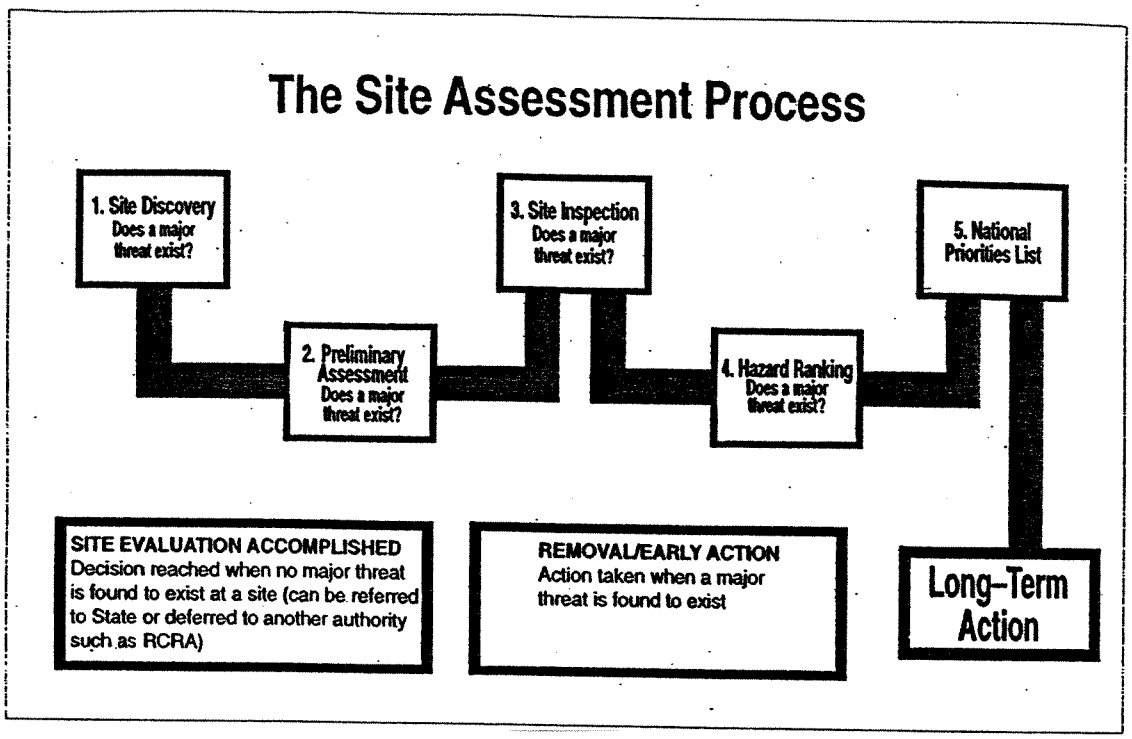
## 2 Preliminary Assessment

After learning about a site, the next step in the site assessment process is to gather existing information about the site. EPA calls this the *preliminary assessment*. Anyone can request that a preliminary assessment be performed at a site by petitioning EPA, the State environmental agency, local representatives, or health officials.

During the preliminary assessment, EPA or the State environmental agency:

- Reviews available background records;
- Determines the size of the site and the area around it;
- Tries to determine whether hazardous substances are involved;
- Identifies actual or potential pollution victims, such as the nearby population and sensitive environments;
- Makes phone calls or interviews people who may be familiar with the site; and
- Evaluates the need for early action using EPA's removal authority.

By gathering information and possibly visiting the site, EPA or the State environmental agency is able to determine if major threats exist and if cleanup is needed. Many times, the preliminary assessment indicates that no major threats exist.




***However, if hazardous substances do pose an immediate threat, EPA quickly acts to address the threat.*** When a site presents an immediate danger to human health or the environment—for example, there is the potential for a fire or an explosion or the drinking water is contaminated as a result of hazardous substances leaking out of drums—EPA can move quickly to address site contamination. This action is called a *removal* or an *early action*. Additional information on early actions can be found on page 4.

EPA or the State environmental agency then decides if further Federal actions are required. Of the more than 35,000 sites discovered since 1980, only a small percentage have needed further remedial action under the Federal program.

