DEPARTMENT OF THE ARMY
U.S. ARMY WHITE SANDS MISSILE RANGE
100 HEADQUARTERS AVENUE
WHITE SANDS MISSILE RANGE, NEWMEXICO 88002-5000

November 14, 2001

REPLY TO
ATTENTION OF
Environment and Safety Directorate

NO REVIEW
WSMR did work
& will submit
A VCA REPORT

Ms. Cheryl Frischkorn
State of New Mexico Environment Department - HWB
2905 Rodeo Park Drive East
Building 1
Santa Fe, New Mexico 87505

Subject: Corrective Measures Implementation Work Plan for the Former North Oscura Peak Landfill

Dear Ms. Frischkorn:

In accordance with agreements reached during the in-process review for the White Sands Installation Restoration Program on October 16, 2001, two hard copies and one electronic copy of the *Corrective Measures Implementation Work Plan for the North Oscura Peak Landfill, Solid Waste Management Units 47, 48, 49 (DSERTS WSMR-71)* dated December 1999 are enclosed for your approval. Discussions during the in-process review revealed that you were not able to approve the *Voluntary Corrective Action Work Plan for the North Oscura Peak Landfill* that was furnished to you in our letter dated August 16, 1999, because the document title did not contain billable (20 NMAC 4.2) nomenclature.

You are completely familiar with the North Oscura Peak project from numerous discussions and meetings with Ms. Robin Paul of our staff. Nothing about the proposed action has changed. The project is a simple "dig and haul" operation with follow-on confirmation sampling to demonstrate clean closure. A Corrective Measures Implementation Report will be prepared and submitted after the actions have been completed.

White Sands intends to implement the corrective measures at this site during the first two weeks of December 2001. It would be our great pleasure if you could join us during this time to observe the activities and take split confirmation samples if you so desire.

Copies of this correspondence are also being furnished to Ms. Julie Jacobs, NMED DSMOA; Messrs. James Bearzi and John Kieling, NMED HWB; Mr. James Harris, Region VI EPA; Ms. Nancy Kosko, Developmental Test Command; Mr. Bruce Ensor, Staff Judge Advocate White Sands Missile Range; and to MEVATEC Corporation. Please contact Mr. Gene Forsythe or Ms. Robin Paul of our office at (505) 678-2224 if you have any questions.

Sincerely,

Thomas A. Ladd

Thomas A. Ladd
Director, Environment and
Safety Directorate

Enclosure

REPORT DOCUMENTATION PAGE			OMB No. 0704-0188
Public reporting burden for this collection of information estimated to average 1 hour per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspects of this collection information including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302 and to the Office of Management and Budget Paperwork Reduction Project (0704-0188), Washington DC 20503			
1. AGENCY USE ONLY (LEAVE BLANK)	**2. REPORT DATE** December 1999		**3. REPORT TYPE AND DATES COVERED** Final
4. TITLE AND SUBTITLE Corrective Measures Implementation Work Plan for the North OSCURA Peak Landfill, Solid Waste Management Units 47, 48, and 49 (DSERTS WSMR-71)			**5. FUNDING NUMBERS**
6. AUTHOR(S) Mr. Chris Whitman, MEVATEC Corporation			
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(ES) MEVATEC Corporation Box 399 WSMR, NM 88002			**8. PERFORMING ORGANIZATION REPORT NUMBER** 400ZZ/99/002F
9. SPONSORING/MONITORING AGENCY NAMES(S) AND ADDRESS(ES) Robin Paul Technical Inspector (505) 678-8693 U.S. Army White Sands Missile Range WS-ES-EC			**10. SPONSORING/MONITORING AGENCY REPORT NUMBER** WS-ES-EC-9924
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION AVAILABILITY STATEMENT On request, Distribution D			**12b. DISTRIBUTION CODE**
13. ABSTRACT (MAXIMUM 200 WORDS) Work Plan details the removal of wastes from 3 landfill cells near North Oscura Peak on White Sands. Environmental sampling to confirm closure of the site is planned. Site restoration plans for grading and revegetation are incorporated.			
14. SUBJECT TERMS IRP, SWMU, DSERTS, WSMR, Landfill, Corrective Action, SWMU 47-48-49, DSERTS WSMR-71			**15. NUMBER OF PAGES** 38 **16. PRICE CODE**
17. SECURITY CLASSIFICATION OF REPORT Unclassified	**18. SECURITY CLASSIFICATION OF THIS PAGE** Unclassified	**19. SECURITY CLASSIFICATION OF ABSTRACT** Unclassified	**20. LIMITATION OF ABSTRACT**

NSN 7540-01-280-5500 STANDARD FORM 298 (2-89) PREPARED BY ANSI Std 239-8 299-102

CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN FOR THE NORTH OSCURA PEAK LANDFILL, SOLID WASTE MANAGEMENT UNITS 47, 48, AND 49 (DSERTS WSMR-71),

Submitted to:

U.S. Army
White Sands Missile Range
Environment and Safety Directorate
White Sands Missile Range, New Mexico 88002-5048

December 1999

Submitted by:

MEVATEC Corporation
Building 126
White Sands Missile Range, New Mexico 88002

EXECUTIVE SUMMARY

The former North Oscura Peak landfill received solid and septic waste generated by personnel stationed at the observation and telemetry facilities at the North Oscura Range Camp until closure in 1989. The waste was domestic and office refuse.

The site was inspected during the White Sands Missile Range (White Sands) Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) in 1988 and added to the corrective action portion of the RCRA Part B Permit. The three landfill trenches at the site were designated as Solid Waste Management Units (SWMUs) 47, 48, and 49.

An investigation of the SWMUs was conducted in 1997 to characterize the nature and extent of the waste. The results of the investigation indicate that it is possible to clean-close the site by excavating the refuse for disposal at an approved facility.

This Work Plan proposes corrective action at the SWMUs to include excavating the waste materials for disposal at an approved, offsite, solid waste disposal facility. Laboratory analyses of soil samples taken following waste excavation will determine whether further corrective action is necessary. If clean closure of the site can be demonstrated by conformational sampling, the former landfill cells will be backfilled with clean soil and graded to promote stabilization of the topsoil. A request will then be made to the New Mexico Environment Department to remove these SWMUs from the Permit.

Source removal does not preclude a contaminant release from the landfill trenches. In the event that waste excavation does not sufficiently demonstrate clean closure due to releases detected visually or analytically, appropriate further corrective measures and/or environmental monitoring will be assessed.

TABLE OF CONTENTS

Section **Page**

EXECUTIVE SUMMARY ii

1.0 INTRODUCTION 1
- 1.1 Facility Description 1
- 1.2 Environmental Setting 1
- 1.3 Objectives and Scope 4
- 1.4 Regulatory Requirements 4

2.0 SITE CHARACTERIZATION 4
- 2.1 Site Description and Operational History 4
- 2.2 Site Geology 11
- 2.3 Site Hydrology 11
- 2.4 Previous Site Investigations 12
- 2.5 Site Conceptual Model 17

3.0 SITE DESIGN 18
- 3.1 Design Objectives 18
- 3.2 Design Criteria 19
- 3.3 Post-Closure Care 20

4.0 CORRECTIVE ACTION 20
- 4.1 Landfill Excavation and Waste Removal 20
- 4.2 Site Control 22
- 4.3 Performance Monitoring 23
- 4.4 Soil Stabilization 26
- 4.5 Schedule 26

5.0 DATA QUALITY OBJECTIVES 26
- 5.1 Data Quality Objectives Process 26
- 5.2 Field Data Collection and Measurements 30
- 5.3 Technical Data 30

6.0 PROJECT MANAGEMENT 30
- 6.1 Duties and Responsibilities 30
- 6.2 Work Products 34

LIST OF ACRONYMS 36

REFERENCES 38

TABLE OF CONTENTS (*continued*)

Section **Page**

List of Figures

Figure 1-1. Location map of White Sands Missile Range, New Mexico 2
Figure 2-1. Location of North Oscura Peak landfill, USGS 7.5-minute Series Quadrangles..... 5
Figure 2-2. Schematic diagram of the North Oscura Peak landfill site 6
Figure 2-3. Waste characterization borehole locations 13
Figure 2-4. Cross-sectional interpretation of SWMU 49 waste cell from soil borings made along A-A' and B-B' of Figure 2-3 16
Figure 4-1. Soil sample locations proposed for conformational sampling following excavation activities at SWMUs 47, 48, and 49 25
Figure 6-1. Project Personnel Organization Chart 31

List of Photographs

Photo 2-1. SWMUs 47, 48, and 49 7
Photo 2-2. SWMU 48 9
Photo 2-3. SWMU 49 10

List of Tables

Table 2-1. Analytes detected by TCLP at the North Oscura Peak landfill 14
Table 4-1. Analytical methods for soil and water conformational sampling at the North Oscura Peak landfill 23

APPENDIX A Toxicity Characteristic Leaching Procedure Analytical Reports

APPENDIX B Chain of Custody

APPENDIX C Site Health and Safety Plan

APPENDIX D Site Restoration Plan

CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN FOR THE NORTH OSCURA PEAK LANDFILL, SOLID WASTE MANAGEMENT UNITS 47, 48, and 49 (DSERTS WSMR-71)

1.0 INTRODUCTION

1.1 Facility Description

White Sands Missile Range is a U.S. Army installation under the Test and Evaluation Command (TECOM), headquartered at Aberdeen Proving Ground, Maryland. White Sands occupies 3,200 square miles (approximately 8,300 square kilometers [km^2]) in portions of five New Mexico counties: Dona Ana, Socorro, Lincoln, Otero, and Sierra (Figure 1-1). Two Call-Up Areas extend from the western and northern property boundaries, covering an additional 3,200 square miles (approximately 8,300 km^2) of Sierra, Socorro, and Torrance Counties. The Main Post and Headquarters is in the southwestern corner of the installation, approximately 27 miles (43 kilometers (km)) east-northeast of Las Cruces, New Mexico and 45 miles (72 km) north of El Paso, Texas. The missile test range was established on July 9, 1945 as the White Sands Proving Ground and given its current name in 1958. White Sands provides scientific expertise along with administrative and logistical support for the development of weapons systems. Tenants include the U.S. Air Force, U.S. Navy and National Aeronautics and Space Administration. The North Oscura Peak landfill is located in the north-central portion of the installation.

1.2 Environmental Setting

1.2.1 Regional Geology

Located within the Basin and Range Physiographic Province, the geology of White Sands Missile Range consists predominantly of the San Andres Mountains on the west side and the Tularosa Basin, which forms the central and eastern portions of White Sands. A narrow region of north/south-trending, large-displacement normal faulting separates the mountains from the basin and causes the change in relief across the missile range. The average elevation of the Tularosa Basin is 4,000 feet (1,220 meters [m]) above mean sea level. The San Andres range trends north-south along the western side of the missile range and varies in elevation from 5,700 feet (approximately 1,740 m) at San Augustin pass, where Highway 70 crosses the mountains, to over 9,000 feet (approximately 2,750 m) at Salinas Peak, the highest point on White Sands.

The Oscura Mountains extend north and east from the San Andres mountain range forming the northern terminus of the Tularosa Basin, west of the town of Carrizozo. The Sierra Oscura are bounded on the west by the Jornada del Muerto basin, on the east by northern-most limit of the Tularosa Basin, and on the north by Chupadera Mesa. The Oscura Uplift is a basement-cored uplift formed by a large-displacement normal fault on its western margin. Paleozoic sedimentary rocks cap the Precambrian basement rocks and dip northward and eastward towards the Tularosa Valley floor and Chupadera Mesa.

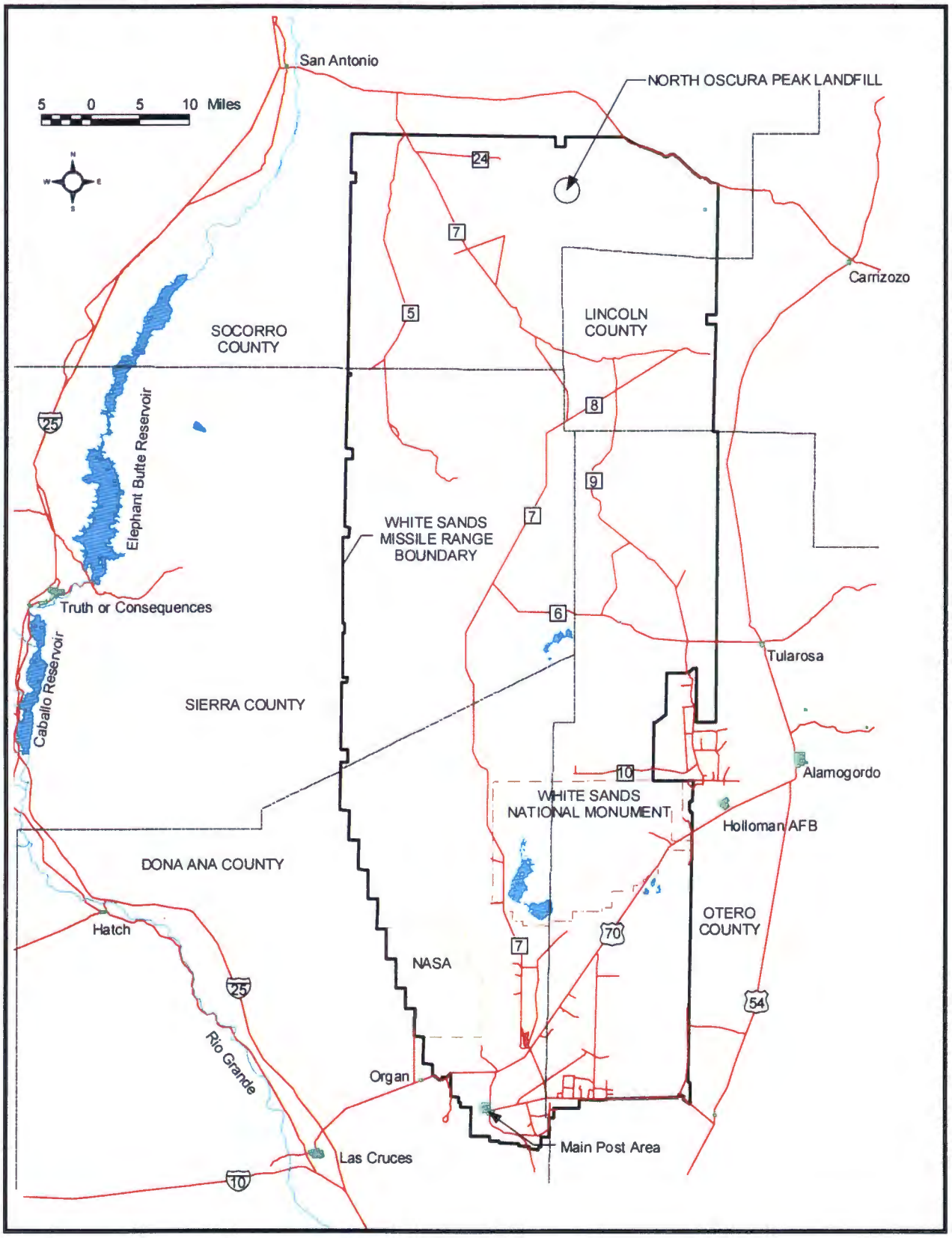


Figure 1-1. Location map of White Sands Missile Range, New Mexico.

1.2.2 Climate

Average annual precipitation at a gauging station in the Tularosa Basin, southeast of the White Sands Main Post, is 10.8 inches (27.4 centimeters) per year. About 50 percent of the annual precipitation in southern New Mexico falls during the months of July through September. The average high temperature in the summer is about 92 degrees Fahrenheit (°F) (33 degrees Celsius [°C]) with the lows reaching 65 °F (18 °C). During the winter months the average high is about 57 °F (14 °C) and the average low is about 36 °F (2 °C). Average annual relative humidity readings are only 37 percent. Wind is a climatic factor at Whites Sands from February to about May. Westerly winds can reach about 40 miles per hour (65 km per hour).

1.2.3 Surface Water

Natural surface waters on White Sands Missile Range are primarily ephemeral due to the semi-arid climate. Most watercourses flow intermittently during and shortly after intense, localized storm events. These arroyos are typically incised on the alluvial fans shed from the San Andres Mountains and terminate in the Tularosa and Jornada del Muerto Basins where the water seeps into the subsurface and/or evaporates. No surface water flows out of the Tularosa Basin, which is a closed basin.

Salt Creek originates on the southwest side of the Oscura Mountains and flows south along the western side of the Tularosa Basin. Salt Creek terminates in the alkali flats in the central portion of the basin. A portion of Salt Creek is perennial and provides critical habitat for the endangered White Sands pupfish (Cyprinodon tularosa). Salt Creek and Three Rivers Creek, which carries water from the northeastern side of the Tularosa Basin, discharge into evaporative playa lakes in the center of the basin from which there is no outlet. The largest of these playas are Lumley Lake and Big Salt Lake. Another large playa lake, Lake Lucero, receives storm water from the southern San Andres range and is the source of evaporite minerals that form the gypsum sand dunes of White Sands National Monument.

1.2.4 Groundwater

The fault-bounded basins of the Basin and Range Physiographic Province are filled with sediments eroded from the surrounding mountains as the basins subside. Groundwater flows from the mountainous recharge areas toward the central portions of the basins. The groundwater flows in unconsolidated basin sediments, also known as bolson deposits. Travel and residence time in the bolsons allows the groundwater to dissolve the bolson deposit minerals. Groundwater that has traveled from the mountain recharge areas to the center of the Tularosa Basin, and which is at or near equilibrium with the minerals in the basin, is generally non-potable due to high total dissolved solids (TDS) concentrations.

Groundwater within the basement-cored uplifts in the Basin and Range region of New Mexico generally occurs under unpredictable fracture-flow conditions in the Precambrian basement rock. Faults defining the boundaries between ranges and basins are major sites of recharge to the regional groundwater.

1.3 Objectives and Scope

The former landfill that supported operations at North Oscura Peak Range Center consisted of three trenches, designated as SWMUs 47, 48, and 49 by the U.S. EPA contractor that conducted the RFA (Kearney, 1988). Owing to their proximity and similar operation, the three SWMUs will be treated together in a single waste removal action. Removing the potential contaminant source (clean closure) is the proposed action because of the relatively shallow burial depth and small volume of the refuse.

The horizontal and vertical extent of the landfill cells was delineated and the waste materials were characterized in June 1997. This Work Plan proposes corrective action at the SWMUs to include excavating the waste materials for disposal at an approved solid waste disposal facility. Laboratory analyses of soil samples taken following waste excavation will determine whether further corrective action is necessary. If clean closure of the site can be demonstrated by confirmation sampling, then a request will be made to remove these SWMUs from the corrective action portion of the RCRA Part B Permit.

1.4 Regulatory Requirements

The proposed corrective action is subject to the requirements of the New Mexico Hazardous Waste Act (NMSA 1978, Chapter 74-4-1 through 14), Title 20 of the New Mexico Administrative Code, Chapter 4.1 (NMED, 1998), and Title 40 of the Code of Federal Regulations (CFR) Parts 260-273. Waste disposal decisions will be based on comparisons of Toxicity Characteristic Leaching Procedure (TCLP) results with regulatory limits listed in 40 CFR 261.24. Waste will be excavated and disposed of in accordance with the New Mexico Solid Waste Act (NMSA 1978, Chapter 74-9-1 through 42) and Title 20 of the New Mexico Administrative Code (NMAC), Chapter 9.1. Site closure decisions will be based on comparisons of total contaminant concentrations with U.S. EPA Region 9 Preliminary Remediation Goals (U.S. EPA, 1998). Physical excavation of the waste will be in accordance with Occupational Safety and Health Administration (OSHA) regulations.

2.0 SITE CHARACTERIZATION

2.1 Site Description and Operational History

North Oscura Peak is located in the north-central portion of White Sands Missile Range in Section 25.3.3, T.6S., R.5E., and reaches an elevation of 7,998 feet (2,438 m) above mean sea level (1929 National Geodetic Vertical Datum [NGVD]). The North Oscura Peak landfill is located in Section 5.1.3.3, T.7S., R.6E., approximately 1.35 miles (2.2 km) southeast of North Oscura Peak, at an elevation of approximately 7,750 feet (2,360 m) (1929 NGVD) (Figure 2-1).

The landfill site (Figure 2-2 and Photograph 2-1) is approximately 235 yards (215 m) northwest of Range Road 331 in a clearing approximately 3,500 feet (1,070 m) east of the USGS benchmark at the Atom Site. The land surface slopes to the east across the site and drains in that direction. The area surrounding the site is forested.

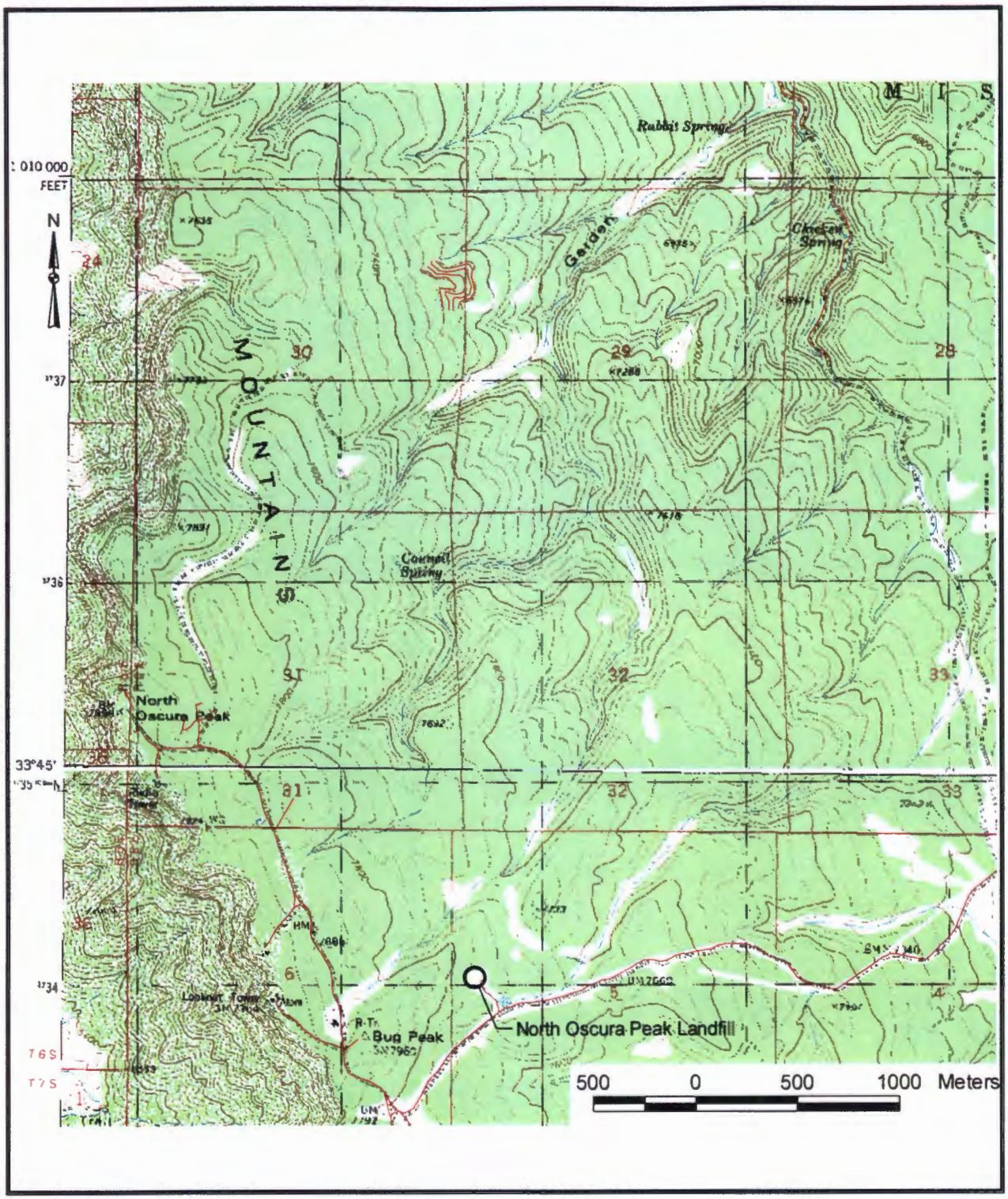


Figure 2-1.
Location of North Oscura Peak landfill, USGS 7.5-minute Oscura Peak Quadrangle.

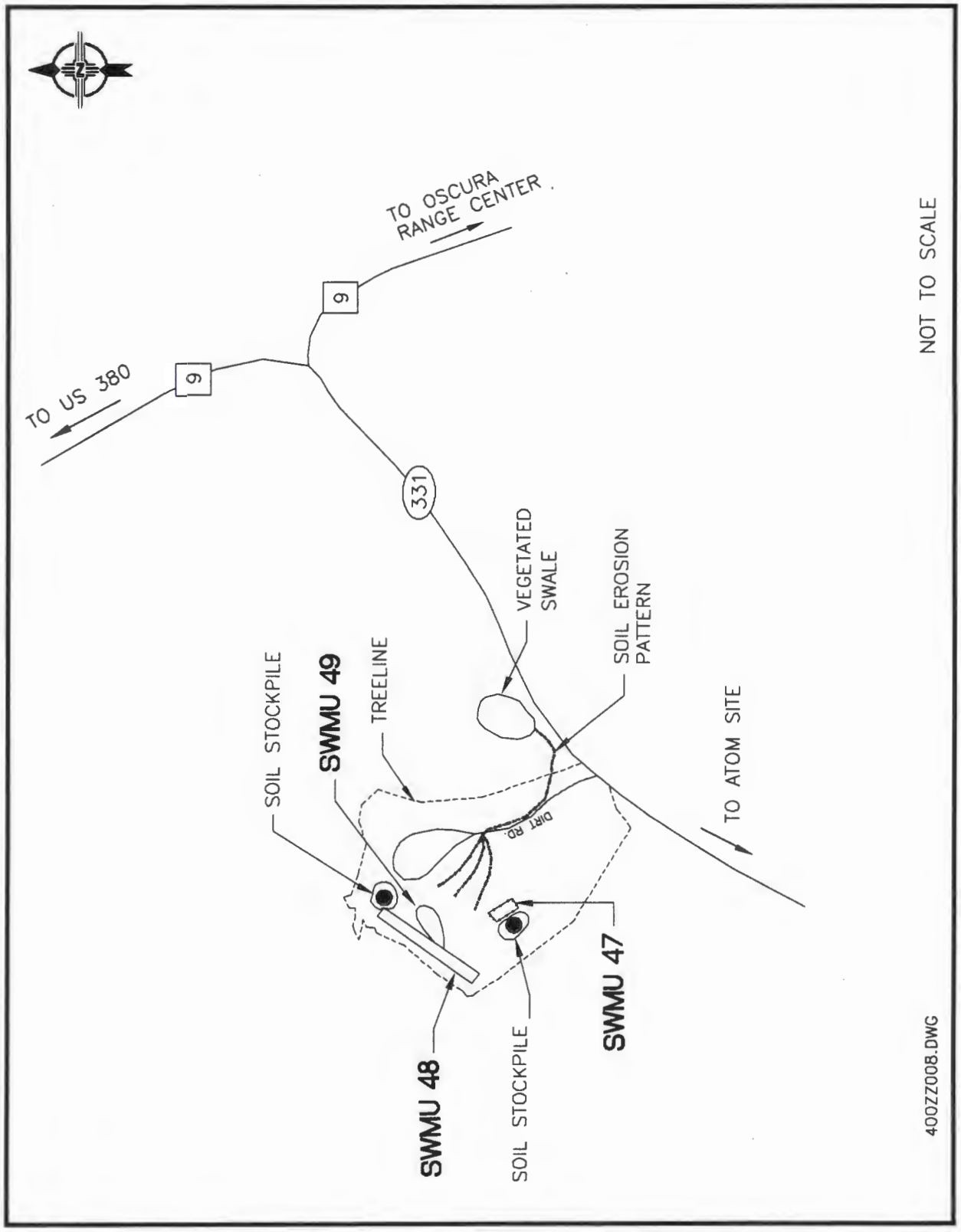


Figure 2-2. Schematic diagram of the North Oscura Peak landfill site.

Photograph 2-1. View looking north across the North Oscura Peak Landfill site. SWMU 47 is fenced in the foreground. SWMUs 48 and 49 are at the treeline, left of the topsoil stockpile.

North Oscura Peak offers a superior vantage point for observing ordnance and vehicle testing and has been used as a telemetry station since 1945. Solid waste generated in the area of the North Oscura Peak Range Center was disposed of in a series of three trenches (Figure 2-2). Designs for the landfill do not exist because the construction method involved no more than trench cutting and backfill. Records searches did not locate a history of waste acceptance history if one was kept. However, interviews with range employees suggest that the facility received ordinary municipal/commercial wastes from Atom Site (in operation from 1960-1972) and the North Oscura Range Camp complex. The Preliminary Review/Visual Site Inspection Report conducted during the RFA noted that most of the exposed waste at the site was visually determined to be ordinary office and household-type refuse (A.T. Kearney, 1988). Waste disposal operations at the site ceased in 1989.

The SWMU 47 landfill cell (Figure 2-2 and shown in Photograph 2-1) measures 40 feet by 50 feet square and approximately 5-feet deep (12.2 x 15.25 x 1.5 m). A barbed-wire fence surrounds the enclosed depression, which received primarily septic waste. A vegetated soil pile on the southwest side of the SWMU likely resulted from the excavation of the septage pit. Waste fills the depression to approximately 1 foot (30 cm), as determined by hand augering conducted to collect TCLP samples in 1997. In addition to the septage, approximately 0.5 cubic yard (0.38 m^3) of plastic, glass and metal containers, wire insulation, wood, cable spools and metal are visible on the surface of the southern half of the landfill.

An open trench, 120-feet long, 5-feet wide and 6-feet deep (37 x 1.5 x 1.8 m), was designated as SWMU 48 (Figure 2-2 and Photograph 2-2). The trench has remained uncovered since waste disposal operations ceased in 1989. A maximum of 1 cubic yard (0.76 m^3) of glass, plastic bottles, rubber tubing, aluminum cans, wood and waste paper lie on the bottom of the trench. Several wooden cable spools rest on top of the refuse. A mound of topsoil 10-feet (3 m) high is situated near the northern end of the open trench. A seam of compacted garbage, approximately 2-feet (60-cm) thick and 4-feet (1.2-m) wide, is visible in the east wall of the trench about 3-feet (1-m) below the present ground surface. This garbage is suspected to be the western extent of waste buried in the trench designated SWMU 49 (Figure 2-2).

At the time of the RFA in 1988, the third waste cell had been covered with soil. Disturbed soil adjacent to SWMU 48 was suspected to be a covered cell. This area immediately east of SWMU 48 was listed as SWMU 49. Its construction is assumed to be similar to that of the open SWMU 48 trench. The SWMU 49 trench had been filled and covered with topsoil. To characterize the nature and extent of the buried waste, 12 augered borings were performed as described in Section 2.4.2. The characterization efforts indicate that the SWMU 49 trench extends to the east from the center of SWMU 48 at an oblique angle (Figure 2-2 and Photograph 2-3).

There is a scattering of refuse and several rusted-out, empty 55-gallon (208-liter) drums among the trees bordering the site on the north side. The debris appears to be scattered on the surface peripheral to the SWMUs and there is no evidence of additional waste burial sites.

Photograph 2-2.
View looking southwest across the SWMU 48 open excavation.
Cable spools are approximately 4.5 feet (1.4 m) in diameter.

Photograph 2-3.
View looking southwest.
The buried SWMU 49 trench is in the foreground and SWMU 48 is behind it at the treeline.

2.2 Site Geology

Sedimentary rocks forming the crest of the Oscura Mountains dip toward the northeast. The landfill site is situated on the dip slope. A thin veneer of soil has developed on the Paleozoic sedimentary bedrock. The open trench at the western margin of the site exposes thinly-bedded, light-gray to yellow shale. The shale exposed at the site was interbedded during Permo-Pennsylvanian deposition of the predominantly limestone marine sequence capping the Oscuras. These sedimentary rocks are predominantly thick-bedded limestone of Pennsylvanian age approximately 800 to 1,000 feet (approximately 250 to 300 m) thick.

Soils at the North Oscura Peak landfill site are mapped as Deama-Rock outcrop complex (DO) by the federal Natural Resources Conservation Service (Neher and Bailey, 1976). The Deama series consists of very shallow to shallow, well-drained soils formed in material weathered from limestone bedrock. The open, nearly empty trench (SWMU 48) at the site offers a cross-sectional view of about 7 vertical feet (2.1 m) of soil and bedrock (Photograph 2-2). The soil profile displays dark O and A horizons which, together form the top foot. Below the A horizon, a rapid gradational color change to a very-light gray, which may represent a B horizon several inches to one-foot thick. The rest of the visible soil column is comprised of light gray to almost white, thinly laminated, and friable lime-shale forming a C horizon at least 5 feet (1.5 m) thick. Consistent with the Deama series description, coherent limestone bedrock probably occurs within 10 feet (3 m) below the bottom of the trench (Neher and Bailey, 1976).

2.3 Site Hydrology

2.3.1 Surface Water

Topography across the landfill site slopes 5 to 10 percent, causing storm water to drain toward the southeastern side of the site. Runoff from the site is along the dirt access road where erosion gullying begins. Storm water runoff enters a vegetated swale east of landfill access road along the north side of Range Road 331. The swale is approximately one-half acre (0.2 hectare) in size and slope gently to approximately 2 feet (60 cm) below grade. The North Oscura Peak landfill site is situated very near to a watershed divide. In the vicinity of the landfill site, Range Road 331 is built along the divide. Water overflowing the natural swale enters a nameless drainage that flows northeast and joins the Garden Spring Canyon 3.5 miles (5.65 km) downstream from the landfill site. The landfill site is at the head of the watershed defined by surface water channels that flow intermittently during storm events, as indicated on USGS Garden Spring 7.5-Minute Quadrangle. A fortuitous combination of a natural swale and no erosion of the SWMU 49 soil cover indicates that there is limited contaminant migration along the surface water pathway (Figure 2-2).

Mean annual precipitation at approximate altitude and latitude of the Sierra Oscura crest approaches 16 inches (40.6 cm), as determined by vegetation and soil type (Deama-Rock outcrop complex) (Neher and Bailey, 1976). A rain gauge operated at North Oscura Peak between 1991 and 1995 recorded an annual average of 16 inches (40.6 cm) of precipitation during that time (Ehrlich, 1998).

2.3.2 Groundwater

To date, water wells have not been drilled at North Oscura Peak. Therefore, groundwater conditions must be inferred from the local geology. Paleozoic sedimentary rocks dipping northeast from the crest of the Sierra Oscura are predominantly shallow marine limestones with some interbedded limey shales. It can be generally assumed that water recharging the subsurface at the upper elevations of the Sierra Oscura might migrate along bedding planes and fractures. This dip control on the flow of atmospheric water recharging the regional aquifer adds a northeasterly component to the downward vertical aquifer recharge pathway. The Paleozoic sedimentary rocks overlie Precambrian granite in which saturation is characteristically dominated by unpredictable fracture-flow conditions. The elevation of the regional aquifer is below the ground surface in both the Tularosa and Jornada del Muerto Basins. Therefore, the depth to regional groundwater below the landfill site is in excess of 1,700 feet (500 m).

2.4 Previous Site Investigations

2.4.1 RCRA Facility Assessment

The Preliminary Assessment/Visual Site Inspection portion of the RCRA Facility Assessment (RFA) investigated SWMUs 47, 48, and 49 in August 1988 (A.T. Kearney, 1988). The RFA report states that two of the SWMUs (47 and 48) were uncovered and active at the time of the site inspection, and that the start date for the landfills is unknown. Contaminant release potential to major exposure routes could not be assessed due to uncertainty about the waste composition.

Although White Sands followed the RFA with a RCRA Facility Investigation (RFI), neither Phase I nor Phase II of the RFI addressed the North Oscura Peak Landfill site. Delineation of the nature of the waste and its volume was conducted through a drilling and sampling program during the summer of 1997.

2.4.2 On-Site Waste Characterization

Investigation of the SWMU 47/48/49 waste has progressed under the Defense Environmental Restoration Program (DERP). Management decisions under DERP required site specific waste characterization and volume estimates. On June 30, 1997, twelve shallow soil borings were drilled by hollow-stem auger in the vicinity of SWMU 49 (Figure 2-3). The borings defined the buried SWMU 49 trench dimensions by determining the lateral and vertical extent of the waste. The borings also provided characterization of the waste brought up in the drill cuttings through visual inspection and chemical analysis.

Six waste samples were collected from the subsurface during the investigation. Samples were taken from each of the three borings that encountered the thickest intervals of waste. A hand auger was used to collect three near-surface waste samples, two from the uncovered SWMU 47 and one from visible waste in the open SWMU 48 trench. The waste samples were analyzed by TCLP to determine the available disposal options for the waste. The results of the investigation are reported below in Table 2-1.

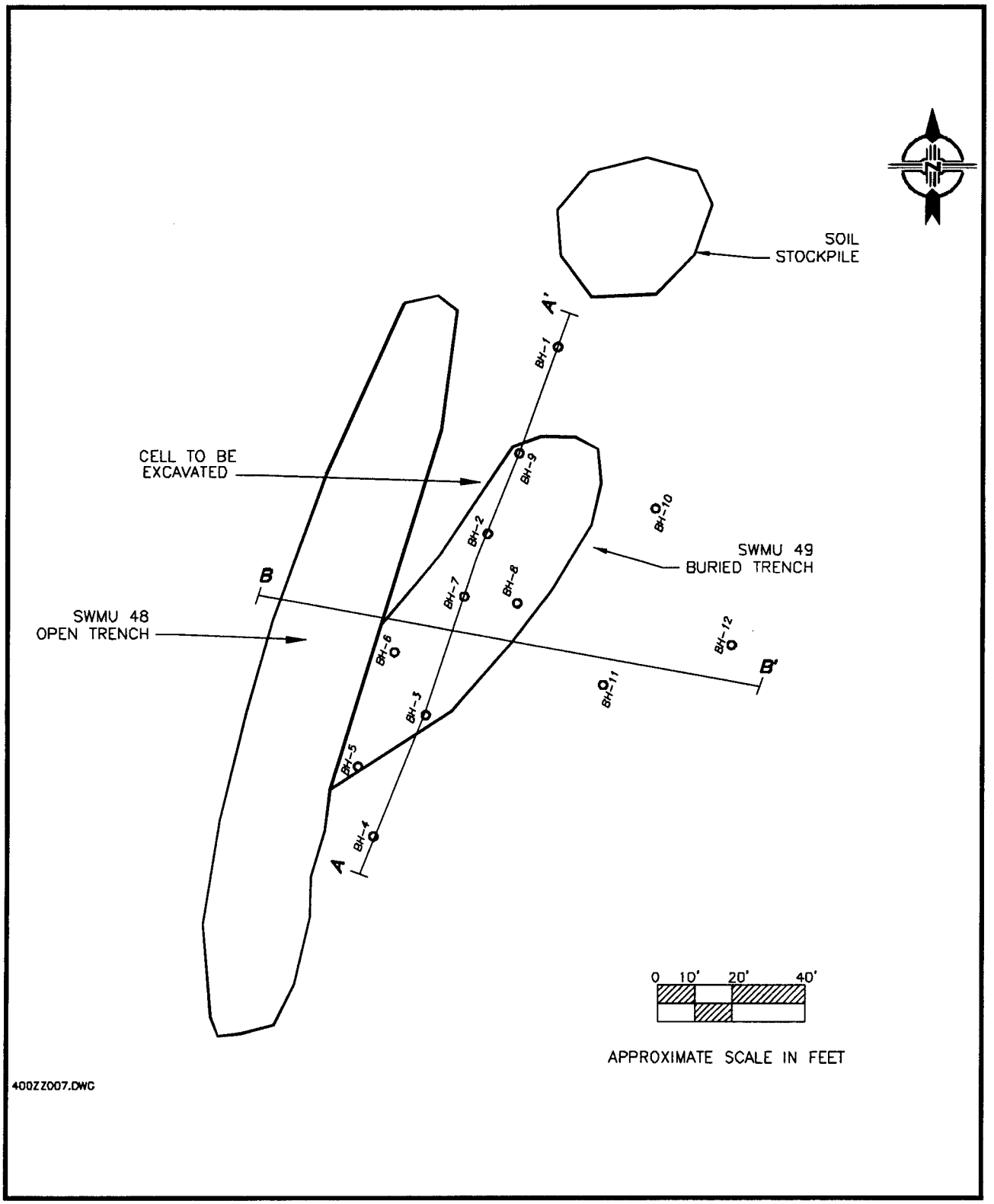


Figure 2-3. Waste characterization borehole locations.
Cross-sectional interpretations of lines A-A' and B-B' are shown in Figure 2-4.

Table 2-1. North Oscura Peak Analytes Detected by TCLP, EPA Method 1311.
Sample Date: 6/30/97

PARAMETER	METHOD	UNITS	NOP-BH2-S1	NOP-BH7-S1	NOP-BH9-S1	NOP-N TRENCH-S1	NOP-W TRENCH S-S1	NOP-W TRENCH N-S1	TC Regulatory Levels*
TCLP Metals									
Barium	SW846-6010A	mg/L	0.67	0.96	0.82	1.00	1.00	0.82	100
Cadmium	SW846-6010A	mg/L	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	1.0
Arsenic	SW846-6010A		No Arsenic detected by this method.						
Chromium	SW846-6010A		No Chromium detected by this method.						
Lead	SW846-6010A		No Lead detected by this method.						
Mercury	SW846-7470A		No Mercury detected by this method.						
Selenium	SW846-6010A		No Selenium detected by this method.						
Silver	SW846-6010A		No Silver detected by this method.						
TCLP Volatile Organic Compounds									
Methyl ethyl ketone (MEK)	SW846-8240B	mg/L	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	200.0
Tetrachloroethene (PCE)	SW846-8240B	mg/L	0.018 J	<0.025	<0.025	<0.025	<0.025	<0.025	0.7
TCLP Semi-Volatile Organic Compounds									
	SW846-8270B		No compounds detected by this method.						
TCLP Organochlorine Pesticides									
	SW846-8080A		No compounds detected by this method.						
TCLP Herbicides									
	SW846-8150B		No compounds detected by this method.						

*Toxicity Characteristic regulatory level, 40 CFR 261.24, Table 1.
J- Estimated concentration below quantitation limit.

Six borings drilled in the SWMU 49 area encountered intervals of refuse and six borings encountered no refuse. Borings BH-2, BH-5, BH-6, BH-7, BH-8, and BH-9 drilled through a single layer of waste a maximum of 8 feet (2.4 m) thick. The boring locations are shown in Figure 2-3, which also delineates the location of the waste trench. The axis of the SWMU 49 trench appears to trend at an oblique angle to that of the open SWMU 48 trench. This conclusion is drawn from borehole data and the intersection point of the two trenches, where buried waste is exposed in the east sidewall of the SWMU 48 trench. A 2-foot (60-cm) interval of waste extending approximately 9 feet (2.75 m) horizontally along the sidewall is exposed 3 feet (1 m) below grade. This location is suspected to be the western terminus of the SWMU 49 trench.

In order to establish waste removal and disposal options, TCLP samples were taken from three of the borings; BH-2, BH-7 and BH-9 (labeled NOP-BH2-S1, NOP-BH7-S1 and NOP-BH9-S1, respectively). These borings were selected for TCLP analysis because they encountered the thickest intervals of waste (8.5, 2.5, and 5.0 ft [2.6, 0.76, and 1.5 m], respectively). Waste samples were taken from depths of between 5.5 and 7.5 ft (1.67 and 2.3 m) below ground surface and analyzed for TCLP metals, TCLP volatile organic compounds (VOCs), and TCLP semi-volatile organic compounds (SVOCs), including pesticides, and herbicides.