A report is prepared at the completion of the preliminary assessment. The report includes a description of any hazardous substance release, the possible source of the release, whether the contamination could endanger people or the environment, and the pathways of the release. The information outlined in this report is formed into hypotheses that are tested if further investigation takes place. You can request a copy of this report once it becomes final— just send your name and address to your EPA regional Superfund office. See page 8 for further information on these contacts.

Sometimes it is difficult to tell if there is contamination at the site based on the initial information gathering. When this happens, EPA moves on to the next step of the site assessment, called the *site inspection.*

## Making Polluters Pay

One of the major goals of the Superfund program is to have the responsible parties pay for or conduct remedial activities at hazardous waste sites. To accomplish this goal, EPA:

- Researches and determines who is responsible for contaminating the site;
- Issues an order requiring the private parties to perform cleanup actions with EPA oversight; and
- Recovers costs that EPA spends on site activities from the private parties.

## Removals/Early Actions

EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment. These actions are called *removals* or *early actions* because EPA rapidly eliminates or reduces the risks at the site. EPA can take a number of actions to reduce risks, including:

- Fencing the site and posting warning signs to secure the site against trespassers;
- Removing, containing, or treating the source of the contamination;
- Providing homes and businesses with safe drinking water; and, as a last resort,
- Temporarily relocating residents away from site contamination.

**"EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment."**

# 3 Site Inspection

If the preliminary assessment shows that hazardous substances at the site may threaten residents or the environment, EPA performs a site inspection. During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water. EPA may initiate a concurrent SI/remedial investigation at those sites that are most serious and determined early as requiring long-term action. Sometimes, wells have to be drilled to sample the ground water. Site inspectors may wear protective gear, including coveralls and respirators, to protect themselves against any hazardous substances present at the site. Samples collected during the site inspection are sent to a laboratory for analysis to help EPA answer many questions, such as:

- Are hazardous substances present at the site? If so, what are they, and approximately how much of each substance is at the site?
- Have these hazardous substances been released into the environment? If so, when did the releases occur, and where did they originate?
- Have people been exposed to the hazardous substances? If so, how many people?
- Do these hazardous substances occur naturally in the immediate area of the site? At what concentrations?
- Have conditions at the site gotten worse since the preliminary assessment? If so, is an early action or removal needed? (See box above.)

Often, the site inspection indicates that there is no release of major contamination at the site, or that the hazardous substances are safely contained and have no possibility of being released into the environment. In these situations, EPA decides that no further Federal inspections or remedial actions are needed. This decision is referred to as *site evaluation accomplished.* (See page 5 for more details on the *site evaluation accomplished* decision.)

At the completion of the site inspection, a report is prepared. This report is available to the public–call your EPA regional Superfund office for a copy. See page 8 for the phone numbers of these offices.

**"During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water."**

At sites with particularly complex conditions, EPA may need to perform a second SI to obtain legally defensible documentation of the releases.

Because EPA has limited resources, a method has been developed to rank the sites and set priorities throughout the nation. That method, known as the *Hazard Ranking System*, is the next step in the site assessment process.

# 4 Hazard Ranking System

EPA uses the information collected during the preliminary assessment and site inspection to evaluate the conditions at the site and determine the need for long-term remedial actions. When evaluating the seriousness of contamination at a site, EPA asks the following questions:

- Are people or sensitive environments, such as wetlands or endangered species, on or near the site?
- What is the toxic nature and volume of waste at the site?
- What is the possibility that a hazardous substance is in or will escape into ground water, surface water, air, or soil?

Based on answers to these questions, each site is given a score between zero and 100. Sites that score 28.5 or above move to the next step in the process: listing on the *National Priorities List*. Sites that score below 28.5 are referred to the State for further action.

## Site Evaluation Accomplished

In many instances, site investigators find that potential sites do not warrant Federal action under the Superfund program. This conclusion can be attributed to one of two reasons:

- The contaminants present at the site do not pose a major threat to the local population or environment; or
- The site should be addressed by another Federal authority, such as EPA's Resource Conservation and Recovery Act (RCRA) hazardous waste management program.

When investigators reach this conclusion, the site evaluation is considered accomplished. A site can reach this point at several places during the site assessment process, namely at the conclusion of the preliminary assessment or the site inspection, or once the site is scored under the Hazard Ranking System.