Waste was sampled from SWMU 47 where septage from the North Oscura Range Camp was discharged into the unlined trench. Borings were not drilled at this uncovered trench because the lateral dimensions are marked at the surface by a fence. Some solid waste is visible at the surface near the south end of the SWMU 47 trench. Samples of that solid waste and septage (labeled "NOP-W TRENCH S-S1"), and of the septage from the north end of the SWMU 47 trench (labeled "NOP-W TRENCH N-S1") were obtained by hand augering. During collection

of waste samples using a hand auger, the thickness of the waste was determined to be less than one foot (<0.3 m). Septage samples were collected from approximately 8-10 inches (20-25 cm) below ground surface.

A sixth waste sample (NOP-N TRENCH-S1) was collected from the open SWMU 48 trench for TCLP analysis. The sample included refuse and surface soil/sediment from the bottom of the north end of this trench. The south and central sections of the trench contained no refuse and were not sampled. Sample information generated during the investigation is listed in Table 2-1.

2.4.3 Results and Conclusions

The soil boring methodology confirmed that waste disposal at SWMU 49 was concentrated in a shallow, unlined trench. The lateral extent of the trench was also delineated as shown in Figure 2-3. Cross sections interpreting the soil boring results from A to A' and B to B' on Figure 2-3 are shown in Figure 2-4. The distribution and thickness of the solid waste buried in SWMU 49 allow for a preliminary waste volume estimation of 200 cubic yards (150 m^3). The soil cover layer is estimated to represent an additional 100 cubic yards (75 m^3) of clean overburden.

Observations made during sample collection at SWMU 47 indicates that solid waste fills the septage trench to a depth of less than one foot (<30 cm). The preliminary volume estimate of the sludge waste is 3 cubic yards (2.3 m^3) and remains uncovered except for natural revegetation by native grasses. The investigation did not characterize the extent to which any liquid waste may have infiltrated the subsurface. However, following excavation of the solid waste, confirmation sampling of the substrate will address the possibility of downward migration, as described in Section 4.3, Performance Monitoring.

Solid waste lies exposed on the surface of the trench labeled SWMU 48. Contamination of the underlying soil/bedrock appears unlikely and, if present, limited to the northern end of the trench where waste disposal is concentrated. The volume of waste in this trench is estimated to be less than 1 cubic yard (<0.76 m^3), aside from five, empty, wooden communication-wire spools resting on the surface of the open trench. As with the other SWMUs, the possibility of downward contaminant migration will be assessed with confirmation sampling following removal of the solid waste.

Detected analytes from the six TCLP (EPA Method 1311) analyses described in Section 2.4.2, above, are summarized in Table 2-1. Sample locations are plotted in Figure 2-3. The results classify the waste as non-hazardous by Toxicity Characteristic, as defined in 40 CFR 261.24. Two metals were quantified above method detection limits by TCLP. Barium was detected in each of the six samples at concentrations orders of magnitude below the federal Toxicity Characteristic regulatory level, as shown in Table 2-1. Cadmium was detected in one of the six samples at a concentration one order of magnitude below the Toxicity Characteristic limit. Table 2-1 also shows that persistent organic compounds were not detected, but that two volatile organic compounds (VOCs) were detected well below concentrations defined as hazardous due to toxicity characteristic. The two organic compounds, tetrachloroethene (PCE) and methyl ethyl ketone (MEK), were identified by TCLP. Both were identified only once and in separate samples, as shown in Table 2-1. Complete laboratory results and data quality reports from the six TCLP samples are contained in Appendix A.

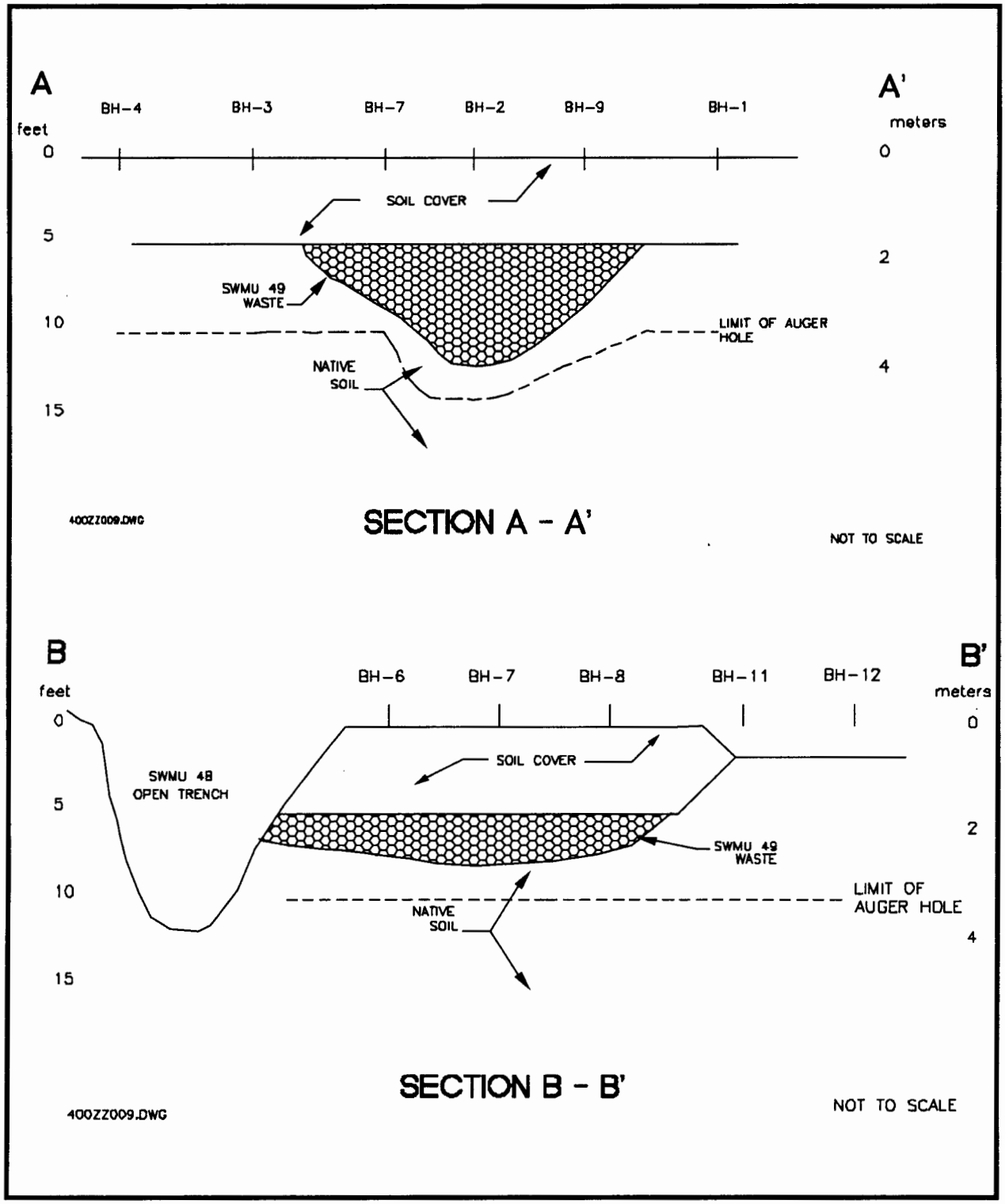


Figure 2-4. Cross-sectional interpretation of SWMU 49 waste cell from soil borings made along A-A' and B-B' of Figure 2-3.

Based on the TCLP results of six solid waste analyses from the North Oscura Peak Landfill site, the waste is not considered hazardous due to Toxicity Characteristic. The determination that the waste is non-hazardous forms the basis for this Work Plan, which proposes in Section 4 to excavate the waste material for removal and disposal at a NMED-permitted landfill outside of White Sands Missile Range boundaries.

2.5 Site Conceptual Model

2.5.1 Surface Water Contaminant Migration Pathway

The site of the landfill near North Oscura Peak, at 7,750 feet (2,360 m) (1929 NGVD) above mean sea level, is the highest SWMU location on White Sands Missile Range. This location is both laterally and vertically distant from groundwater resources in the adjacent basins. Annual rainfall amounts and vegetative cover combine to limit the volume of water that can pass through the SWMUs. Characterization indicates that it is unlikely that solid waste residing at the site will generate a leachate exceeding Toxicity Characteristic levels (based on TCLP data, Sections 2.4.2 and 2.4.3). However, it is possible that high mobility contaminants, not yet identified during site characterization efforts, will be encountered during the waste removal activities. Evidence for such a release of mobile contaminants would include the discovery of drums or liquid storage containers, and/or detections of volatile organic compounds in the subsurface using a Photo-ionization Detector (PID) and laboratory analytical methods during/following source removal.

Soil and vegetative cover on the SWMU 47 and 49 trenches combine with the topography of the SWMU 48 trench to impede the migration of contaminants along the surface water pathway. However, given the high relief in the region and the increase in rainfall due to the extreme altitude, the possibility of rapid, catastrophic erosion of the soil at the SWMU sites during an intense storm event exists. Natural erosion of the site over decades or centuries without maintenance of the soil cover could eventually disperse the waste material.

Storm water runoff from the site of SWMUs 47, 48 and 49 collects within the open meadow and flows southeast along the dirt access road to Range Road 331 (Figure 2-1). The crowned design of the gravel road diverts the runoff to the northeast in the ditch along the north side of the road. Within 30 feet (10 m) the ditch splays out into a natural swale, approximately one-half acre in size, where runoff ponds to a depth of approximately 2 feet (60 cm). The ponding area dampens the kinetic energy of the water and undissolved materials have the opportunity to settle out. To date, storm intensity has not resulted in erosion of solid waste from the landfill cells, which are either covered (SWMU 48) or concave (SWMUs 47 and 49). Water flowing beyond the swale ultimately enters an ephemeral tributary to Garden Spring Canyon (Figure 2-1).

2.5.2 Subsurface Contaminant Migration Pathways

The Oscura Mountains provide a source for groundwater recharge to the Tularosa and Jornada del Muerto basins. Rainwater entering the subsurface at the North Oscura Peak Landfill migrates downward under unsaturated flow conditions through the soil. Overall, the surface tension force, which dominates unsaturated flow, causes water to flow preferentially in the finer-grained soil rather than the coarser refuse material. Atmospheric water held in the 5-foot thick soil cover is

available to plant roots for evapotranspiration. Residence time and contact time of groundwater with the refuse buried in SWMUs 48 and 49 is relatively short due to the fact that the trenches are unlined. The septage discharged to SWMU 47, originally containing a higher percentage of water and fine-grained sludge, has a higher organic content than the refuse buried in the other SWMUs and is therefore more likely to have released more mobile, negatively-charged ions like chloride and nitrate to the subsurface. The mobility of these negatively-charged ionic species is not retarded like that of most organic contaminants and would, therefore, likely be the first to arrive at any given monitoring location.

Depth to the first saturated-flow aquifer below the former landfill site is unverified, but is estimated to be approximately 1,700 feet (500 m). No wells have been drilled at North Oscura Peak and water is supplied to the area by tanker truck. It is likely, however, that recharge water migrating downward through the soil encounters dipping limestone layers adding an easterly component to the flow direction because unsaturated flow through the limestone is primarily along fractures and bedding planes. Where the groundwater ultimately enters the Precambrian basement rock below the sedimentary rock, the fracture-flow regime causes flow direction to be unpredictable locally.

TCLP results indicate that any leachate generated in the SWMUs is not concentrated in excess of the Toxicity Characteristic regulatory levels. During excavation of these cells, attention will be paid to whether liquids disposal is evident. Because SWMU 47 received septic waste in a semi-liquid state, there is a greater likelihood that leachate from this cell has migrated vertically. Whether contaminant migration can be detected at an accessible subsurface monitoring point cannot be determined from the existing information. Confirmation samples taken during the waste removal action should give indications of whether significant contaminant releases have occurred. The confirmation sampling will be along the vertical and lateral migration pathways, including the swale that collects runoff from the site. Following the source removal described in this Work Plan, the threat of future contaminant migration will be significantly reduced or eliminated.

3.0 SITE DESIGN

3.1 Design Objectives

Corrective Action at the site is designed to return the ecosystem to a self-sustaining natural habitat posing no additional health risk to humans, plants, or animals due to toxins. The Design Objectives of the waste removal at North Oscura Peak landfill are to achieve a "clean closure" of the site and to return the former landfill site as a healthy part of the ecosystem. Therefore, the Corrective Action detailed in this Work Plan is designed to remove all potential contaminant sources and verify that previous releases have not migrated from the SWMU site.

3.1.1 Waste Removal and Backfilling

The Corrective Action is intended to meet the design objectives through complete excavation and removal of waste material. Using dig and haul removal techniques, the dimensions of the excavations will follow those of the original landfill trench construction,

plus removal of soil in contact with the contaminant source. Designs for the landfill cell construction are not available, but it is anticipated that waste removal will follow a very basic trench configuration. Figure 2-4 is a schematic diagram representing the trench cross-section interpreted from the soil boring data. Waste cells will be over-excavated no greater than 2 feet (60 cm) vertically and 6 inches (15 cm) horizontally beyond the last occurrence of waste or visibly contaminated soil.

Open excavations will be sloped to prevent storm water runoff. The excavations will remain open until laboratory analyses (detailed in Sections 4.1.1 and 4.1.2) confirm that detected contaminants are below EPA Region 9 Preliminary Remediation Goals (PRGs) (U.S. EPA, 1998). If necessary to meet the design objectives, additional soil may be excavated and confirmation sampling repeated. When confirmation sampling meets the site screening PRGs, clean soil will be backfilled in lifts and wheel-rolled with heavy equipment to minimize settling and subsidence. Topography will be contoured to meet the design shown in the Site Restoration Plan (Appendix D). Clean borrow material may be required to meet backfilling objectives.

As the Site Restoration Plan depicts (Appendix D), the natural slope makes the site susceptible to storm water erosion. An integral part of the final site design are the Best Management Practices (BMPs) to be employed until the site is revegetated and the surface is stabilized naturally by plants. Final remedial design calls for reestablishment of the native grasses after the site has been graded to conform to the natural topography. The two existing soil stockpiles that resulted from the landfill and septage trench construction will be leveled to create smooth relief across the site. Straw bales, erosion dams, and/or sediment fences are BMPs anticipated to protect the site from erosion during the time it takes to revegetate the site.

3.2 Design Criteria

3.2.1 Excavation Trenches

Initially, the limit of excavation will be not greater that 2 feet (60 cm) vertically and 6 inches (15 cm) horizontally beyond the last occurrence of waste or visibly contaminated soil. Configuration of the open trenches created by the waste removal activities will be determined according to OSHA regulation 29 CFR 1926, Subpart P. Workers will not be allowed to enter open trenches unless they are benched or sloped in accordance with OSHA regulations. Trench floors will be sloped approximately 2% inward to prevent the release of storm water during the time when the trenches are open.

If analysis of soil samples confirms (see Section 4.3 for analytical methods) that regulatory screening action levels (U.S. EPA Region 9 PRGs) are not exceeded in soil at the bottom and sides of the excavation(s), clean soil will be spread in 12-inch (approximately 30-cm) lifts. Each lift will be compacted by heavy equipment wheel-rolling the clean soil while spreading each succeeding lift.

3.2.2 Surface Contouring

If confirmation soil analyses indicate that the excavations may be filled in without risk to human health or the environment, the area disturbed by the removal action will be graded to conform to the natural topography, as shown in the Site Restoration Plan (Appendix D). Clean borrow material will make up the lost volume due to the waste removal. Additionally, the two topsoil stockpiles (Figure 2-2) will be spread and graded. The stockpiles were created when topsoil was cleared from the site prior to landfill trench construction. The resultant slope across the site will average between 8 and 10 percent. Due to the natural slope across the site, BMPs to control erosion, such as straw bales and sediment fencing, will be installed in low areas where erosion is more likely to occur during storm events before vegetation is reestablished at the site.

3.3 Post-Closure Care

Post-closure care will be required to establish the natural vegetation and stabilize the soil cover at the site. As soon as practicable, or within 2 weeks, following each significant precipitation event, the site will be inspected to determine the effectiveness of BMPs installed to prevent erosion. Early indications from the range Land Manager indicate that natural revegetation is preferable to re-seeding at the site (Anderson, 1997). An inspection of the site on March 31, 1999 found western wheatgrass and a brome grass species to be the two predominant species at the site. Following the final regrading of the former landfill site, live wheatgrass and brome seed will be broadcast to accelerate the natural revegetation that is otherwise expected. When the soil is stabilized and the site is restored to its natural state, post-closure care will revert to normal caretaker status.

4.0 CORRECTIVE ACTION

4.1 Landfill Excavation and Waste Removal

A survey of buried utilities at the site will mark potential hazards prior to invasive procedures. Workers will be instructed to be constantly alert for any unmarked utilities and also must attend mandatory Unexploded Ordnance recognition and awareness training. Excavation of the SWMUs will be by means of mechanized equipment only. Excavation of up to 2 feet (60 cm) beyond the last occurrence of waste or visibly contaminated soil is intended to ensure that the buried waste is completely removed. Each bucket-full of material removed will be visually inspected for potentially hazardous waste materials. Non-hazardous waste material will be transported in covered dump trucks to a NMED-permitted landfill outside of White Sands' boundaries for disposal. A site closure report describing the waste materials removed and the confirmation sampling results will document all remedial efforts for the public record, as required under RCRA.

4.1.1 SWMU 49 – Covered Landfill Trench

Waste buried in the shallow trench labeled SWMU 49 (Figure 2-3) was delineated and characterized (Figure 2-4) as described in Section 2.4.2. Based on the results of that investigation, the following Corrective Action will be performed:

- Excavate clean soil cover and stockpile for later backfilling.

- Excavate waste from the landfill trench and load for removal via covered transport to a landfill permitted by NMED to accept municipal, construction and demolition (C & D), and commercial waste. Over-excavate into the native material a maximum of 2 feet (60 cm) vertically and 6 inches (15 cm) horizontally to ensure that the waste material is completely removed. Visibly contaminated soil will be removed, within the limits of the equipment and the scope of the excavation contract. Excavation will continue until any detected VOC concentrations in the subgrade material are less than 100 ppm, as determined by heated headspace techniques. A separate remedial investigation work plan will be developed if a decision to halt work is made and contaminated soils remain onsite following excavation of the landfill waste.

- Visually inspect and use PID to screen waste for potentially hazardous material, including VOCs. To date, visual inspections and TCLP analyses indicate that the waste is non-hazardous. Samples of any potentially hazardous material discovered during excavation will be collected for toxicity, reactivity, corrosivity, and/or ignitability characteristic analysis. Any hazardous waste excavated will be segregated and containerized for disposal at a permitted facility

- Collect clearance confirmation soil samples after the waste material is removed from the SWMU. Confirmation sampling is discussed in Section 4.3, Performance Monitoring. Arrange sample locations to maximize the representativeness of the area exposed by the excavation. However, sampling will be biased to include areas where contamination is most likely to be found based on visual and PID monitoring. It is not expected that the excavation will encounter groundwater. But if groundwater is encountered, samples of water will be collected and analyzed for the same parameters as the soil samples with the addition of a test for VOCs. Based on the suspected size of the excavated trench, nine (9) confirmation soil samples will be analyzed for VOCs, total petroleum hydrocarbons (TPH) in both the gasoline and diesel ranges, polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs), organochlorine pesticides, herbicides, and the 8 RCRA metals. Analytical parameters and methodologies are listed in Table 4-1 in Section 4.3.2, below. Confirmation sample results will be compared to EPA Region 9 PRGs (U.S. EPA, 1998) prior to backfilling the excavation. If any parameters exceed PRG action levels, a comparison with site background concentrations will be made and the excavation will be kept open. Consultation with NMED will be made to determine if further corrective action and/or remedial investigation should be performed.

- Backfill the excavation with stockpiled soil from the original construction of the landfills and with clean soil used as cover material. Wheel-roll the backfilled soil to prevent subsidence. Grade site to conform to the existing topography.

- Remove all other waste littering the surface in the area.

- Determine storm water BMPs to set in place to protect against soil erosion while the natural vegetation reestablishes itself.

4.1.2 SWMU 48 – Open Landfill Trench

- Load waste from the currently open trench for removal and backfill trench with clean soil. Corrective Action will be the same as for SWMU 49, described in Section 4.1.1 above, with the following exception:

- Three (3) confirmation soil samples will be taken from areas most likely to be contaminated beneath the refuse at the site.

4.1.3 SWMU 47 - Septage Trench

Corrective Action will be performed as at SWMU 49, described in Section 4.1.1 above, with the following exceptions:

- Remove fence posts and barbed wire surrounding the SWMU and load for disposal offsite with any other C&D waste.

- Excavate waste and visibly contaminated soil and load for transport via covered transport to a landfill permitted by NMED to receive special waste of the "sludge" category (20 NMAC 9.1.709).

- Based on the suspected size of the excavated trench, seven (7) confirmation soil samples will be analyzed for VOCs, TPH in both the gasoline and diesel ranges, PAHs and PCBs, organochlorine pesticides, herbicides, and the 8 RCRA metals.

4.2 Site Control

Access to the Oscura Mountains is restricted locked and/or guarded gates at the range boundary fence. The SWMUs are located 300 yards (275 m) north of Range Road 331 (Figure 2-2). A single dirt double-track provides the only access to the SWMUs and approaches the SWMUs from the southeast. The surrounding forest vegetation prevents vehicle access from other directions. Excavation equipment and waste haulers will use the dirt access road.

Following excavation of the landfill cells, the excavations will remain open for the amount of time it takes to receive and review (approximately 2 months) the confirmation sampling results. During the waste removal activities and until the time when the confirmation sampling indicates that backfilling of the trenches can begin, the excavations will be cordoned-off with barrier tape.

4.3 Performance Monitoring

4.3.1 Groundwater Monitoring

It is not anticipated that groundwater will be encountered in the subsurface during the course of the excavation because of the shallow construction of the landfill cells. If the excavation intersects water in the subsurface in quantities sufficient for sampling, samples will be collected. Samples will be collected in accordance with the protocol required by the Data Quality Objectives (Section 5) in containers supplied by the analytical laboratory. Analytical parameters include PAHs, PCBs, VOCs, pesticides, herbicides, TPH, total metals and the major water quality indicators. Laboratory methods are listed in Table 4-1.

Table 4-1. Analytical methods for soil and water conformational sampling at the North Oscura Peak landfill.

Analytical Parameter	Analytical Method	Number of Samples	Preservation / Soil/Water	Sample Type
Total Recoverable Petroleum Hydrocarbons	EPA 8015 modified Gas range Diesel range	21 + 2 QA/QC	Cool to 4° C / H_2SO_4 to pH > 2	Grab
PAHs/PCBs	EPA 8275/ EPA 8082	21 + 2 QA/QC	Cool to 4° C	Grab
Herbicides	EPA 8151	21 + 2 QA/QC	Cool to 4° C	Grab
Organochlorine Pesticides	EPA 8081	21 + 2 QA/QC	Cool to 4° C / H_2SO_4 to pH > 5	Grab
RCRA Metals/Background Metals Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	EPA 7060 EPA 6010 EPA 6010 EPA 6010 EPA 6010 EPA 7471 (soil) EPA 7470 (water) EPA 6010 EPA 6010	21 + 2 QA/QC and 1 bkgnd.	Cool to 4° C / HNO_3 to pH > 2	Grab
Volatile Organic Compounds	EPA 8260	TBD	Cool to 4° C / HCl to pH > 2	Grab

4.3.2 Soil Clearance Sampling

Following over-excavation of the waste material, confirmation samples of soil from the bottom and sidewall of each SWMU will be collected according to the protocol detailed in the Data Quality Objectives (Section 5). Samples will be placed in containers supplied by the analytical laboratory, preserved, and transported using the appropriate chain-of-custody documentation. Soil samples will be analyzed for VOCs, PAHs, TPH, PCBs and total metals by the laboratory methods listed in Table 4-1. Sample locations will be selected so as to be representative of the greatest surface area possible. However, if discoloration or other evidence of potential contaminant release is observed, a sampling location will be established at the apparent point of maximum contamination.

Confirmation soil samples will be collected from undisturbed soil using a stainless steel hand auger from depths of 6 inches to 1 foot (0.15 to 0.30 m) below the bottom of the excavated area. Alternately, soil properties and trench configuration may require that samples be collected from the excavator bucket using stainless steel hand tools. If the excavator bucket is used, it will be decontaminated with Alconox and deionized water rinse prior to the collection of each confirmation sample. Proposed sampling locations are shown in Figure 4-1. Seven (7) sampling locations will be established in the septage disposal trench (SWMU 47) and twelve (12) sample locations will be established at the refuse disposal trenches (SWMUs 48 and 49). Of the 19 sample locations, two (2) will be selected for duplicate quality control (QC) and quality assurance (QA) sampling. Additionally, two (2) soil samples will be collected from the vegetated swale that impounds storm water runoff from the site (Figure 4-1). It is likely that contaminants transported in storm water runoff from the landfill site would have the opportunity to settle out in this natural impoundment. Samples will be collected using a decontaminated stainless steel hand auger from depths of 0 to 6 inches (0-15 cm) and 3-4 feet (1-1.3 m). Sampling equipment will be discarded between each sample location or decontaminated using an Alconox scrub, followed by a deionized water rinse, and finally allowed to air dry. Samples will be sealed in containers supplied by the analytical laboratory and preserved on wet ice, or as recommended by the laboratory.

Laboratory analytical results will be independently validated and included in a summary report of the waste removal activities.

4.3.3 Soil Background Sampling

A suitable background location will be sampled to determine the total concentrations of the 8 RCRA metals. The location will be selected 50 to 100 feet (15-30 m) upslope from the landfill site as shown in Figure 4-1. For direct comparison, the metals analytical methods (Table 4-1) will be the same for determining the concentrations of the metals for which toxicity characteristic action levels are available: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The background soil sample will be collected with a hand auger from depths between 3 to 5 feet (1-1.5 m) below ground surface, or at auger refusal if repeated attempts at augering fail to reach those depths. Organic compounds listed in Table 4-1 will not be analyzed in the background samples because it is assumed that the background concentration of anthropogenic compounds is zero.

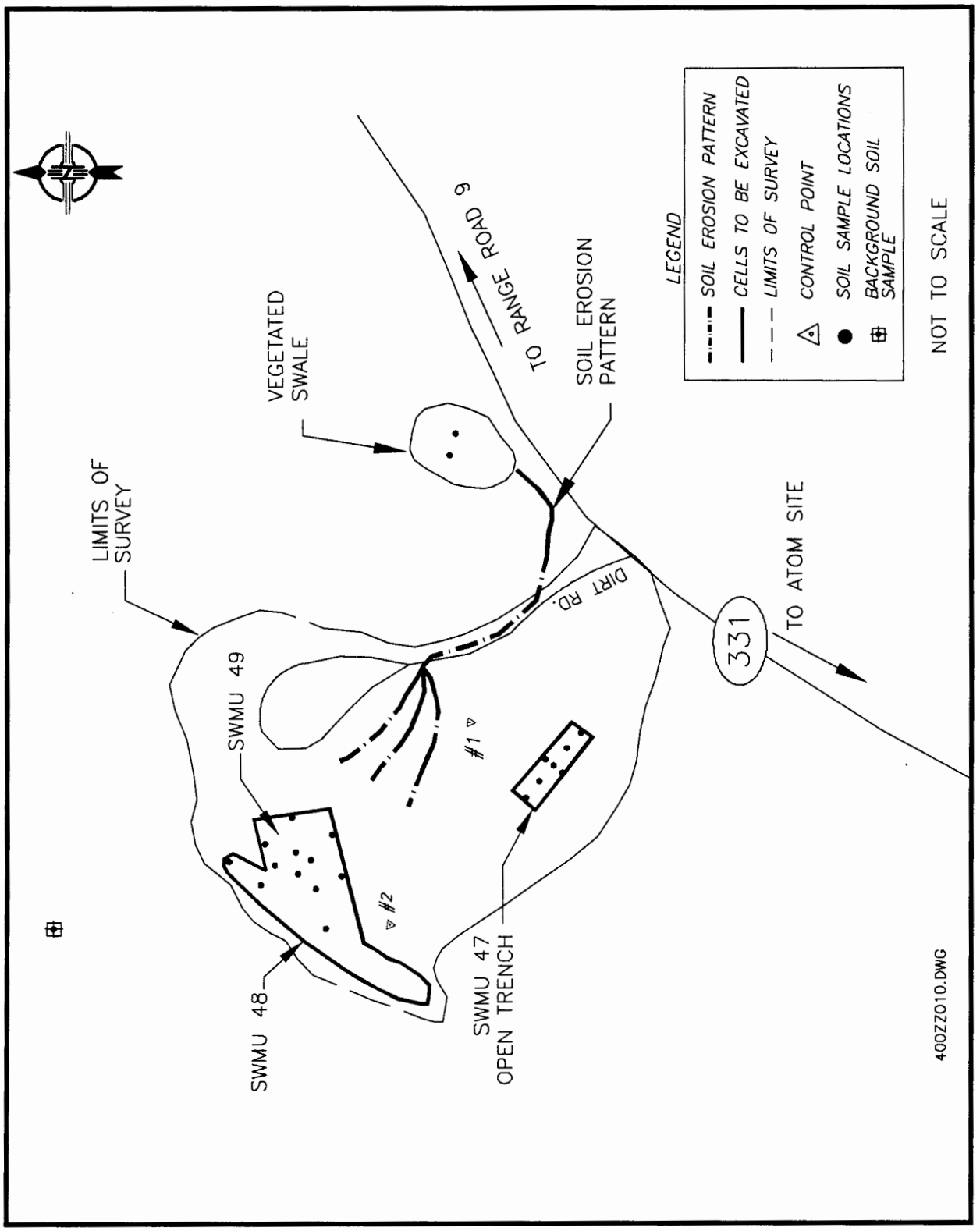


Figure 4-1. Soil sample locations proposed for conformational sampling following excavation activities at SWMUs 47, 48, and 49.

4.4 Soil Stabilization

Following excavation, removal and confirmation sampling, the native soil at the site will be recontoured to conform with the natural topography according to the Site Restoration Plan (Appendix D). The stockpile of soil from the original (pre-landfill) trench excavation will be used to fill the trenches following waste removal. The planned slope across the site averages 8%. Western wheatgrass grows naturally across the site and will reestablish without seeding (D.L. Anderson, 1997). Broadcast seeding of western wheatgrass and brome will accelerate the rate of revegetation by these native species. During the period where grass is being reestablished at the site, BMPs to retard erosion, such as straw bales and sediment fences, will be employed.

4.5 Schedule

0 days out	Notice to Proceed
12 days out	First mobilization
18 days out	Waste Excavation completed
20 days out	Confirmation samples submitted to analytical laboratory
50 days out	Site closure decision
60 days out	Second mobilization
70 days out	Site regarding and stabilization complete

note: Site reseeding dates are constrained by supplier's seed germination instructions.

5.0 DATA QUALITY OBJECTIVES

5.1 Data Quality Objectives Process

To support the overall investigation objectives, data quality objectives (DQOs) were established. The DQOs are qualitative and quantitative statements which specify the quality of data necessary to quantify the effectiveness of the corrective action. Data developed during the study will be used to evaluate the occurrence of vertical contaminant migration. Data characterizing the distribution of contaminants will be used to demonstrate whether the corrective action meets state and federal cleanup requirements under RCRA.

DQOs will be used to:

- Ensure data comparability through the use of standard methods and controlled systems to collect and analyze samples;
- Provide analytical results of known and acceptable precision and accuracy; and
- Provide 95 percent data completeness for analytical results representing each matrix-method combination.

The level of analytical support to meet these goals is between Level III and IV as described in "Data Quality Objectives for Remedial Response Activities: Development Process", U.S. Environmental Protection Agency, EPA 540/G-87/003, May 1987. As part of the analytical reporting requirements, the following data will be provided by all reporting laboratories:

- Sample identification numbers cross-referenced with laboratory identification numbers and QC sample numbers,
- Copies of executed Chain-of-Custody forms and the corresponding documentation of any problems with arriving samples noted.
- Each analyte reported as an actual value or less than a specified detection limit.
- Dilution factors, extraction dates, and analysis date.
- QC sample results for laboratory blanks, surrogate spikes, matrix spikes, laboratory duplicates, field duplicates, field blanks, and trip blanks.

The data developed during the investigation will meet the chosen objectives for precision, representatives, accuracy, completeness, and comparability.

5.1.1 Accuracy

Accuracy is the degree to which a measurement agrees with the actual value, i.e., the amount of measurement bias. Accuracy is expressed as a percent recovery of a known concentration of reference material.

The accuracy of an analytical procedure is determined by the addition of a known amount of material (matrix spike) to a field sample matrix or a standard matrix. A standard matrix is made up of distilled water or sterile, clean soil with approximately the same physical properties (porosity, permeability, plasticity, grain size, etc.) as the field sample. The field sample matrix is described as all components of the sample mixture except the analyte (the compound being analyzed). The lab will be required to perform matrix spiking on 10% of field samples, as well as on 5 to 10% of standard matrix samples. Field sample matrix and standard matrix sample spiking show how the sample matrix-analyte chemical interactions affect the analytical results. The matrix behavior of the spiked field sample will be comparable to that of the matrix of the original sample. After analysis for the spike is completed, the accuracy of the procedure is expressed as a percent recovery as shown by the following equation:

$$\text{Percent Recovery} = \frac{(C_2 - C_1)}{C_0} \times 100\%$$

where: C_0 = amount of analyte added to the sample matrix,

C_1 = amount of analyte present in the unspiked sample matrix (equal to zero for the standard matrix), and

C_2 = amount of spiked material recovered in the analysis.

Typically, the amount of a reference analyte spiked into a field sample matrix is specified by the laboratory quality control program, or 3 to 5 times the background concentration of the analyte in the sample matrix. Samples cannot be spiked for all organic compounds which could possibly exist in the field sample matrix, however, a set of surrogate compounds, each of whose physical and chemical properties is similar, is used as surrogate matrix spikes, or surrogates. Acceptable recovery ranges for each class of organic compounds are discussed in the analytical methods for each parameter.

5.1.2 Precision

Precision is a measure of the degree of reproducibility of an analytical value and is used as a check on the quality of the sampling and analytical procedures. Precision is determined by analyzing replicate samples. The significance of a precision measurement depends on whether the sample is a field replicate, lab replicate, or a matrix spike replicate.

Field replicates are taken at the rate of 10% or one per batch (each daily shipment of samples from a site), whichever is greater. Precision of the analytical method, at each stage, is determined by calculation of a relative percent difference (RPD) between duplicate analytical recoveries of a sample component, relative to the average of those recoveries:

$$RPD = \frac{|C2 - C1|}{(C2 + C1)/2} \times 100\%$$

where: C_1 = analyte concentration in the sample
C_2 = analyte concentration in the sample replicate
| | = an absolute value (It is customary to express RPD as a positive number.

These calculations are usually performed on matrix spikes and matrix spike duplicates.

5.1.3 Completeness

Field completeness will be assessed by comparing the number of samples collected to the number of samples planned. Analytical completeness will be assessed by comparing the total number of samples with valid analytical results to the number of samples collected. The overall project completeness is, therefore, a comparison between the total number of valid samples to the number of samples planned. The results will be calculated following data validation and reduction.

Completeness (C) is determined by:

$$C = \frac{P_1}{P_0} \times 100\%$$

where: P_0 = total number of samples planned
P_1 = number of valid data points

A value of 90% or higher is the goal. For values less than 90%, problems in the sampling or analytical procedures will be examined and possible solutions explored.

5.1.4 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent actual site conditions. The determination of the representativeness of the data will be performed by:

- Comparing actual sampling procedures and chain-of-custody forms to those described in the work plan,
- Identifying and eliminating non-representative data in site characterization activities,
- Evaluating holding times and condition of samples on arrival at the laboratory, and
- Examining blanks for cross contamination.

Representativeness is a qualitative determination. The objective of this work plan is to eliminate all non-representative data.

5.1.5 Comparability

Comparability is a qualitative measure of the confidence with which one data set can be compared to another. These data sets include data generated by different laboratories performed under this work plan, data generated by laboratories in previous investigative phases, data generated by the same laboratory over a period of several years, or data obtained using differing sampling techniques or analytical protocols. The comparability objectives of this work plan are (1) to generate consistent data using standard test methods; and (2) to salvage as much previously generated data as possible. Comparability will be evaluated by comparing the QA sample analyzed by an independent laboratory to its field replicate.

5.1.6 Sensitivity

Sensitivity is a general term which refers to the calibration sensitivity and the analytical sensitivity of a piece of equipment. The calibration sensitivity is the slope of the calibration curve evaluated in the concentration range of interest. The analytical sensitivity is the ratio of the calibration sensitivity to the standard deviation of the analytical signal at a given analyte concentration. The detection limit, which is based on the sensitivity of the analysis, is the smallest reported concentration in a sample within a specified level of confidence. Quantitation limits represent the sum of all of the uncertainties in the analytical procedure plus a safety factor. The detection limit is a part of the quantitation limit. Quantitation limits are given in Table 1-2.

5.1.7 Chemical Data Validation

Raw laboratory data are typically reduced at the laboratory, resulting in a report containing the analytical data and the laboratory QC results. If needed, the laboratory will provide calibration and internal standards information, raw data, and all instrumentation output. Following receipt of chemical laboratory data, the validation process will include the following:

- Review of laboratory testing methods, detection limits, holding times, data qualifiers, etc.
- Review of data summaries and reports for transcriptional and typographical errors
- Review to determine propriety of sampling protocols
- Review to compare the data against trip blanks to detect contamination from sampling
- Review to compare field sampling replicates
- Review to compare field sampling replicates (QC samples)

- Review of laboratory QC including laboratory blanks, spike recovery and duplicates
- Review chain-of-custody forms, sample receipt data, damaged sample containers, etc.

5.2 Field Data Collection and Measurements

The collection of reliable field data requires complete understanding by those performing the operations. Instruments will be properly calibrated and used as directed by the manufacturer. Validation of field data will be determined primarily by making several readings and checking for reproducibility. All field personnel will be knowledgeable in the use and calibration of field instruments, the oversight of field data collection, validation, and record keeping. All field data will be recorded at the site.

Field measurements will be performed to Level I (U.S. EPA, 1983) standards. These will include measurement of pH, conductivity, and temperature on groundwater samples. Working airspace will be monitored with an industrial hygiene-grade PID for the presence of volatile organics. The PID will be calibrated daily to an isobutylene standard with an 11.6 milli-electron volt bulb. Precision on field measurements will be assessed by duplicate measurements to determine reproducibility. These consecutive readings should be ± 1 °F for temperature, ± 0.02 units for pH, and ± 10% for conductivity. Vapor concentrations will be made at 15-second intervals automatically by the PID.

5.3 Technical Data

Technical data refers to data of several types, such as potentiometric surface measurements, groundwater flow calculations, and lithologic thickness' generated from geologic and geophysical field data, stratigraphic horizon descriptions and laboratory sample identification information. This information will be recorded in the site logbook as it is collected. Anomalous readings or results will be rechecked and presented to the Task Manager for verification. Technical Data will be reported in the site closure report or, if necessary, in subsequent corrective measures work plan addenda.

6.0 PROJECT MANAGEMENT

The project organization reflects the relationship between White Sands' point-of-contact (POC) and the MEVATEC team assembled to plan, organize, control, and execute this project. Within the MEVATEC project management system, the key positions are the Program Manager, Principal Engineer and the Principal Site Geologist. The basic organization chart for this project is shown on Figure 6-1.

6.1 Duties and Responsibilities

6.1.1 Program Manager

The Program Manager is the senior MEVATEC representative on the project, and functions as the focal point for White Sands. For this project, the Program Manager's responsibilities include:

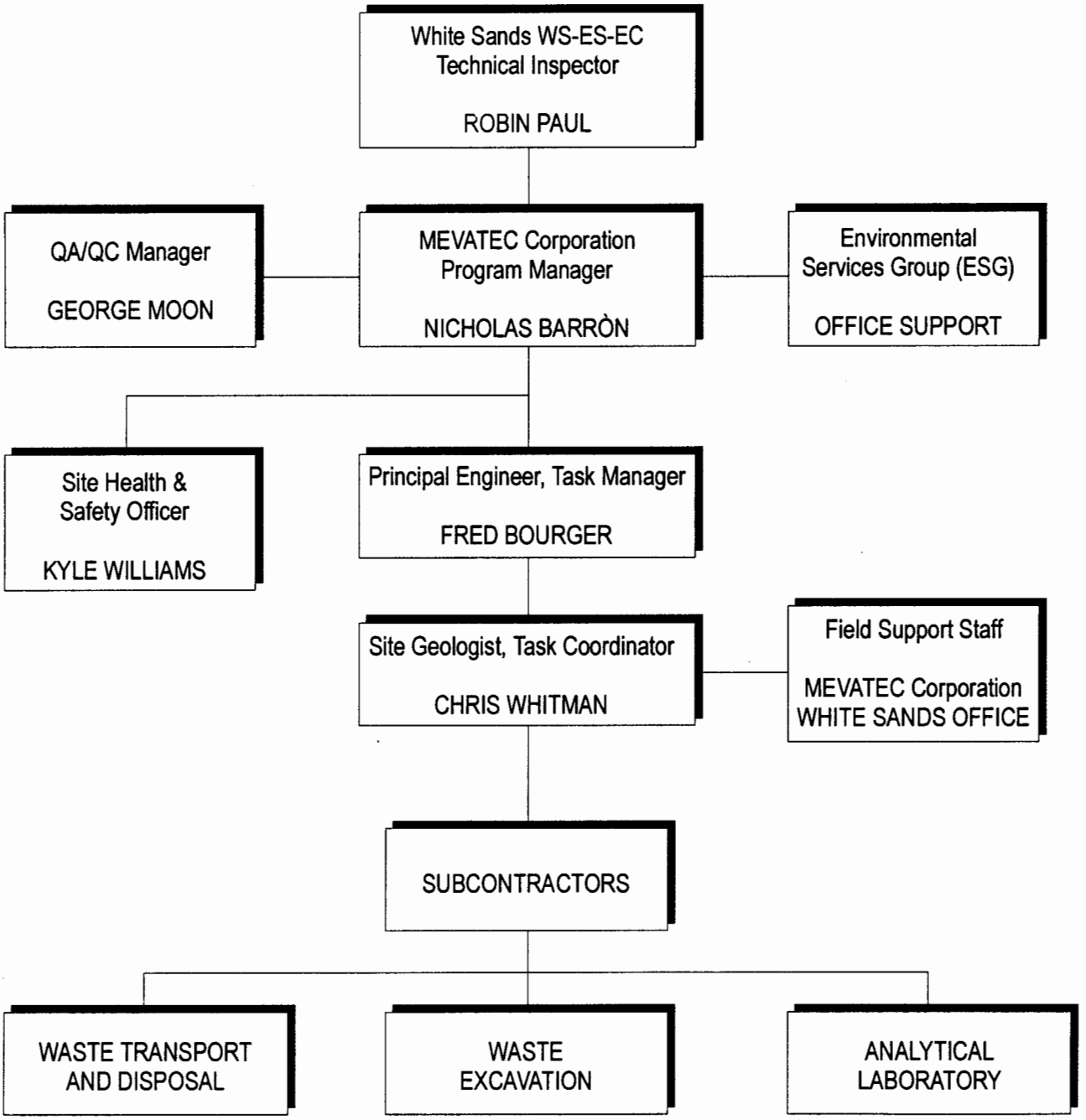


Figure 6-1. Project Personnel Organization Chart.

- Overall project management
- Total planning, organization and execution of the Sampling and Analysis Plan
- Maintaining contact with the White Sands POC throughout the work
- Directing the Principal Engineer in conducting a successful project
- Providing resources to the Principal Engineer to accomplish project responsibilities

- Guiding the Principal Engineer on the approach to a public relations program
- Reviewing and approving all deliverables

Dr. Nicholas Barrón serves as the Program Manager for MEVATEC.

6.1.2 QA/QC Manager

The Deputy Program Manager for this project is responsible for the following:

- Acting for the Program Manager in his absence
- Reviewing project progress
- Ensuring project QC protocols and procedures are followed
- Documenting that all quality objectives have been met
- Assisting the Principal Engineer in evaluating alternatives to meeting project objectives
- Providing guidance on the allocation of resources

Mr. George Moon, P.E. serves as the QA/QC Manager and Deputy Program Manager for MEVATEC.