# 5 National Priorities List

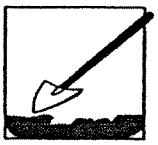
Sites that are listed on the *National Priorities List* present a potential threat to human health and the environment, and require further study to determine what, if any, remediation is necessary. EPA can pay for and conduct remedial actions at NPL sites if the responsible parties are unable or unwilling to take action themselves. There are three ways a site can be listed on the National Priorities List:

- It scores 28.5 or above on the Hazard Ranking System;
- If the State where the site is located gives it top priority, the site is listed on the National Priorities List regardless of the HRS score; or
- EPA lists the site, regardless of its score, because all of the following are true about the site:
  - The Agency for Toxic Substances and Disease Registry (ATSDR), a group within the U.S. Public Health Service, issues a health advisory recommending that the local population be *dissociated* from the site (i.e., that the people be temporarily relocated or the immediate public health threat be removed);
  - EPA determines that the site poses a significant threat to human health; and
  - Conducting long-term remediation activities will be more effective than addressing site contamination through early actions.

The list of proposed sites is published in the *Federal Register*, a publication of legal notices issued by Federal agencies. The community typically has 60 days to comment on the list. After considering all comments, EPA publishes a list of those sites that are officially on the National Priorities List. When a site is added to the National Priorities List, the site assessment is completed. Long-term actions take place during the next phase. See page 6 for more details on long-term actions.

## As a Concerned Citizen, How Can I Help ?

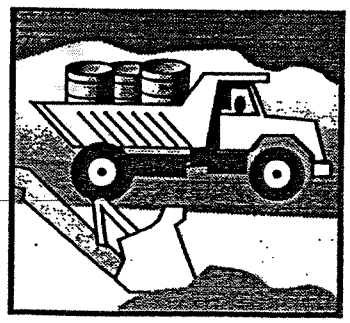
- Read this fact sheet.
- Call EPA with any potential sites in your area.
- Provide EPA with site information.
- Comment on proposed listing of sites on the National Priorities List.
- If the site is listed on the NPL, work with your citizens' group to apply for a technical assistance grant.



## Addressing Sites in the Long Term

Once a site is placed on the National Priorities List, it enters the long-term or remedial phase. The stages of this phase include:

- ✓ Investigating to fully determine the nature and extent of contamination at the site, which can include a public health assessment done by the ATSDR;
- ✓ Exploring possible technologies to address site contamination;
- ✓ Selecting the appropriate technologies—also called remedies;
- ✓ Documenting the selected remedies in a record of decision (ROD);
- ✓ Designing and constructing the technologies associated with the selected remedies;
- ✓ If necessary, operating and maintaining the technologies for several years (e.g., long-term treatment of ground water) to ensure safety levels are reached; and
- ✓ Deleting the site from the National Priorities List, completing Superfund's process and mission.



# Some Commonly Asked Questions

**Q: What exactly is a site?**

A: EPA designates the area in which contamination exists as the "site." Samples are taken to define the area of contamination. At any time during the cleanup process the site may be expanded if contamination is discovered to have spread further.

**Q: How long will it take to find out if a threat exists?**

A: Within one year of discovering the site, EPA must perform a preliminary assessment. The preliminary assessment allows EPA to determine if there is an immediate danger at the site; if so, EPA takes the proper precautions. You will be notified if you are in danger. EPA may also contact you to determine what you know about the site.

**Q: What is the State's role in all these investigations?**

A: The State can take the lead in investigating and addressing contamination. It also provides EPA with background information on (1) immediate threats to the population or environment, and (2) any parties that might be responsible for site contamination. The State shares in the cost of any long-term actions conducted by the Superfund program, comments on the proposal of sites to the National Priorities List, and concurs on the selected remedies and final deletion of sites from the National Priorities List.

**Q: Why are private contractors used to assess sites?**

A: EPA has a limited workforce. By using private contractors, EPA is able to investigate more sites. Also, EPA is able to draw on the expertise of private contracting companies.