6.1.3 Principal Engineer/Task Manager

The Principal Engineer for this project will be responsible and accountable to the Program Manager for overall direction and performance of the project including:

- Developing and executing the Work Plan
- Directing the Principal Site Geologist
- Keeping Program Manager and White Sands POC appropriately informed
- Approving uses of technical resources
- Coordinating all assigned resources
- Periodic review of progress and progress reporting
- Resolving Work Plan issues
- Schedule and budget tracking
- Quality and timeliness of deliverables
- Work performed by subcontractors
- Technical liaison between the Principal Site Geologist and the Program Manager

Mr. Fred Bourger will serve as the Principal Engineer and Task Manager.

6.1.4 Principal Site Geologist/Task Coordinator

The Task Coordinator will be responsible for coordinating all site activities, including those of the on-site contractors, and all laboratory activities. These include execution of the fieldwork in accordance with appropriate sections of this Sampling and Analysis Plan. Specific responsibilities include:

- Day to day execution of the Work Plan
- Reporting project progress to the Principal Engineer

- Coordinating, directing and overseeing field technical support staff
- Providing overall direction and supervision of the excavation, soil sampling, data validation, and related activities
- Ensuring that all staff and subcontractors meet White Sands security requirements
- Completing all appropriate field logs for project activities
- Providing overall supervision of the collection, handling, and shipping of all samples
- Monitoring sampling operations to ensure that all project site personnel are fully implementing and executing the provisions of this Work Plan
- Understanding the quality requirements of each field task, and bringing to the attention of management, conditions which may adversely impact the quality of the data or other work product.
- Execution of all field QC procedures

Mr. Chris Whitman will serve as the Principal Site Geologist and Task Coordinator for this project.

6.1.5 Site Health and Safety Officer

The Site Health and Safety Officer will report to the Task Manager and be responsible for:

- Directing all health and safety activities on site
- Reporting safety-related incidents or accidents to the Task Manager
- Temporarily suspending field activities, if health and safety of personnel are endangered
- Maintaining health and safety equipment on-site
- Conducting pre-work and daily health and safety meetings
- Verifying personnel working on the site have completed medical surveillance and health and safety training.
- Maintaining documentation of health and safety measures taken at the site, including:
  - Communication of provisions of the Site Safety and Health Plan
  - Levels of protection and required upgrades
  - Incident reporting
  - Upgrading or downgrading levels of protection in response to field conditions

Mr. Kyle Williams will serve as the Site Health and Safety Officer.

6.1.6 Project Chemist

As part of the project team, the project chemist will provide technical support during sample collection and analysis. The project chemist will report to the Task Coordinator and duties will include:

- Evaluating analytical data to determine usability of results
- Verifying laboratory procedures and QA protocols
- Immediate notification to the Task Manager of potential data problems
- Confirming field QC procedures to obtain representative data

A representative from Sverdrup Environmental, a subcontractor to MEVATEC, will serve as the project chemist.

6.2 Work Products

MEVATEC Corporation will provide personnel, services and equipment necessary for the completion of the scope of work described in this Sampling and Analysis Plan. The work will be performed under the general supervision of a Professional Engineer (George Moon, P.E.) registered in the State of New Mexico. This section provides a description of the work to be performed and the items to be delivered to White Sands.

6.2.1 Monthly Status Report

MEVATEC Corporation will provide to the White Sands Technical Inspector by the 15th of the following month an update of each month's progress at the site.

6.2.2 Corrective Action Report

A Corrective Action Report will be prepared to summarize the findings of the investigation, present conclusions drawn from the findings, and if necessary, make recommendations for further action at the site. These recommendations will provide a basis for the completion of a feasibility study for remedial alternatives.

The format for the Corrective Action Report will consist of, but not be limited to, the following:

Executive Summary

1.0 Introduction
- 1.1 Purpose
- 1.2 Site Background
  - 1.2.1 Site Description
  - 1.2.2 Site History
  - 1.2.3 Previous Investigations

2.0 Study Area Investigation (Discussion of field activities conducted for site characterization)
- 2.1 Surface Features
- 2.2 Contaminant Source Investigations
- 2.3 Geological Investigations
- 2.4 Hydrological Investigations
- 2.5 Soil and Vadose Zone Investigations
- 2.6 Groundwater Investigations

3.0 Physical Characteristics of the Study Area (Results of field activities)
- 3.1 Surface Features
- 3.2 Meteorology
- 3.3 Surface Water Hydrology
- 3.4 Geology
- 3.5 Soils

3.6 Hydrogeology
3.7 Demography and Land Use
3.8 Land use

4.0 Nature and Extent of Contamination
4.1 Source (s)
4.2 Soils and Vadose Zone
4.3 Groundwater

5.0 Results of the Corrective Action
5.1 Quantities of Wastes Removed
5.2 Disposition of Wastes
5.3 Clearance Sampling Results
5.4 BMPs Implemented
5.5 Continuing Site Maintenance

6.0 Summary and Conclusions

7.0 Recommendations

Appendices
Laboratory Data and QA/QC Evaluation Results
Field Data

6.2.3 As-Built Drawings

Upon completion of the corrective action at the site, as-built drawings of the site will be developed. The drawings will depict the topography across the former landfill site following waste removal and regarding.

LIST OF ACRONYMS

BMP	Best Management Practice
°C	degrees Centigrade
C&D	construction and demolition
CFR	Code of Federal Regulations
cm	centimeter
DERP	Defense Environmental Restoration Program
DO	Deama-Rock outcrop complex (soil classification)
DQO	Data Quality Objectives
EIB	New Mexico Environmental Improvement Board
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
HRMB	Hazardous and Radioactive Materials Bureau (of NMED)
HSWA	Hazardous and Solid Waste Amendments
IT Corp.	International Technology Corporation
km	kilometer
m	meter
MAR	Multi-Array Radar
MCL	Maximum Contaminant Level
MEK	methyl ethyl ketone (2-butanone)
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
NASA	National Aeronautics and Space Administration
NFA	No Further Action
NGVD	National Geodetic Vertical Datum
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMSA	New Mexico Statutes Annotated
NMWQCC	New Mexico Water Quality Control Commission
PAH	poly-aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PID	photo-ionization detector
POC	point-of-contact
ppm	parts per million
PRG	Preliminary Remediation Goal
PR/VSI	Preliminary Review/Visual Site Inspection (RFA)
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SOP	Standard Operating Procedure
SVOC	semi-volatile organic compound

LIST OF ACRONYMS *continued*

SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TDS	total dissolved solids
TECOM	Test and Evaluation Command, U.S. Army
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
U.S. EPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey
UXO	unexploded ordnance
VOC	volatile organic compound

REFERENCES

Anderson, D. L., 1997. *memorandum to file, 6 Nov. 1997:* National Range Environment and Safety Directorate Land Manager, STEWS-NRES-E (200-3).

Ehrlich, D., 1998. *Climatological Data for White Sands Missile Range:* Climatology Station, White Sands Missile Range, November 17, 1998.

Neher, R.E. and Bailey, O.F., 1976. *Soil Survey of White Sands Missile Range, New Mexico*: U.S. Department of Agriculture, 64 p.

NMED, 1998. *HRMB Standard Operating Procedures Manual, Volume 1*: New Mexico Environment Department.

A.T. Kearney, 1988. *RCRA Facility Assessment Preliminary Review/Visual Site Inspection Report, White Sands Missile Range*: U.S. EPA Contract No. 68-01-7374.

U.S. EPA, 1998. *EPA Region 9 Preliminary Remediation Goals (PRGs):* Stanford J. Smucker, Ph.D. memorandum, December 29, 1998.

APPENDIX A

TCLP Laboratory Reports

PDP
Analytical Services

1680 Lake Front Circle, Suite B
The Woodlands, Texas 77380
Phone (713) 363-2233
Fax (713) 298-5784

July 25, 1997

Mr. Dana Downs
Mevatec Corporation
P.O. Box 399
White Sands Missile Range
New Mexico 88002

Episode: 4056
Project ID: Nop Landfill
Project #: 400-ZZ

Dear Mr. Downs

Enclosed are the analytical results for the samples received in our laboratory on July 2, 1997. The samples were analyzed for the parameters indicated on the chain of custody.

Please be advised that unused portions of your samples, sample extracts and digestates will be stored for 30 days from the date of this report. Unless prior arrangements were made, at the end of this period your samples will either be disposed of, or returned to you if your samples were determined to be hazardous.

We appreciate your business. Should you have any questions or need assistance with this report, please feel free to call Homai Madisetty, Data Review Officer or me, at (281) 363-2233.

Sincerely,

Homai Madisetty

Reddy Pakanati
Laboratory Manager

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Suite B • The Woodlands, TX 77380 • Phone (281)363-2233

DATA PACKAGE DOCUMENT INVENTORY

EPISODE NUMBER: 4056

Section	Document Type	Pages
1.	*Case Narrative & Data Qualifiers*	1-3
2.	*Chain-of-Custody Forms*	4-8
3.	*Sample Data*	
	TCLP Volatiles	10-16
	TCLP Semivolatiles	17-23
	TCLP Metals	24-30
	TCLP Pesticides	31-39
	TCLP Herbicides	40-46
4.	*Quality Control Data*	
	TCLP Volatiles	48-56
	TCLP Semivolatiles	57-66
	TCLP Metals	67-75
	TCLP Pesticides	76-81
	TCLP Herbicides	82-89
5.	*End of Report*	90

CASE NARRATIVE & DATA QUALIFIERS

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Suite B • The Woodlands, TX 77380 • Phone (281)363-2233

Client: Mevatec Corporation	**Project Name: Nop Landfill**
Episode No.: 4056	**Project No.: 400-ZZ**

CASE NARRATIVE

Six soil samples were received for analysis on 07/02/97. All regulatory holding times were met by the laboratory.

All batch quality control (QC) results (Duplicates, Matrix Spikes, Matrix Spike Duplicates) are included in this data package. Batch QC may or may not have been performed on your samples. If it was, the QC reports will reference our internal sample identification.

The data qualifiers are presented following the narrative remarks. For CLP data forms, consult the CLP Qualifiers sheet. For standard PDP data spreadsheets, consult the Data Flags and Abbreviations sheet.

TCLP VOLATILES:

No problems were encountered.

TCLP SEMIVOLATILES:

One matrix spike recovery was outside the control limits. Since, the associated laboratory control sample recoveries were acceptable, matrix effects are suspected.

TCLP METALS:

No problems were encountered.

TCLP PESTICIDES:

No problems were encountered.

TCLP HERBICIES:

No problems were encountered.

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Suite B The Woodlands, Texas 77380

DATA FLAGS AND ABBREVIATIONS

B	This flag is used when the analyte is found in the associated blank as well as in the sample.
D	Indicates that the compound could not be detected because it was diluted out.
DL	This flag identifies an analysis at a secondary dilution factor.
E	This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis. A more accurate quantitation is obtained from a diluted sample analysis.
I	This flag is used to indicate the presence of interference which resulted in not determining the value.
J	This flag is used when the data indicates the presence of a compound below the quanitation limit as determined by the identification criteria.
NA	Not applicable.
NC	Not calculated.
ND	Indicates a compound was analyzed for but not detected at the quantitation level.
P	This flag is used for a pesticide/aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns.
RE	This flag is used when the sample is re-extracted and re-analyzed.
RA	This flag is used when the sample is re-analyzed.
U	This flag indicates that the compound was analyzed for but not detected.
*	Indicates that the compound is out of the Quality Control limits.

SAMPLE DATA

TCLP VOLATILES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH2-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.001
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8240B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/8/97 16:53

ANALYST	: GWH	ANALYST	: LZ
DATE ANALYZED	: 7/7/97	DILUTION	: 5
INSTRUMENT FILE	: B3989	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 13:43		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	ND UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	18 UG/L	J
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	101
1,2-Dichloroethane-d4	250 UG/L	76 - 114	91
Bromofluorobenzene	250 UG/L	86 - 115	98

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG07	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG07
LCS ID :BVLCSG07	MS ID :4041.002MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH7-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.002
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8240B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/8/97 16:53

ANALYST	: GWH	ANALYST	: LZ
DATE ANALYZED	: 7/3/97	DILUTION	: 5
INSTRUMENT FILE	: B3974	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 17:36		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	ND UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	ND UG/L	
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	100
1,2-Dichloroethane-d4	250 UG/L	76 - 114	90
Bromofluorobenzene	250 UG/L	86 - 115	103

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG06
LCS ID :BVLCSG05	MS ID :4041.002MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH9-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.003
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8240B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/8/97 16:53

ANALYST	: GWH	ANALYST	: LZ
DATE ANALYZED	: 7/7/97	DILUTION	: 5
INSTRUMENT FILE	: B3990	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 14:10		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	ND UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	ND UG/L	
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	98
1,2-Dichloroethane-d4	250 UG/L	76 - 114	95
Bromofluorobenzene	250 UG/L	86 - 115	97

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG07	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG07
LCS ID :BVLCSG07	MS ID :4041.002MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-N TRENCH-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.004
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8240B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/8/97 16:54

ANALYST	: GWH	ANALYST	: LZ
DATE ANALYZED	: 7/3/97	DILUTION	: 5
INSTRUMENT FILE	: B3976	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 18:30		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	ND UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	ND UG/L	
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	102
1,2-Dichloroethane-d4	250 UG/L	76 - 114	94
Bromofluorobenzene	250 UG/L	86 - 115	102

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG06
LCS ID :BVLCSG05	MS ID :4041.002MS	

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-W TRENCH N-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.005
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8240B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/8/97 16:54

ANALYST	: GWH	ANALYST	: LZ
DATE ANALYZED	: 7/3/97	DILUTION	: 5
INSTRUMENT FILE	: B3977	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 18:57		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	ND UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	ND UG/L	
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	101
1,2-Dichloroethane-d4	250 UG/L	76 - 114	87
Bromofluorobenzene	250 UG/L	86 - 115	96

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG06
LCS ID :BVLCSG05	MS ID :4041.002MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-W TRENCH S-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.006
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8240B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/8/97 16:54

ANALYST	: GWH	ANALYST	: LZ
DATE ANALYZED	: 7/3/97	DILUTION	: 5
INSTRUMENT FILE	: B3978	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 19:24		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	52 UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	ND UG/L	
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	103
1,2-Dichloroethane-d4	250 UG/L	76 - 114	88
Bromofluorobenzene	250 UG/L	86 - 115	99

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG06
LCS ID :BVLCSG05	MS ID :4041.002MS	

TCLP SEMIVOLATILES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-BH2-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.001
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/15/97 10:25

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/3/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: D1038	INSTRUMENT ID	: D-HP5971A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 21:57		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	90
2-Fluorobiphenyl	250 UG/L	43 - 116	55
2-Fluorophenol	375 UG/L	21 - 100	51
Nitrobenzene-d5	250 UG/L	35 - 114	63
Phenol-d5	375 UG/L	10 - 94	33
Terphenyl-d14	250 UG/L	33 - 141	60

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1	PRE-PREP BLANK ID :TCLP 2076	PREP BLANK ID :4041.WBLK1
LCS ID :4041.WLCS1	MS ID :4041.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-BH7-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.002
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/15/97 10:25

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: A1764	INSTRUMENT ID	: A-HP5970B
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 15:28		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	73
2-Fluorobiphenyl	250 UG/L	43 - 116	58
2-Fluorophenol	375 UG/L	21 - 100	51
Nitrobenzene-d5	250 UG/L	35 - 114	72
Phenol-d5	375 UG/L	10 - 94	36
Terphenyl-d14	250 UG/L	33 - 141	54

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1A	PRE-PREP BLANK ID :TCLP 2077	PREP BLANK ID :4041.WBLK1
LCS ID :4041.WLCS1	MS ID :4041.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-BH9-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.003
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/15/97 10:26

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/7/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: D1048	INSTRUMENT ID	: D-HP5971A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 20:36		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	89
2-Fluorobiphenyl	250 UG/L	43 - 116	57
2-Fluorophenol	375 UG/L	21 - 100	47
Nitrobenzene-d5	250 UG/L	35 - 114	57
Phenol-d5	375 UG/L	10 - 94	30
Terphenyl-d14	250 UG/L	33 - 141	54

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1 PRE-PREP BLANK ID :TCLP 2076 PREP BLANK ID :4041.WBLK1

LCS ID :4041.WLCS1 MS ID :4041.001MS

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-N TRENCH-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.004
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/15/97 10:26

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/9/97	DATE EXTRACTED	: 7/8/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: A1761	INSTRUMENT ID	: A-HP5970B
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 17:53		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	77
2-Fluorobiphenyl	250 UG/L	43 - 116	66
2-Fluorophenol	375 UG/L	21 - 100	50
Nitrobenzene-d5	250 UG/L	35 - 114	70
Phenol-d5	375 UG/L	10 - 94	36
Terphenyl-d14	250 UG/L	33 - 141	48

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.TWBLK1	PRE-PREP BLANK ID :TCLP 2077	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4041.001MS	

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-W TRENCH N-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.005
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/15/97 10:26

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/7/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: D1050	INSTRUMENT ID	: D-HP5971A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 22:10		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	87
2-Fluorobiphenyl	250 UG/L	43 - 116	64
2-Fluorophenol	375 UG/L	21 - 100	47
Nitrobenzene-d5	250 UG/L	35 - 114	63
Phenol-d5	375 UG/L	10 - 94	29
Terphenyl-d14	250 UG/L	33 - 141	65

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1 PRE-PREP BLANK ID :TCLP 2076 PREP BLANK ID :4041.WBLK1

LCS ID :4041.WLCS1 MS ID :4041.001MS

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-W TRENCH S-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.006
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/15/97 10:26

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/7/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: D1051	INSTRUMENT ID	: D-HP5971A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 22:58		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	88
2-Fluorobiphenyl	250 UG/L	43 - 116	60
2-Fluorophenol	375 UG/L	21 - 100	46
Nitrobenzene-d5	250 UG/L	35 - 114	61
Phenol-d5	375 UG/L	10 - 94	30
Terphenyl-d14	250 UG/L	33 - 141	66

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1 PRE-PREP BLANK ID :TCLP 2076 PREP BLANK ID :4041.WBLK1

LCS ID :4041.WLCS1 MS ID :4041.001MS

TCLP METALS

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: MEVATEC
Project Name: NOP LANDFILL
Project Number: 400-ZZ

Client Sample ID: NOP-BH2-S1
PDP Sample ID: 4056.001
Report Number: I056001

Date Sampled:06/30/97
Date Received:07/02/97
Date Reported:07/25/97

TCLP METALS (DATA SHEET)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	0.67	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP Method Blank ID: ICPB644
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2076

ICP LCS ID: ICPL644
CVAA LCS ID: HGL570
ICP LCSD ID: ICPL644D
CVAA LCSD ID: HGL570D

ICP MS ID: 4025.003MS
CVAA MS ID: 4025.003MS
ICP MSD ID: NA
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: MEVATEC
Project Name: NOP LANDFILL
Project Number: 400-ZZ

Client Sample ID: NOP-BH7-S1
PDP Sample ID: 4056.002
Report Number: I056002

Date Sampled:06/30/97
Date Received:07/02/97
Date Reported:07/25/97

TCLP METALS (DATA SHEET)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	0.96	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP LCS ID: ICPL644
ICP MS ID: 4025.003MS
ICP Method Blank ID: ICPB644
CVAA LCS ID: HGL570
CVAA MS ID: 4025.003MS
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2077
ICP LCSD ID: ICPL644D
ICP MSD ID: NA
CVAA LCSD ID: HGL570D
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: MEVATEC
Project Name: NOP LANDFILL
Project Number: 400-ZZ

Client Sample ID: NOP-BH9-S1
PDP Sample ID: 4056.003
Report Number: I056003

Date Sampled:06/30/97
Date Received:07/02/97
Date Reported:07/25/97

TCLP METALS (DATA SHEET)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	0.82	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	0.10	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	0.05	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP LCS ID: ICPL644
CVAA LCS ID: HGL570
ICP LCSD ID: ICPL644D
CVAA LCSD ID: HGL570D

ICP MS ID: 4025.003MS
CVAA MS ID: 4025.003MS
ICP MSD ID: NA
CVAA MSD ID: NA

ICP Method Blank ID: ICPB644
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2076

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: MEVATEC
Project Name: NOP LANDFILL
Project Number: 400-ZZ

Client Sample ID: NOP-N TRENCH-S1
PDP Sample ID: 4056.004
Report Number: I056004

Date Sampled:06/30/97
Date Received:07/02/97
Date Reported:07/25/97

TCLP METALS (DATA SHEET)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	1.00	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP LCS ID: ICPL644
CVAA LCS ID: HGL570
ICP LCSD ID: ICPL644D
CVAA LCSD ID: HGL570D

ICP MS ID: 4025.003MS
CVAA MS ID: 4025.003MS
ICP MSD ID: NA
CVAA MSD ID: NA

ICP Method Blank ID: ICPB644
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2077

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: MEVATEC
Project Name: NOP LANDFILL
Project Number: 400-ZZ

Client Sample ID: NOP-W TRENCH N-S1
PDP Sample ID: 4056.005
Report Number: I056005

Date Sampled:06/30/97
Date Received:07/02/97
Date Reported:07/25/97

TCLP METALS (DATA SHEET)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	0.82	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP LCS ID: ICPL644
ICP MS ID: 4025.003MS
ICP Method Blank ID: ICPB644
CVAA LCS ID: HGL570
CVAA MS ID: 4025.003MS
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2076
ICP LCSD ID: ICPL644D
ICP MSD ID: NA
CVAA LCSD ID: HGL570D
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: MEVATEC
Project Name: NOP LANDFILL
Project Number: 400-ZZ

Client Sample ID: NOP-W TRENCH S-S1
PDP Sample ID: 4056.006
Report Number: I056006

Date Sampled:06/30/97
Date Received:07/02/97
Date Reported:07/25/97

TCLP METALS (DATA SHEET)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	1.00	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP LCS ID: ICPL644
CVAA LCS ID: HGL570
ICP LCSD ID: ICPL644D
CVAA LCSD ID: HGL570D

ICP MS ID: 4025.003MS
CVAA MS ID: 4025.003MS
ICP MSD ID: NA
CVAA MSD ID: NA

ICP Method Blank ID: ICPB644
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2076

TCLP PESTICIDES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH2-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.001
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:43

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07680	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 19:27		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	57
Decachlorobiphenyl	1.00 UG/L	30 - 150	51

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH7-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.002
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:44

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07682	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 20:21		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	64
Decachlorobiphenyl	1.00 UG/L	30 - 150	55

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2077	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH9-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.003
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:44

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07683	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 20:48		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	68
Decachlorobiphenyl	1.00 UG/L	30 - 150	57

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

LCS ID :4056.WLCS1 MS ID :4056.001MS

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-N TRENCH-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.004
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:44

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07684	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 21:15		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	61
Decachlorobiphenyl	1.00 UG/L	30 - 150	53

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2077	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-W TRENCH N-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.005
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:44

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07685	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 21:42		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	66
Decachlorobiphenyl	1.00 UG/L	30 - 150	59

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-W TRENCH S-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.006
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:45

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/9/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07691	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 0:25		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	62
Decachlorobiphenyl	1.00 UG/L	30 - 150	52

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME :		CLIENT SAMPLE ID :	PRE-PREP BLANK
PROJECT NAME :		LAB SAMPLE ID :	TCLP2076
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8080A
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/10/97 17:03

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: D07678	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 18:33		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	58
Decachlorobiphenyl	1.00 UG/L	30 - 150	56

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	:	CLIENT SAMPLE ID	: PRE-PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: TCLP2077
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/10/97 17:04

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/8/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 10 mL
INSTRUMENT FILE	: E07679	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 19:00		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.25 UG/L	ND UG/L	
Heptachlor	0.25 UG/L	ND UG/L	
Heptachlor epoxide	0.25 UG/L	ND UG/L	
Methoxychlor	2.5 UG/L	ND UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	64
Decachlorobiphenyl	1.00 UG/L	30 - 150	58

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

TCLP HERBICIDES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME :	MEVATEC	CLIENT SAMPLE ID :	NOP-BH2-S1
PROJECT NAME :	NOP LANDFILL	LAB SAMPLE ID :	4056.001
PROJECT NUMBER :	400-ZZ	METHOD REFERENCE :	SW846-8150B
DATE SAMPLED :	6/30/97	DATE RECEIVED :	7/2/97
SAMPLE MATRIX :	SOIL	PRINTED ON :	7/17/97 15:05

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07701	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 19:48		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	82

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH7-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.002
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/17/97 15:06

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07703	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 20:47		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	72

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2077	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH9-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.003
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/17/97 15:06

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07704	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 21:17		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	67

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-N TRENCH-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.004
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/17/97 15:06

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07705	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 21:46		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	69

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2077	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-W TRENCH N-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.005
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/17/97 15:06

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07706	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 22:16		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	66

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-W TRENCH S-S1
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.006
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/17/97 15:07

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07708	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 23:15		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	79

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1	PRE-PREP BLANK ID :TCLP2076	PREP BLANK ID :4056.WBLK1
LCS ID :4056.WLCS1	MS ID :4056.001MS	

QUALITY CONTROL DATA

TCLP VOLATILES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	PRE-PREP BLANK
PROJECT NAME :		LAB SAMPLE ID :	4041.EXTBLK
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8240B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/8/97 17:54

ANALYST	: GH	ANALYST	: LZ
DATE ANALYZED	: 7/3/97	DILUTION	: 5
INSTRUMENT FILE	: B3966	INSTRUMENT ID	: B-HP5971A
PURGE VOLUME	: 5 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 13:00		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	25 UG/L	ND UG/L	
1,2-Dichloroethane	25 UG/L	ND UG/L	
2-Butanone	50 UG/L	ND UG/L	
Benzene	25 UG/L	ND UG/L	
Carbon tetrachloride	25 UG/L	ND UG/L	
Chlorobenzene	25 UG/L	ND UG/L	
Chloroform	25 UG/L	ND UG/L	
Tetrachloroethene	25 UG/L	ND UG/L	
Trichloroethene	25 UG/L	ND UG/L	
Vinyl chloride	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	250 UG/L	88 - 110	95
1,2-Dichloroethane-d4	250 UG/L	76 - 114	86
Bromofluorobenzene	250 UG/L	86 - 115	91

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06 PRE-PREP BLANK ID :4041.EXTBLK PREP BLANK ID :BVBLKG06

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	PREP BLANK
PROJECT NAME :		LAB SAMPLE ID :	BVBLKG06
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8240B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/8/97 17:43

ANALYST	: LZ	DATE ANALYZED	: 7/3/97
DILUTION	: 1	INSTRUMENT FILE	: B3963
INSTRUMENT ID	: B-HP5971A	PURGE VOLUME	: 5 mL
TIME ANALYZED	: 11:30		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	5.0 UG/L	ND UG/L	
1,2-Dichloroethane	5.0 UG/L	ND UG/L	
2-Butanone	10 UG/L	ND UG/L	
Benzene	5.0 UG/L	ND UG/L	
Carbon tetrachloride	5.0 UG/L	ND UG/L	
Chlorobenzene	5.0 UG/L	ND UG/L	
Chloroform	5.0 UG/L	ND UG/L	
Tetrachloroethene	5.0 UG/L	ND UG/L	
Trichloroethene	5.0 UG/L	ND UG/L	
Vinyl chloride	10 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	50.0 UG/L	88 - 110	95
1,2-Dichloroethane-d4	50.0 UG/L	76 - 114	89
Bromofluorobenzene	50.0 UG/L	86 - 115	90

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06 PRE-PREP BLANK ID :4041.EXTBLK PREP BLANK ID :BVBLKG06

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	PREP BLANK
PROJECT NAME :		LAB SAMPLE ID :	BVBLKG07
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8240B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/8/97 17:44

ANALYST	: LZ	DATE ANALYZED	: 7/7/97
DILUTION	: 1	INSTRUMENT FILE	: B3985
INSTRUMENT ID	: B-HP5971A	PURGE VOLUME	: 5 mL
TIME ANALYZED	: 11:33		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	5.0 UG/L	ND UG/L	
1,2-Dichloroethane	5.0 UG/L	ND UG/L	
2-Butanone	10 UG/L	ND UG/L	
Benzene	5.0 UG/L	ND UG/L	
Carbon tetrachloride	5.0 UG/L	ND UG/L	
Chlorobenzene	5.0 UG/L	ND UG/L	
Chloroform	5.0 UG/L	ND UG/L	
Tetrachloroethene	5.0 UG/L	ND UG/L	
Trichloroethene	5.0 UG/L	ND UG/L	
Vinyl chloride	10 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	50.0 UG/L	88 - 110	93
1,2-Dichloroethane-d4	50.0 UG/L	76 - 114	80
Bromofluorobenzene	50.0 UG/L	86 - 115	91

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG07 PRE-PREP BLANK ID :4041.EXTBLK PREP BLANK ID :BVBLKG07

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	LAB CONTROL SAMPLE
PROJECT NAME :		LAB SAMPLE ID :	BVLCSG05
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8240B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/8/97 17:42

ANALYST	: LZ	DATE ANALYZED	: 7/3/97
DILUTION	: 1	INSTRUMENT FILE	: B3964
INSTRUMENT ID	: B-HP5971A	PURGE VOLUME	: 5 mL
TIME ANALYZED	: 11:59		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	5.0 UG/L	86 UG/L	
1,2-Dichloroethane	5.0 UG/L	78 UG/L	
2-Butanone	10 UG/L	58 UG/L	
Benzene	5.0 UG/L	81 UG/L	
Carbon tetrachloride	5.0 UG/L	82 UG/L	
Chlorobenzene	5.0 UG/L	79 UG/L	
Chloroform	5.0 UG/L	80 UG/L	
Tetrachloroethene	5.0 UG/L	83 UG/L	
Trichloroethene	5.0 UG/L	84 UG/L	
Vinyl chloride	10 UG/L	96 UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	50.0 UG/L	88 - 110	92
1,2-Dichloroethane-d4	50.0 UG/L	76 - 114	95
Bromofluorobenzene	50.0 UG/L	86 - 115	87

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG06 PRE-PREP BLANK ID :4041.EXTBLK PREP BLANK ID :BVBLKG06

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LCS/LCSD SUMMARY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :
PROJECT NAME :
PROJECT NUMBER :

DATE RECEIVED :
PRINTED ON : 7/8/97

SAMPLE MATRIX : SOLID

METHOD REFERENCE : SW846-8240B

LAB CONTROL SAMPLE

LCS SAMPLE ID : BVLCSG05
CLIENT SAMPLE ID :
DATE ANALYZED : 7/3/97
INSTRUMENT FILE : B3964

LAB CONTROL SAMPLE DUPLICATE

LCSD SAMPLE ID :
CLIENT SAMPLE ID :
DATE ANALYZED :
INSTRUMENT FILE :

PARAMETER	UNITS	LCS TRUE VALUE	LCSD TRUE VALUE	LCS FOUND VALUE	LCSD FOUND VALUE	LCS RECOVER (%)	LCSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMITS REC.
1,1-Dichloroethene	UG/L	100		86.4		86			25	61 - 145
1,2-Dichloroethane	UG/L	100		77.6		78			25	50 - 150
2-Butanone	UG/L	100		58.3		58			25	50 - 150
Benzene	UG/L	100		80.9		81			25	76 - 127
Carbon tetrachloride	UG/L	100		82.0		82			25	50 - 150
Chlorobenzene	UG/L	100		78.8		79			25	75 - 130
Chloroform	UG/L	100		80.0		80			25	50 - 150
Tetrachloroethene	UG/L	100		83.0		83			25	50 - 150
Trichloroethene	UG/L	100		84.1		84			25	71 - 120
Vinyl chloride	UG/L	100		95.6		96			25	50 - 150

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 10 outside limits

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	LAB CONTROL SAMPLE
PROJECT NAME :		LAB SAMPLE ID :	BVLCSG07
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8240B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/8/97 17:41

ANALYST	: LZ	DATE ANALYZED	: 7/7/97
DILUTION	: 1	INSTRUMENT FILE	: B3986
INSTRUMENT ID	: B-HP5971A	PURGE VOLUME	: 5 mL
TIME ANALYZED	: 12:09		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,1-Dichloroethene	5.0 UG/L	83 UG/L	
1,2-Dichloroethane	5.0 UG/L	74 UG/L	
2-Butanone	10 UG/L	53 UG/L	
Benzene	5.0 UG/L	81 UG/L	
Carbon tetrachloride	5.0 UG/L	86 UG/L	
Chlorobenzene	5.0 UG/L	80 UG/L	
Chloroform	5.0 UG/L	78 UG/L	
Tetrachloroethene	5.0 UG/L	91 UG/L	
Trichloroethene	5.0 UG/L	89 UG/L	
Vinyl chloride	10 UG/L	80 UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Toluene-d8	50.0 UG/L	88 - 110	96
1,2-Dichloroethane-d4	50.0 UG/L	76 - 114	81
Bromofluorobenzene	50.0 UG/L	86 - 115	91

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :BVBLKG07	PRE-PREP BLANK ID :4041.EXTBLK	PREP BLANK ID :BVBLKG07

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LCS/LCSD SUMMARY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME :
PROJECT NAME :
PROJECT NUMBER :

DATE RECEIVED :
PRINTED ON : 7/8/97

SAMPLE MATRIX : SOLID

METHOD REFERENCE : SW846-8240B

LAB CONTROL SAMPLE

LCS SAMPLE ID : BVLCSG07
CLIENT SAMPLE ID :
DATE ANALYZED : 7/7/97
INSTRUMENT FILE : B3986

LAB CONTROL SAMPLE DUPLICATE

LCSD SAMPLE ID :
CLIENT SAMPLE ID :
DATE ANALYZED :
INSTRUMENT FILE :

PARAMETER	UNITS	LCS TRUE VALUE	LCSD TRUE VALUE	LCS FOUND VALUE	LCSD FOUND VALUE	LCS RECOVER (%)	LCSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMITS REC.
1,1-Dichloroethene	UG/L	100		83.0		83			25	61 - 145
1,2-Dichloroethane	UG/L	100		73.7		74			25	50 - 150
2-Butanone	UG/L	100		53.0		53			25	50 - 150
Benzene	UG/L	100		80.6		81			25	76 - 127
Carbon tetrachloride	UG/L	100		86.4		86			25	50 - 150
Chlorobenzene	UG/L	100		80.2		80			25	75 - 130
Chloroform	UG/L	100		77.8		78			25	50 - 150
Tetrachloroethene	UG/L	100		91.0		91			25	50 - 150
Trichloroethene	UG/L	100		89.0		89			25	71 - 120
Vinyl chloride	UG/L	100		79.9		80			25	50 - 150

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 10 outside limits

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

MS/MSD SUMMARY REPORT

TCLP VOLATILES BY GC/MS

CLIENT NAME : [redacted]
PROJECT NAME : [redacted]
PROJECT NUMBER : [redacted]

DATE RECEIVED : [redacted]
PRINTED ON : 7/8/97

SAMPLE MATRIX : SOIL

METHOD REFERENCE : SW846-8240B

SAMPLE	MATRIX SPIKE	MATRIX SPIKE DUPLICATE
SAMPLE ID : 4041.002	MS SAMPLE ID : 4041.002MS	MSD SAMPLE ID :
CLIENT SAMPLE ID : 2481-PES-001-FS	CLIENT SAMPLE ID : 2481-PES-001-FSMS	CLIENT SAMPLE ID :
DATE ANALYZED : 7/3/97	DATE ANALYZED : 7/3/97	DATE ANALYZED :
INSTRUMENT FILE : B3970	INSTRUMENT FILE : B3969	INSTRUMENT FILE :

PARAMETER	UNITS	MS SPIKE ADDED	MSD SPIKE ADDED	SAMPL CONC.	MS CONC.	MSD CONC.	MS RECOVERY (%)	MSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMIT REC.
1,1-Dichloroethene	UG/L	500		0	423		85			25	50 - 150
1,2-Dichloroethane	UG/L	500		0	414		83			25	50 - 150
2-Butanone	UG/L	500		0	375		75			25	50 - 150
Benzene	UG/L	500		0	423		85			25	76 - 127
Carbon tetrachloride	UG/L	500		0	412		82			25	50 - 150
Chlorobenzene	UG/L	500		0	419		84			25	75 - 130
Chloroform	UG/L	500		0	395		79			25	50 - 150
Tetrachloroethene	UG/L	500		0	413		83			25	50 - 150
Trichloroethene	UG/L	500		0	418		84			25	71 - 120
Vinyl chloride	UG/L	500		0	435		87			25	50 - 150

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 10 outside limits

TCLP SEMIVOLATILES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME	:	CLIENT SAMPLE ID	: PRE-PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: TCLP 2076
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8270B
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/15/97 10:28

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/7/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: D1043	INSTRUMENT ID	: D-HP5971A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 16:44		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	81
2-Fluorobiphenyl	250 UG/L	43 - 116	53
2-Fluorophenol	375 UG/L	21 - 100	41
Nitrobenzene-d5	250 UG/L	35 - 114	56
Phenol-d5	375 UG/L	10 - 94	27
Terphenyl-d14	250 UG/L	33 - 141	55

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1 PRE-PREP BLANK ID :TCLP 2076 PREP BLANK ID :4041.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	PRE-PREP BLANK
PROJECT NAME :		LAB SAMPLE ID :	TCLP 2077
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/15/97 10:28

ANALYST	: KG	ANALYST	: RP
DATE ANALYZED	: 7/3/97	DATE EXTRACTED	: 7/3/97
DILUTION	: 1	EXTRACT VOLUME	: 1 mL
INSTRUMENT FILE	: D1034	INSTRUMENT ID	: D-HP5971A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 18:52		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	50 UG/L	ND UG/L	
2,4,5-Trichlorophenol	120 UG/L	ND UG/L	
2,4,6-Trichlorophenol	50 UG/L	ND UG/L	
2,4-Dinitrotoluene	50 UG/L	ND UG/L	
2-Methylphenol	50 UG/L	ND UG/L	
3+4-Methylphenol	50 UG/L	ND UG/L	
Hexachlorobenzene	50 UG/L	ND UG/L	
Hexachlorobutadiene	50 UG/L	ND UG/L	
Hexachloroethane	50 UG/L	ND UG/L	
Nitrobenzene	50 UG/L	ND UG/L	
Pentachlorophenol	120 UG/L	ND UG/L	
Pyridine	50 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	375 UG/L	10 - 123	82
2-Fluorobiphenyl	250 UG/L	43 - 116	57
2-Fluorophenol	375 UG/L	21 - 100	51
Nitrobenzene-d5	250 UG/L	35 - 114	66
Phenol-d5	375 UG/L	10 - 94	33
Terphenyl-d14	250 UG/L	33 - 141	66

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1A PRE-PREP BLANK ID :TCLP 2077 PREP BLANK ID :4041.WBLK1

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	PREP BLANK
PROJECT NAME :		LAB SAMPLE ID :	4041.WBLK1
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/15/97 10:28

ANALYST	: RP	DATE ANALYZED	: 7/7/97
DATE EXTRACTED	: 7/3/97	DILUTION	: 1
EXTRACT VOLUME	: 1 mL	INSTRUMENT FILE	: D1041
INSTRUMENT ID	: D-HP5971A	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 15:11		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	10 UG/L	ND UG/L	
2,4,5-Trichlorophenol	25 UG/L	ND UG/L	
2,4,6-Trichlorophenol	10 UG/L	ND UG/L	
2,4-Dinitrotoluene	10 UG/L	ND UG/L	
2-Methylphenol	10 UG/L	ND UG/L	
3+4-Methylphenol	10 UG/L	ND UG/L	
Hexachlorobenzene	10 UG/L	ND UG/L	
Hexachlorobutadiene	10 UG/L	ND UG/L	
Hexachloroethane	10 UG/L	ND UG/L	
Nitrobenzene	10 UG/L	ND UG/L	
Pentachlorophenol	25 UG/L	ND UG/L	
Pyridine	10 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	75.0 UG/L	10 - 123	81
2-Fluorobiphenyl	50.0 UG/L	43 - 116	58
2-Fluorophenol	75.0 UG/L	21 - 100	45
Nitrobenzene-d5	50.0 UG/L	35 - 114	58
Phenol-d5	75.0 UG/L	10 - 94	29
Terphenyl-d14	50.0 UG/L	33 - 141	67

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1 PRE-PREP BLANK ID :TCLP 2076 PREP BLANK ID :4041.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME	:	CLIENT SAMPLE ID	: PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: 4056.WBLK1
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8270B
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/15/97 10:28

ANALYST	: RP	DATE ANALYZED	: 7/9/97
DATE EXTRACTED	: 7/8/97	DILUTION	: 1
EXTRACT VOLUME	: 1 mL	INSTRUMENT FILE	: A1759
INSTRUMENT ID	: A-HP5970B	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 15:57		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	10 UG/L	ND UG/L	
2,4,5-Trichlorophenol	25 UG/L	ND UG/L	
2,4,6-Trichlorophenol	10 UG/L	ND UG/L	
2,4-Dinitrotoluene	10 UG/L	ND UG/L	
2-Methylphenol	10 UG/L	ND UG/L	
3+4-Methylphenol	10 UG/L	ND UG/L	
Hexachlorobenzene	10 UG/L	ND UG/L	
Hexachlorobutadiene	10 UG/L	ND UG/L	
Hexachloroethane	10 UG/L	ND UG/L	
Nitrobenzene	10 UG/L	ND UG/L	
Pentachlorophenol	25 UG/L	ND UG/L	
Pyridine	10 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	75.0 UG/L	10 - 123	65
2-Fluorobiphenyl	50.0 UG/L	43 - 116	58
2-Fluorophenol	75.0 UG/L	21 - 100	42
Nitrobenzene-d5	50.0 UG/L	35 - 114	62
Phenol-d5	75.0 UG/L	10 - 94	31
Terphenyl-d14	50.0 UG/L	33 - 141	44

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.TWBLK1 PRE-PREP BLANK ID :TCLP 2077 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :		CLIENT SAMPLE ID :	LAB CONTROL SAMPLE
PROJECT NAME :		LAB SAMPLE ID :	4041.WLCS1
PROJECT NUMBER :		METHOD REFERENCE :	SW846-8270B
DATE SAMPLED :		DATE RECEIVED :	
SAMPLE MATRIX :	SOLID	PRINTED ON :	7/15/97 10:27

ANALYST	: RP	DATE ANALYZED	: 7/7/97
DATE EXTRACTED	: 7/3/97	DILUTION	: 1
EXTRACT VOLUME	: 1 mL	INSTRUMENT FILE	: D1042
INSTRUMENT ID	: D-HP5971A	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 15:58		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	10 UG/L	23 UG/L	
2,4,5-Trichlorophenol	25 UG/L	28 UG/L	
2,4,6-Trichlorophenol	10 UG/L	31 UG/L	
2,4-Dinitrotoluene	10 UG/L	25 UG/L	
2-Methylphenol	10 UG/L	26 UG/L	
3+4-Methylphenol	10 UG/L	49 UG/L	
Hexachlorobenzene	10 UG/L	44 UG/L	
Hexachlorobutadiene	10 UG/L	23 UG/L	
Hexachloroethane	10 UG/L	22 UG/L	
Nitrobenzene	10 UG/L	27 UG/L	
Pentachlorophenol	25 UG/L	29 UG/L	
Pyridine	10 UG/L	18 UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	75.0 UG/L	10 - 123	83
2-Fluorobiphenyl	50.0 UG/L	43 - 116	51
2-Fluorophenol	75.0 UG/L	21 - 100	39
Nitrobenzene-d5	50.0 UG/L	35 - 114	54
Phenol-d5	75.0 UG/L	10 - 94	27
Terphenyl-d14	50.0 UG/L	33 - 141	52

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4041.TSBLK1 PRE-PREP BLANK ID :TCLP 2076 PREP BLANK ID :4041.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LCS/LCSD SUMMARY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :
PROJECT NAME :
PROJECT NUMBER :