**Q: Why are there so many steps in the evaluation process? Why can't you just take away all the contaminated materials right now, just to be safe?**

A: When EPA assesses a site, it first determines if contamination poses any threats to the health of the local population and the integrity of the environment. Dealing with worst sites first is one of Superfund's national goals. By evaluating contamination in a phased approach, EPA can quickly identify sites that pose the greatest threats and move them through the site assessment process. Once EPA understands the conditions present at a site, it searches for the remedy that will best protect public health and the environment. Cost is only one factor in weighing equally protective remedies. Many sites do not warrant actions because no major threat exists. However, if a significant threat does exist, EPA will take action.

# about Superfund Sites

**Q: If a site is added to the National Priorities List, how will we know when EPA has completed the cleanup efforts?**

A: EPA notifies the public and requests their comments on the actions proposed to treat site contaminants. In addition, the community is notified when a site will be deleted from the National Priorities List. The entire process can take as long as 7 years; at sites where ground water is contaminated, it can take even longer.

**Q: I live next door to a site and I see EPA and contractor personnel wearing "moon suits." Am I safe?**

A: EPA and contractor personnel wear protective gear because they might actually be handling hazardous materials. Also, these people are regularly exposed to contaminants at different sites and do not always know what contaminants they are handling. EPA takes steps to protect the public from coming in contact with the site contamination. If a dangerous situation arises, you will be notified immediately.

**Q: If a site is added to the National Priorities List, who pays for the activities?**

A: EPA issues legal orders requiring the responsible parties to conduct site cleanup activities under EPA oversight. If the parties do not cooperate, Superfund pays and files suit for reimbursement from responsible parties. The sources of this fund are taxes on the chemical and oil industries; only a small fraction of the fund is generated by income tax dollars.

**Q: How can I get more information on any health-related concerns?**

A: Contact your EPA regional Superfund office for more information. The ATSDR also provides information to the public on the health effects of hazardous substances. Ask your EPA regional Superfund office for the phone number of the ATSDR office in your region.

**Q: How can I verify your findings? What if I disagree with your conclusions?**

A: You can request copies of the results of the site assessment by writing to your EPA regional Superfund office. The public is given the opportunity to comment on the proposal of a site to the National Priorities List and the actions EPA recommends be taken at the site. If a site in your community is listed on the National Priorities List, a local community group may receive grant funds from EPA to hire a technical advisor. Call your EPA regional Superfund office (see page 8) for the location of an information repository and for information on applying for a **technical assistance grant.**

**Q: How can I get further information? How can I get a list of the sites EPA has investigated?**

A: Contact your EPA regional Superfund office (see page 8) for more information and a list of sites in your area.

## *Important Phone Numbers*

For information on the Superfund program or to report a hazardous waste emergency, call the national numbers below.

**U.S. EPA Headquarters Hazardous Site Evaluation Division**

- Site Assessment Branch
  703-603-8860

**Federal Superfund Program Information**

- EPA Superfund Hotline
  800-424-9346

**Emergency Numbers:**

**Hazardous Waste Emergencies**

- National Response Center
  800-424-8802

**ATSDR Emergency Response Assistance**

- Emergency Response Line
  404-639-0615

For answers to site-specific questions and information on opportunities for public involvement, contact your region's Superfund community relations office.

**EPA Region 1:** *Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont*

- Superfund Community Relations Section
  617-565-2713

**EPA Region 2:** *New Jersey, New York, Puerto Rico, Virgin Islands*

- Superfund Community Relations Branch
  212-264-1407

**EPA Region 3:** *Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia*

- Superfund Community Relations Branch
  800-438-2474

**EPA Region 4:** *Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee*

- Superfund Site Assessment Section
  404-347-5065

**EPA Region 5:** *Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin*

- Office of Superfund
  312-353-9773

**EPA Region 6:** *Arkansas, Louisiana, New Mexico, Oklahoma, Texas*

- Superfund Management Branch, Information Management Section
  214-655-6718

**EPA Region 7:** *Iowa, Kansas, Missouri, Nebraska*

- Public Affairs Office
  913-551-7003

**EPA Region 8:** *Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming*

- Superfund Community Involvement Branch
  303-294-1124

**EPA Region 9:** *Arizona, California, Hawaii, Nevada, American Samoa, Guam*

- Superfund Office of Community Relations
  800-231-3075

**EPA Region 10:** *Alaska, Idaho, Oregon, Washington*

- Superfund Community Relations
  206-553-2711