DATE RECEIVED :
PRINTED ON : 7/15/97

SAMPLE MATRIX : SOLID

METHOD REFERENCE : SW846-8270B

LAB CONTROL SAMPLE

LCS SAMPLE ID : 4041.WLCS1
CLIENT SAMPLE ID :
DATE ANALYZED : 7/7/97
INSTRUMENT FILE : D1042

LAB CONTROL SAMPLE DUPLICATE

LCSD SAMPLE ID :
CLIENT SAMPLE ID :
DATE ANALYZED :
INSTRUMENT FILE :

PARAMETER	UNITS	LCS TRUE VALUE	LCSD TRUE VALUE	LCS FOUND VALUE	LCSD FOUND VALUE	LCS RECOVER (%)	LCSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMITS REC.
1,4-Dichlorobenzene	UG/L	50.0		23.2		46			28	36 - 97
2,4,5-Trichlorophenol	UG/L	50.0		27.7		55			50	9 - 103
2,4,6-Trichlorophenol	UG/L	50.0		30.7		61			50	9 - 103
2,4-Dinitrotoluene	UG/L	50.0		24.9		50			38	24 - 96
2-Methylphenol	UG/L	50.0		26.3		53			50	23 - 97
3+4-Methylphenol	UG/L	100		49.1		49			50	10 - 120
Hexachlorobenzene	UG/L	50.0		43.6		87			50	36 - 97
Hexachlorobutadiene	UG/L	50.0		23.0		46			50	30 - 140
Hexachloroethane	UG/L	50.0		21.8		44			50	30 - 140
Nitrobenzene	UG/L	50.0		26.6		53			50	35 - 120
Pentachlorophenol	UG/L	50.0		29.0		58			50	9 - 103
Pyridine	UG/L	50.0		17.9		36			50	9 - 103

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 12 outside limits

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME	:	CLIENT SAMPLE ID :	LAB CONTROL SAMPLE
PROJECT NAME	:	LAB SAMPLE ID :	4056.WLCS1
PROJECT NUMBER	:	METHOD REFERENCE :	SW846-8270B
DATE SAMPLED	:	DATE RECEIVED :	
SAMPLE MATRIX	: SOLID	PRINTED ON :	7/15/97 10:28

ANALYST	: RP	DATE ANALYZED	: 7/9/97
DATE EXTRACTED	: 7/8/97	DILUTION	: 1
EXTRACT VOLUME	: 1 mL	INSTRUMENT FILE	: A1760
INSTRUMENT ID	: A-HP5970B	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 16:55		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
1,4-Dichlorobenzene	10 UG/L	27 UG/L	
2,4,5-Trichlorophenol	25 UG/L	34 UG/L	
2,4,6-Trichlorophenol	10 UG/L	33 UG/L	
2,4-Dinitrotoluene	10 UG/L	40 UG/L	
2-Methylphenol	10 UG/L	33 UG/L	
3+4-Methylphenol	10 UG/L	63 UG/L	
Hexachlorobenzene	10 UG/L	42 UG/L	
Hexachlorobutadiene	10 UG/L	26 UG/L	
Hexachloroethane	10 UG/L	26 UG/L	
Nitrobenzene	10 UG/L	34 UG/L	
Pentachlorophenol	25 UG/L	31 UG/L	
Pyridine	10 UG/L	21 UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4,6-Tribromophenol	75.0 UG/L	10 - 123	78
2-Fluorobiphenyl	50.0 UG/L	43 - 116	65
2-Fluorophenol	75.0 UG/L	21 - 100	47
Nitrobenzene-d5	50.0 UG/L	35 - 114	69
Phenol-d5	75.0 UG/L	10 - 94	35
Terphenyl-d14	50.0 UG/L	33 - 141	49

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.TWBLK1 PRE-PREP BLANK ID :TCLP 2077 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LCS/LCSD SUMMARY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME :
PROJECT NAME :
PROJECT NUMBER :

DATE RECEIVED :
PRINTED ON : 7/15/97

SAMPLE MATRIX : SOLID

METHOD REFERENCE : SW846-8270B

LAB CONTROL SAMPLE

LCS SAMPLE ID : 4056.WLCS1
CLIENT SAMPLE ID :
DATE ANALYZED : 7/9/97
INSTRUMENT FILE : A1760

LAB CONTROL SAMPLE DUPLICATE

LCSD SAMPLE ID :
CLIENT SAMPLE ID :
DATE ANALYZED :
INSTRUMENT FILE :

PARAMETER	UNITS	LCS TRUE VALUE	LCSD TRUE VALUE	LCS FOUND VALUE	LCSD FOUND VALUE	LCS RECOVER (%)	LCSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMITS REC.
1,4-Dichlorobenzene	UG/L	50.0		27.5		55			28	36 - 97
2,4,5-Trichlorophenol	UG/L	50.0		34.0		68			50	9 - 103
2,4,6-Trichlorophenol	UG/L	50.0		32.6		65			50	9 - 103
2,4-Dinitrotoluene	UG/L	50.0		39.7		79			38	24 - 96
2-Methylphenol	UG/L	50.0		32.9		66			50	23 - 97
3+4-Methylphenol	UG/L	100		62.6		63			50	10 - 120
Hexachlorobenzene	UG/L	50.0		42.0		84			50	36 - 97
Hexachlorobutadiene	UG/L	50.0		26.4		53			50	30 - 140
Hexachloroethane	UG/L	50.0		25.6		51			50	30 - 140
Nitrobenzene	UG/L	50.0		34.4		69			50	35 - 120
Pentachlorophenol	UG/L	50.0		31.2		62			50	9 - 103
Pyridine	UG/L	50.0		20.8		42			50	9 - 103

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 12 outside limits

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

MS/MSD SUMMARY REPORT

TCLP-SEMIVOLATILE ORGANICS BY GC/MS

CLIENT NAME : [redacted]
PROJECT NAME : [redacted]
PROJECT NUMBER : [redacted]

DATE RECEIVED : [redacted]
PRINTED ON : 7/15/97

SAMPLE MATRIX : SOIL

METHOD REFERENCE : SW846-8270B

SAMPLE		MATRIX SPIKE		MATRIX SPIKE DUPLICATE	
SAMPLE ID	: 4041.001	MS SAMPLE ID	: 4041.001MS	MSD SAMPLE ID	:
CLIENT SAMPLE ID	: 2481-PEB-001-FS	CLIENT SAMPLE ID	: 2481-PEB-001-FSMS	CLIENT SAMPLE ID	:
DATE ANALYZED	: 7/3/97	DATE ANALYZED	: 7/7/97	DATE ANALYZED	:
INSTRUMENT FILE	: D1035	INSTRUMENT FILE	: D1044	INSTRUMENT FILE	:

PARAMETER	UNITS	MS SPIKE ADDED	MSD SPIKE ADDED	SAMPL CONC.	MS CONC.	MSD CONC.	MS RECOVERY (%)	MSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMIT REC.
1,4-Dichlorobenzene	UG/L	250		0	107		43			28	36 - 97
2,4,5-Trichlorophenol	UG/L	250		0	153		61			50	9 - 103
2,4,6-Trichlorophenol	UG/L	250		0	156		62			50	9 - 103
2,4-Dinitrotoluene	UG/L	250		0	114		46			38	24 - 96
2-Methylphenol	UG/L	250		0	124		50			50	23 - 97
3+4-Methylphenol	UG/L	500		0	224		45			50	10 - 120
Hexachlorobenzene	UG/L	250		0	249		100 *			50	36 - 97
Hexachlorobutadiene	UG/L	250		0	110		44			50	30 - 140
Hexachloroethane	UG/L	250		0	99.2		40			50	30 - 140
Nitrobenzene	UG/L	250		0	136		54			50	35 - 120
Pentachlorophenol	UG/L	250		0	213		85			50	9 - 103
Pyridine	UG/L	250		0	109		44			50	9 - 103

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 1 out of 12 outside limits

TCLP METALS

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

Client Sample ID: NA
PDP Sample ID: TCLP2071 (EXTRACTION BLANK)
Report Number: TCLP2071

Date Sampled: NA
Date Received: NA
Date Reported: 07/25/97

TCLP METALS (TCLP EXTRACTION BLANK)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	06/19/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	06/19/97	07/03/97	07/13/97	0.2	ND	KW
Cadmium	SW846-6010A	06/19/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	06/19/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	06/19/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	06/19/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	06/19/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	06/19/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP Method Blank ID: NA
CVAA Method Blank ID: NA
TCLP Extraction Blank ID: NA

ICP LCS ID: NA
CVAA LCS ID: NA

ICP LCSD ID: NA
CVAA LCSD ID: NA

ICP MS ID: NA
CVAA MS ID: NA

ICP MSD ID: NA
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES

1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

Client Sample ID: NA
PDP Sample ID: TCLP2076 (EXTRACTION BLANK)
Report Number: TCLP2076

Date Sampled: NA
Date Received: NA
Date Reported: 07/25/97

TCLP METALS (TCLP EXTRACTION BLANK)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	ND	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP Method Blank ID: NA
CVAA Method Blank ID: NA
TCLP Extraction Blank ID: NA

ICP LCS ID: NA
CVAA LCS ID: NA

ICP LCSD ID: NA
CVAA LCSD ID: NA

ICP MS ID: NA
CVAA MS ID: NA

ICP MSD ID: NA
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

Client Sample ID: NA
PDP Sample ID: TCLP2077 (EXTRACTION BLANK)
Report Number: TCLP2077

Date Sampled: NA
Date Received: NA
Date Reported: 07/25/97

TCLP METALS (TCLP EXTRACTION BLANK)

Sample Matrix: SOIL

Units: mg/L

ANALYTE	METHOD	DATE EXTRACTED	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Barium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.2	ND	KW
Cadmium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Chromium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Lead	SW846-6010A	07/02/97	07/03/97	07/13/97	0.05	ND	KW
Mercury	SW846-7470A	07/02/97	07/03/97	07/07/97	0.001	ND	KW
Selenium	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW
Silver	SW846-6010A	07/02/97	07/03/97	07/13/97	0.1	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP Method Blank ID: NA
CVAA Method Blank ID: NA
TCLP Extraction Blank ID: NA

ICP LCS ID: NA
CVAA LCS ID: NA
ICP LCSD ID: NA
CVAA LCSD ID: NA

ICP MS ID: NA
CVAA MS ID: NA
ICP MSD ID: NA
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

Client Sample ID: NA
PDP Sample ID: ICPB644 (METHOD BLANK)
Report Number: ICPB644

Date Sampled: NA
Date Received: NA
Date Reported: 07-18-97

TOTAL METALS (DATA SHEET)

Sample Matrix: WATER

Units: mg/L

ANALYTE	METHOD	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Arsenic	SW846-6010A	07-03-97	07-13-97	0.005	ND	KW
Barium	SW846-6010A	07-03-97	07-13-97	0.02	ND	KW
Cadmium	SW846-6010A	07-03-97	07-13-97	0.005	ND	KW
Chromium	SW846-6010A	07-03-97	07-13-97	0.01	ND	KW
Lead	SW846-6010A	07-03-97	07-13-97	0.005	ND	KW
Selenium	SW846-6010A	07-03-97	07-13-97	0.01	ND	KW
Silver	SW846-6010A	07-03-97	07-13-97	0.01	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP LCS ID: NA
CVAA LCS ID: NA

ICP MS ID: NA
CVAA MS ID: NA

ICP Method Blank ID: NA
CVAA Method Blank ID: NA

ICP LCSD ID: NA
CVAA LCSD ID: NA

ICP MSD ID: NA
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

Client Sample ID: NA
PDP Sample ID: HGB570 (METHOD BLANK)
Report Number: HGB570

Date Sampled:NA
Date Received:NA
Date Reported:07-18-97

TOTAL METALS (DATA SHEET)

Sample Matrix: WATER

Units: mg/L

ANALYTE	METHOD	DATE PREPARED	DATE ANALYZED	QUANTITATION LIMIT	RESULT	ANALYST
Mercury	SW846-7470A	07-03-97	07-07-97	0.0002	ND	KW

QUALITY ASSURANCE/QUALITY CONTROL

ICP Method Blank ID: NA
GFAA Method Blank ID: NA
CVAA Method Blank ID: NA

ICP LCS ID: NA
GFAA LCS ID: NA
CVAA LCS ID: NA

ICP LCSD ID: NA
GFAA LCSD ID: NA
CVAA LCSD ID: NA

ICP MS ID: NA
GFAA MS ID: NA
CVAA MS ID: NA

ICP MSD ID: NA
GFAA MSD ID: NA
CVAA MSD ID: NA

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

LCS ID: ICPL644
LCSD ID: ICPL644D

Date Reported: 07-18-97
Report Number: ICPL644

TOTAL METALS (LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE)

Sample Matrix: WATER

Units: mg/L

ELEMENT	METHOD	DATE PREPARED	DATE ANALYZED	TRUE VALUE	LCS FOUND VALUE	LCS % RECOVERY (80-120)	LCSD FOUND VALUE	LCSD % RECOVERY (80-120)	RPD (20)	ANALYST
Arsenic	SW846-6010A	07-03-97	07-13-97	0.25	0.252	101	0.258	103	2.4	KW
Barium	SW846-6010A	07-03-97	07-13-97	5.0	4.90	98	4.90	98	0.0	KW
Cadmium	SW846-6010A	07-03-97	07-13-97	0.125	0.122	98	0.124	99	1.6	KW
Chromium	SW846-6010A	07-03-97	07-13-97	0.50	0.480	96	0.480	96	0.0	KW
Lead	SW846-6010A	07-03-97	07-13-97	0.25	0.238	95	0.246	98	3.3	KW
Selenium	SW846-6010A	07-03-97	07-13-97	0.25	0.245	98	0.243	97	0.8	KW
Silver	SW846-6010A	07-03-97	07-13-97	0.625	0.600	96	0.620	99	3.3	KW

QUALITY ASSURANCE/QUALITY CONTROL

Method Blank ID: ICPB644

PDP ANALYTICAL SERVICES
1680 Lake Front Circle, Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

LCS ID: HGL570
LCSD ID: HGL570D

Date Reported: 07-18-97
Report Number: HGL570

TOTAL METALS (LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE)

Sample Matrix: WATER

Units: mg/L

ELEMENT	METHOD	DATE PREPARED	DATE ANALYZED	TRUE VALUE	LCS FOUND VALUE	LCS % RECOVERY (80-120)	LCSD FOUND VALUE	LCSD % RECOVERY (80-120)	RPD (20)	ANALYST
Mercury	SW846-7470A	07-03-97	07-07-97	0.0020	0.0019	95	0.0020	100	5.1	KW

QUALITY ASSURANCE/QUALITY CONTROL

Method Blank ID: HGB570

PDP ANALYTICAL SERVICES
1680 Lake Front Circle. Ste. B; The Woodlands, TX 77380; Phone (713)363-2233

LABORATORY REPORT

Client: NA
Project Name: NA
Project Number: NA

PDP SAMPLE ID:4025.003
PDP MS ID:4025.003MS
Report Number:I025M003

Date Sampled: NA
Date Received: NA
Date Reported: 07-18-97

TCLP METALS (MATRIX SPIKE)

Sample Matrix: SOIL

Units: mg/L

ELEMENT	METHOD	DATE PREPARED	DATE ANALYZED	SAMPLE VALUE	MATRIX SPIKE ADDED	MATRIX SPIKE VALUE	PERCENT RECOVERY (75-125)
Arsenic	SW-846 6010A	07-03-97	07-13-97	ND	10.0	10.3	103
Barium	SW-846 6010A	07-03-97	07-13-97	0.24	20.0	20.0	99
Cadmium	SW-846 6010A	07-03-97	07-13-97	ND	2.0	2.03	101
Chromium	SW-846 6010A	07-03-97	07-13-97	ND	10.0	9.40	94
Lead	SW-846 6010A	07-03-97	07-13-97	ND	10.0	9.53	95
Mercury	SW-846 7470A	07-03-97	07-07-97	ND	0.0050	0.0055	110
Selenium	SW-846 6010A	07-03-97	07-13-97	0.06	2.0	2.00	97
Silver	SW-846 6010A	07-03-97	07-13-97	ND	10.0	9.80	98

QUALITY ASSURANCE/QUALITY CONTROL

ICP Method Blank ID: ICPB644
CVAA Method Blank ID: HGB570
TCLP Extraction Blank ID: TCLP2071

ICP LCS ID: ICPL644
CVAA LCS ID: HGL570
ICP LCSD ID: ICPL644D
CVAA LCSD ID: HGL570D

ICP MS ID: NA
CVAA MS ID: NA
ICP MSD ID: NA
CVAA MSD ID:NA

Indicates the value is outside control limits.
High analyte concentration prevented accurate determination of the matrix spike recovery.
D = The sample required a post-digest (instrument) dilution resulting in a dilution of the matrix spike added.

TCLP PESTICIDES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	:	CLIENT SAMPLE ID	: PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: 4056.WBLK1
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/16/97 12:45

ANALYST	: BP	DATE ANALYZED	: 7/8/97
DATE EXTRACTED	: 7/7/97	DILUTION	: 1
EXTRACT VOLUME	: 10 mL	INSTRUMENT FILE	: D07676
INSTRUMENT ID	: D-HP5890A	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 17:38		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	1.0 UG/L	ND UG/L	
Endrin	0.10 UG/L	ND UG/L	
gamma-BHC (Lindane)	0.05 UG/L	ND UG/L	
Heptachlor	0.05 UG/L	ND UG/L	
Heptachlor epoxide	0.05 UG/L	ND UG/L	
Methoxychlor	0.50 UG/L	ND UG/L	
Toxaphene	5.0 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	0.200 UG/L	30 - 150	56
Decachlorobiphenyl	0.200 UG/L	30 - 150	52

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH2-S1MS
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.001MS
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8080A
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/16/97 12:46

ANALYST	: BP	DATE ANALYZED	: 7/8/97
DATE EXTRACTED	: 7/7/97	DILUTION	: 1
EXTRACT VOLUME	: 10 mL	INSTRUMENT FILE	: D07681
INSTRUMENT ID	: D-HP5890A	SAMPLE VOLUME	: 200 mL
TIME ANALYZED	: 19:54		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
Chlordane	5.0 UG/L	ND UG/L	
Endrin	0.50 UG/L	2.4 UG/L	
gamma-BHC (Lindane)	0.25 UG/L	2.2 UG/L	
Heptachlor	0.25 UG/L	2.0 UG/L	
Heptachlor epoxide	0.25 UG/L	2.2 UG/L	
Methoxychlor	2.5 UG/L	20 UG/L	
Toxaphene	25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
Tetrachloro-m-xylene	1.00 UG/L	30 - 150	56
Decachlorobiphenyl	1.00 UG/L	30 - 150	55

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

LCS ID :4056.WLCS1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

MS/MSD SUMMARY REPORT

TCLP-ORGANOCHLORINE PESTICIDES BY GC/ECD

CLIENT NAME : MEVATEC
PROJECT NAME : NOP LANDFILL
PROJECT NUMBER : 400-ZZ

DATE RECEIVED : 7/2/97
PRINTED ON : 7/10/97

SAMPLE MATRIX : SOIL

METHOD REFERENCE : SW846-8080A

SAMPLE		MATRIX SPIKE		MATRIX SPIKE DUPLICATE	
SAMPLE ID	: 4056.001	MS SAMPLE ID	: 4056.001MS	MSD SAMPLE ID	:
CLIENT SAMPLE ID	: NOP-BH2-S1	CLIENT SAMPLE ID	: NOP-BH2-S1MS	CLIENT SAMPLE ID	:
DATE ANALYZED	: 7/8/97	DATE ANALYZED	: 7/8/97	DATE ANALYZED	:
INSTRUMENT FILE	: D07680	INSTRUMENT FILE	: D07681	INSTRUMENT FILE	:

PARAMETER	UNITS	MS SPIKE ADDED	MSD SPIKE ADDED	SAMPL CONC.	MS CONC.	MSD CONC.	MS RECOVERY (%)	MSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMIT REC.
Endrin	UG/L	2.50		0	2.42		97			25	56 - 121
gamma-BHC (Lindane)	UG/L	2.50		0	2.17		87			25	56 - 123
Heptachlor	UG/L	2.50		0	2.00		80			25	40 - 131
Heptachlor epoxide	UG/L	2.50		0	2.16		86			25	30 - 150
Methoxychlor	UG/L	25.0		0	20.4		82			25	30 - 150

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 5 outside limits

TCLP HERBICIDES

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	:	CLIENT SAMPLE ID	: PRE-PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: TCLP2076
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/17/97 15:09

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07699	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 18:48		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	68

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	:	CLIENT SAMPLE ID	: PRE-PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: TCLP2077
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/17/97 15:09

ANALYST	: BP	ANALYST	: KGJ
DATE ANALYZED	: 7/10/97	DATE EXTRACTED	: 7/7/97
DILUTION	: 1	EXTRACT VOLUME	: 5 mL
INSTRUMENT FILE	: D07700	INSTRUMENT ID	: D-HP5890A
SAMPLE VOLUME	: 200 mL	TCLP PREP. DATE	: 7/2/97
TIME ANALYZED	: 19:18		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	ND UG/L	
2,4-D	1.2 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	70

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2077 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	:	CLIENT SAMPLE ID	: PREP BLANK
PROJECT NAME	:	LAB SAMPLE ID	: 4056.WBLK1
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/17/97 15:07

ANALYST	: BP	DATE ANALYZED	: 7/10/97
DATE EXTRACTED	: 7/7/97	DILUTION	: 1
EXTRACT VOLUME	: 5 mL	INSTRUMENT FILE	: D07697
INSTRUMENT ID	: D-HP5890A	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 17:48		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.02 UG/L	ND UG/L	
2,4-D	0.25 UG/L	ND UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	5.00 UG/L	30 - 150	63

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	:	CLIENT SAMPLE ID	: LAB CONTROL SAMPLE
PROJECT NAME	:	LAB SAMPLE ID	: 4056.WLCS1
PROJECT NUMBER	:	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	:	DATE RECEIVED	:
SAMPLE MATRIX	: SOLID	PRINTED ON	: 7/17/97 15:07

ANALYST	: BP	DATE ANALYZED	: 7/10/97
DATE EXTRACTED	: 7/7/97	DILUTION	: 1
EXTRACT VOLUME	: 5 mL	INSTRUMENT FILE	: D07698
INSTRUMENT ID	: D-HP5890A	SAMPLE VOLUME	: 1000 mL
TIME ANALYZED	: 18:18		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.02 UG/L	0.29 UG/L	
2,4-D	0.25 UG/L	2.8 UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	5.00 UG/L	30 - 150	71

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2076 PREP BLANK ID :4056.WBLK1

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LCS/LCSD SUMMARY REPORT
TCLP HERBICIDES BY GC/ECD

CLIENT NAME :
PROJECT NAME :
PROJECT NUMBER :

DATE RECEIVED :
PRINTED ON : 7/25/97

SAMPLE MATRIX : SOLID

METHOD REFERENCE : SW846-8150B

LAB CONTROL SAMPLE

LCS SAMPLE ID : 4056.WLCS1
CLIENT SAMPLE ID :
DATE ANALYZED : 7/10/97
INSTRUMENT FILE : D07698

LAB CONTROL SAMPLE DUPLICATE

LCSD SAMPLE ID :
CLIENT SAMPLE ID :
DATE ANALYZED :
INSTRUMENT FILE :

PARAMETER	UNITS	LCS TRUE VALUE	LCSD TRUE VALUE	LCS FOUND VALUE	LCSD FOUND VALUE	LCS RECOVER (%)	LCSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMITS REC.
2,4,5-TP	UG/L	0.250		0.291		116			25	24 - 150
2,4-D	UG/L	2.50		2.79		112			25	29 - 150

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 2 outside limits

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

LABORATORY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME	: MEVATEC	CLIENT SAMPLE ID	: NOP-BH2-S1MS
PROJECT NAME	: NOP LANDFILL	LAB SAMPLE ID	: 4056.001MS
PROJECT NUMBER	: 400-ZZ	METHOD REFERENCE	: SW846-8150B
DATE SAMPLED	: 6/30/97	DATE RECEIVED	: 7/2/97
SAMPLE MATRIX	: SOIL	PRINTED ON	: 7/17/97 15:09

ANALYST	: BP	DATE ANALYZED	: 7/10/97
DATE EXTRACTED	: 7/7/97	DILUTION	: 1
EXTRACT VOLUME	: 5 mL	INSTRUMENT FILE	: D07702
INSTRUMENT ID	: D-HP5890A	SAMPLE VOLUME	: 200 mL
TIME ANALYZED	: 20:17		

PARAMETER	QUANTITATION LIMIT	RESULTS	QUALIFIER
2,4,5-TP	0.12 UG/L	1.4 UG/L	
2,4-D	1.2 UG/L	14 UG/L	

QUALITY CONTROL DATA

SURROGATE COMPOUND	SPIKE ADDED	QC RECOVERY LIMITS	%RECOVERY
2,4-Dichlorophenyl acetic acid	25.0 UG/L	30 - 150	78

BATCH QUALITY CONTROL SAMPLE IDs

QC BATCH ID :4056.WBLK1 PRE-PREP BLANK ID :TCLP2077 PREP BLANK ID :4056.WBLK1

LCS ID :4056.WLCS1

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

MS/MSD SUMMARY REPORT

TCLP HERBICIDES BY GC/ECD

CLIENT NAME : MEVATEC
PROJECT NAME : NOP LANDFILL
PROJECT NUMBER : 400-ZZ

DATE RECEIVED : 7/2/97
PRINTED ON : 7/25/97

SAMPLE MATRIX : SOIL

METHOD REFERENCE : SW846-8150B

SAMPLE		MATRIX SPIKE		MATRIX SPIKE DUPLICATE	
SAMPLE ID	: 4056.001	MS SAMPLE ID	: 4056.001MS	MSD SAMPLE ID	:
CLIENT SAMPLE ID	: NOP-BH2-S1	CLIENT SAMPLE ID	: NOP-BH2-S1MS	CLIENT SAMPLE ID	:
DATE ANALYZED	: 7/10/97	DATE ANALYZED	: 7/10/97	DATE ANALYZED	:
INSTRUMENT FILE	: D07701	INSTRUMENT FILE	: D07702	INSTRUMENT FILE	:

PARAMETER	UNITS	MS SPIKE ADDED	MSD SPIKE ADDED	SAMPL CONC.	MS CONC.	MSD CONC.	MS RECOVERY (%)	MSD RECOVERY (%)	RPD	RPD LIMIT	QC LIMIT REC.
2,4,5-TP	UG/L	1.25		0	1.41		113			25	24 - 150
2,4-D	UG/L	12.5		0	14.0		112			25	29 - 150

* Indicate values outside of QC limits

RPD : 0 out of 0 outside limits
Spike Recovery : 0 out of 2 outside limits

END OF REPORT

APPENDIX B

Chain of Custody

CHAIN-OF-CUSTODY

PDP Analytical Services

1680 Lake Front Circle, Suite B, The Woodlands TX 77380

Sample Log-In Report

Logged By:

Report Date: 07/03/97

Client Name: MEVATEC
Project ID: NOP LANDFILL
Project #: 400-ZZ
P.O. No.:
Courier/No.:

Date Logged: 07/03/97
Date Received: 07/02/97
Time Received: 9:00

Lab Sample ID	Client Sample ID	No. Cont.	Sample Matrix	Date Sampled	Time Sampled	Chain Of Custody No.	Date Due	Remarks
4056.001	NOP-BH2-S1	2	SOIL	06/30/97	11:25		07/16/97	
	Tests Required							
	- MET_TCLP_RCRAMETALS							
	- TCLPHERB8150B							
	- TCLPPEST8080A							
	- TCLPSVOA8270B							
	- TCLPVOA8240B							
4056.002	NOP-BH7-S1	2	SOIL	06/30/97	12:50		07/16/97	
	Tests Required							
	- MET_TCLP_RCRAMETALS							
	- TCLPHERB8150B							
	- TCLPPEST8080A							
	- TCLPSVOA8270B							
	- TCLPVOA8240B							
4056.003	NOP-BH9-S1	2	SOIL	06/30/97	13:40		07/16/97	
	Tests Required							
	- MET_TCLP_RCRAMETALS							
	- TCLPHERB8150B							
	- TCLPPEST8080A							
	- TCLPSVOA8270B							
	- TCLPVOA8240B							
4056.004	NOP-N TRENCH-S1	2	SOIL	06/30/97	15:40		07/16/97	
	Tests Required							
	- MET_TCLP_RCRAMETALS							
	- TCLPHERB8150B							
	- TCLPPEST8080A							
	- TCLPSVOA8270B							
	- TCLPVOA8240B							
4056.005	NOP-W TRENCH N-S1	2	SOIL	06/30/97	16:00		07/16/97	
	Tests Required							
	- MET_TCLP_RCRAMETALS							
	- TCLPHERB8150B							
	- TCLPPEST8080A							
	- TCLPSVOA8270B							
	- TCLPVOA8240B							
4056.006	NOP-W TRENCH S-S1	2	SOIL	06/30/97	16:15		07/16/97	
	Tests Required							
	- MET_TCLP_RCRAMETALS							
	- TCLPHERB8150B							
	- TCLPPEST8080A							

7/7/97

PDP Analytical Services
1680 Lake Front Circle, Suite B, The Woodlands TX 77380
Sample Log-In Report

Logged By:

Report Date: 07/03/97

Client Name: MEVATEC
Project ID: NOP LANDFILL
Project #: 400-ZZ
P.O. No.:
Courier/No.:

Date Logged: 07/03/97
Date Received: 07/02/97
Time Received: 9:00

Lab Sample ID	Client Sample ID	No. Cont.	Sample Matrix	Date Sampled	Time Sampled	Chain Of Custody No.	Date Due	Remarks
	- TCLPSVOA8270B						7/16/97.	
	- TCLPVOA8240B							

Instructions To Lab:

Std. Report

Approved By/Date: 7/7/97

000006

MEVATEC CORPORATION
P.O. Box 399
Bldg. S-146W
WSMR, NM 88002
(505) 678-0263

CHAIN OF CUSTODY RECORD

PROJECT NO.: 400-ZZ
PROJECT NAME: N.O.P. Landfill
SAMPLER'S SIGNATURE: [signature]

DATE COLLECTED	TIME COLLECTED	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	ANALYSIS REQUESTED: TCLP										REMARKS
6-30-97	1125	NOP-BH2-S1	Soil		2	X										4056.001
6-30-97	1250	NOP-BH7-S1	↓		2	X										.002
6-30-97	1340	NOP-BH9-S1			2	X										.003
6-30-97	1540	NOP-N Trench-S1			2	X										.004
6-30-97	1600	NOP-W Trench N-S1			2	X										.005
6-30-97	1615	NOP-W Trench S-S1			2	X										.006.

client Request complete TCLP. NBB 7/2/97

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LABORATORY: (SIGNATURE)
PROJECT MANAGER: Fred Bourgeon	SAMPLES RECEIVED		(PRINTED NAME) S. Kyle Williams	(PRINTED NAME) NBB	(PRINTED NAME) Mark Bourgeon
SHIPPING ID. NO.: 400-ZZ	TOTAL NO. OF CONTAINERS		RECEIVED BY:	RECEIVED BY:	(COMPANY) PDP
VIA: FEDEX	CHAIN OF CUSTODY SEALS		(TIME / DATE) 1600/7-1-97	(TIME / DATE)	(TIME / DATE) 7/2/97
	GOOD CONDITION/CHILLED		SPECIAL INSTRUCTIONS / COMMENTS:		
	CONFORMS TO RECORD				

PLEASE USE BALL POINT PEN

DISTRIBUTION: WHITE - PROJECT FILES; YELLOW - LAB; PINK - FIELD COPY

PDP ANALYTICAL SERVICE 1680 Lake Front Circle, Suite B, The Woodlands, TX 77380

SAMPLE LOG-IN CHECKLIST/DISCREPANCY REPORT

FID: SLCDR01.96

EPISODE #: 4056 DATE/ REC'D: 7/2/97 TIME

TEMP & ID: 1) 4°C # 1

CLIENT NAME: MEVATEC

2) ____ #

PROJECT NAME: N.O.P. LANDFILL

3) ____ #

PROJECT NUMBER: 400.77

4) ____ #

6 AQUEOUS, # 0 SOIL SAMPLES

5) ____ #

COURIER/AIRBILL #

6) ____ #

SAMPLE CONTAINER SEALS: present (absent) intact broken

COOLER CUSTODY SEALS: (present) absent intact broken NAME & DATE: KW

HOW MANY AND WHERE 2 ON Side

	YES	NO
Were samples screened for radioactivity?	✓	
Chain-of-custody present?	✓	
Custody documents: Sealed in a plastic bag?	✓	
Signed and dated by field personnel	✓	
Filled out properly in indelable ink?	✓	
Signed and dated by log-in personnel?	✓	
Container Condition: Each containers sealed in a separate plastic bag?	✓	
Labels complete (ID, date, time, signature, preservative, etc.)?	✓	
Labels agree with chain-of-custody?	✓	
Received without leakage or breakage? If no, list :	✓	
Correct quantity indicated on chain-of-custody?	✓	
Sample Integrity: Correct containers used for the test indicated? If no, list:	✓	
Correct preservatives added to the samples? If no, list:	✓	
Sufficient sample amount sent for the tests indicated? If no, list	✓	
VOA vials filled completely? If no, list:	✓	
Aqueous volatiles samples preserved? If no, list:	✓	

Descrepancy Report:

Discepancies to be discussed with the client?

Project Manager's recommendations?

Who was notified? By whom? Date:

Client's comments:

Corrective actions carried out?

COMMENTS:

For those short holding time and fast turn-around parameters, has a Rush Notification sheet been issued to the lab?

000005

LOG-IN BY: NB DATE: 7/2/97.

APPENDIX C

Site Health and Safety Plan

TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION....C-1

2.0 HEALTH AND SAFETY ORGANIZATION....C-1
- 2.1 Project Organization....C-1
- 2.2 Responsibility and Authority of Key Personnel....C-2
  - 2.2.1 Principal Geologist and Task Manager....C-3
  - 2.2.2 Site Safety Officer....C-3
  - 2.2.3 Principal Site Engineer and Task Coordinator....C-3

3.0 SITE WORK PLAN SUMMARY....C-4
- 3.1 Project Objective....C-4
- 3.2 Project Tasks....C-5

4.0 SITE CHARACTERIZATION AND ANALYSIS....C-5
- 4.1 General Site Information....C-5
- 4.2 Anticipated Hazards....C-5
  - 4.2.1 Chemical Hazards....C-5
  - 4.2.2 Physical Hazards....C-9
  - 4.2.3 Unexploded Ordnance....C-9
  - 4.2.4 Noise....C-9
- 4.3 Personal Protection For Site Work....C-10
- 4.4 Emergency Contact Numbers....C-10
- 4.5 Route to Emergency Medical Treatment....C-10

5.0 ACCIDENT PREVENTION PLAN....C-12

List of Figures

C-2-1 Project Organizational Structure....C-2
C-3-1 North Oscura Peak Landfill Location....C-4
C-4-1 Route to the Carrizozo Health Clinic....C-11

List of Tables

C-4-1 Emergency Contact Telephone Numbers at White Sands Missile Range....C-10

APPENDIX C
SITE SPECIFIC HEALTH AND SAFETY PLAN

1.0 INTRODUCTION

A landfill that received municipal and commercial waste from the North Oscura Range Camp until the late 1980's consisted of three shallow, unlined trenches. Each of the waste trenches was designated as a Solid Waste Management Unit (SWMU) in the corrective action portion of the Resource Conservation Recovery Act (RCRA) Part B Permit. An open trench used for septage disposal is identified as Solid Waste Management Unit (SWMU) 47. Another open trench that remains unfilled is listed as SWMU 48. The third trench, identified as SWMU 49, is filled with waste and covered with approximately 5 feet (1.5 m) of soil. Waste disposal at the landfill facility was not manifested. Waste characterization efforts indicate that the waste is non-hazardous.

White Sands did not investigate the site during the RCRA Facility Investigations. However, in mid-1997 a series of shallow borings were drilled to define the nature and extent of the waste. Twelve borings in the SWMU 49 area included three Toxicity Characteristic Leaching Procedure (TCLP) analyses of the buried waste. Exposed waste in SWMUs 47 and 48 was sampled and analyzed by TCLP. Results of each of the six TCLP analyses indicate that the waste is not hazardous by toxicity characteristic.

Based on the 1997 investigation, approximately 200 cubic yards (150 m^3) of waste are landfilled on-site. Excavation to a depth of 12 to 15 feet (3.5-4.5 m) is anticipated for waste removal. The upper 5 feet (1.5 m) of SWMU 49 is covered with clean soil that must be stockpile during waste excavation and used for backfill. Corrective Action will include excavation and removal of the waste and affected soil up to 2 feet (60 cm) vertically and 6 inches (15 cm) vertically beyond the last waste or visibly contaminated soil. If volatile organic compounds (VOCs) are detected in the contaminated soil, excavation will be continued to the limit where VOCs are less than 100 parts per million in headspace samples. Chemical analyses of soils below the SWMUs will be used to determine whether the corrective action is adequate to permit clean closure of the landfill.

2.0 HEALTH AND SAFETY ORGANIZATION

2.1 Project Organization

The project organizational structure and key project personnel are shown on Figure C-2-1. The MEVATEC personnel assigned specific health and safety responsibilities are identified below.

Nicholas Barrón, Program Manager MEVATEC Corporation	Overall hazardous material program responsibility.
Fred Bourger, Principal Engineer/Task Manager MEVATEC Corporation	Responsible for all site activities.

Kyle Williams, Site Health and Safety Officer MEVATEC Corporation	Responsible for Site Health and Safety Plan (SHSP) implementation.
Chris Whitman, Principal Site Geologist/Task Coordinator, MEVATEC Corporation	Responsible for all site coordination issues during site activities.

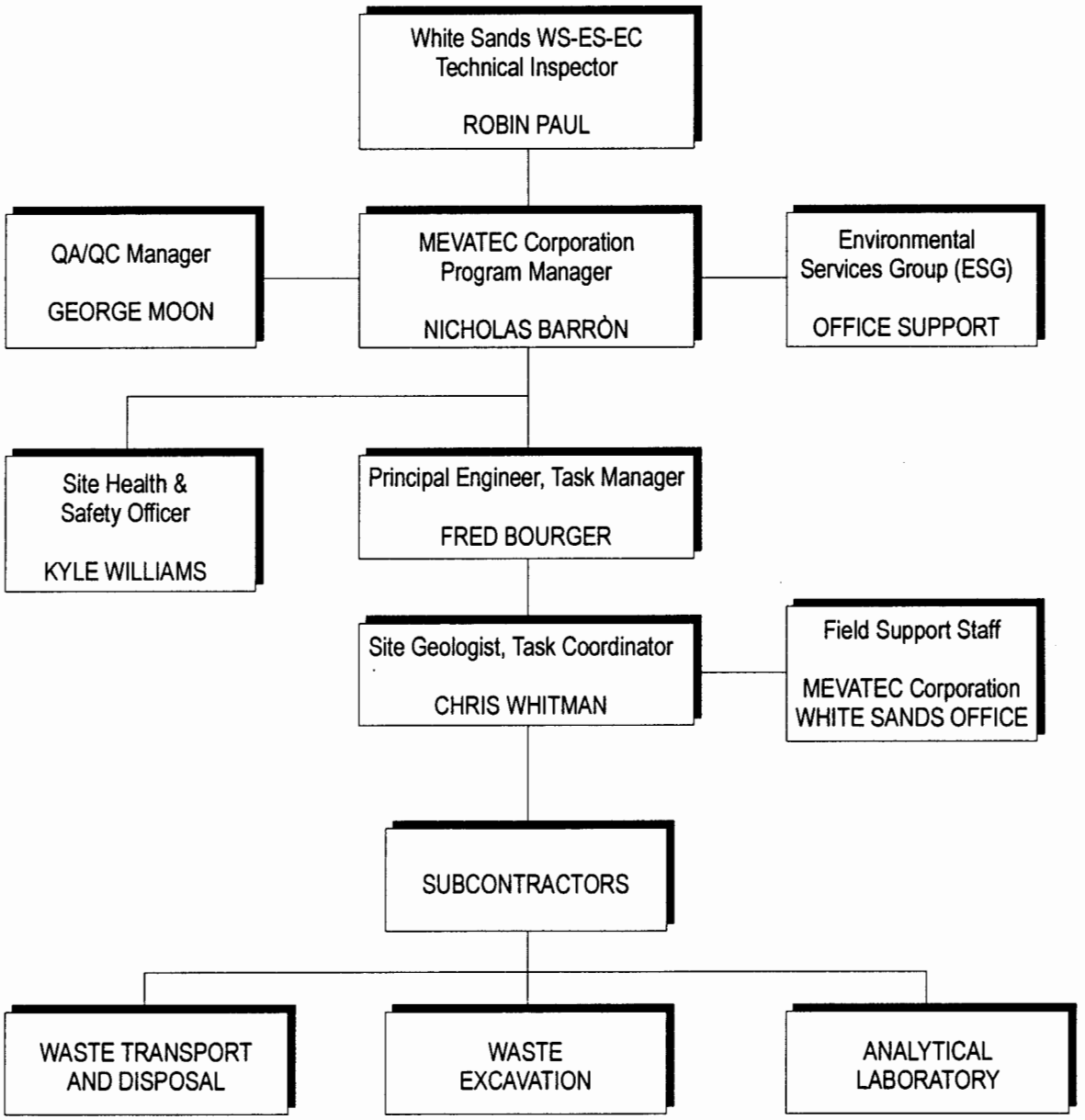


Figure C-2-1. Project Personnel Organization Chart.

2.2 Responsibility and Authority Of Key Personnel

The responsibility and authority of key personnel relative to the implementation of this SHSP are described below.

2.2.1 Principal Engineer and Task Manager

The Principal Engineer health and safety responsibilities include:

- Reporting to the Program Manager.
- Providing oversight of all health and safety matters.
- Reviewing and recommending approval of the SHSP.
- Verifying that the project is performed in a manner consistent with the SHSP.
- Approving the Site Safety Officer for the project.
- Coordinating with the Program Manager on health and safety matters.
- Temporarily suspending field activities if the health and safety of personnel are endangered.
- Reporting all infractions of the SHSP to the MEVATEC Program Manager.

Fred Bourger will be the Principal Engineer for this project. In his absence, the QA/QC Manager, George Moon, will assume his responsibilities.

2.2.2 Site Health and Safety Officer

The Site Health and Safety Officer responsibilities include:

- Directing daily site health and safety activities.
- Reporting safety-related incidents or accidents to the highest authority on-site person.
- Implementing the components of the SHSP.
- Maintaining health and safety equipment on-site, as specified in the SHSP.
- Performing daily site health and safety meetings.
- Maintaining documentation of health and safety measures taken at the site, including:
    - Communication of the SHSP;
    - Levels of protection and required upgrades;
    - Environmental monitoring results; and
    - Incident reporting.
- Upgrading or downgrading levels of protection in response to field conditions.
- Temporarily suspending field activities, if health and safety of personnel are endangered, pending further consideration by the Program Manager.
- Report all infractions of the SHSP to the Program Manager.

Kyle Williams will serve as the Site Health and Safety Officer.

2.2.3 Principal Site Geologist

The Principal Site Geologist has the following responsibilities:

- Executing the SHSP for the project.
- Interfacing with the Health and Safety Officer in matters of health and safety.
- Monitoring compliance with the SHSP.

- Maintaining health and safety equipment for the project.
- Verify personnel working on-site have completed medical surveillance and health and safety training.
- Directing personnel to change work practices if they are deemed hazardous to the health and safety of the personnel.
- Removing personnel from the site if their action or condition endangers their health and safety or the health and safety of their co-workers.

Chris Whitman will serve as the Principal Site Geologist for this project.

3.0 SITE WORK PLAN SUMMARY

3.1 Project Objective

This plan serves as a site-specific addendum to the Accident Reporting and Safety Program dated 14 September 1995, developed by MEVATEC Corporation, for all activities conducted at White Sands Missile Range. The Accident Reporting and Safety Program provides minimum safety standards and accident prevention fundamentals to cover a range of activities at White Sands Missile Range. The components of this Site-Specific Health and Safety Plan cover site work for the excavation and removal of waste from the landfill site and the follow-on stabilization of the site (Figure C-3-1).

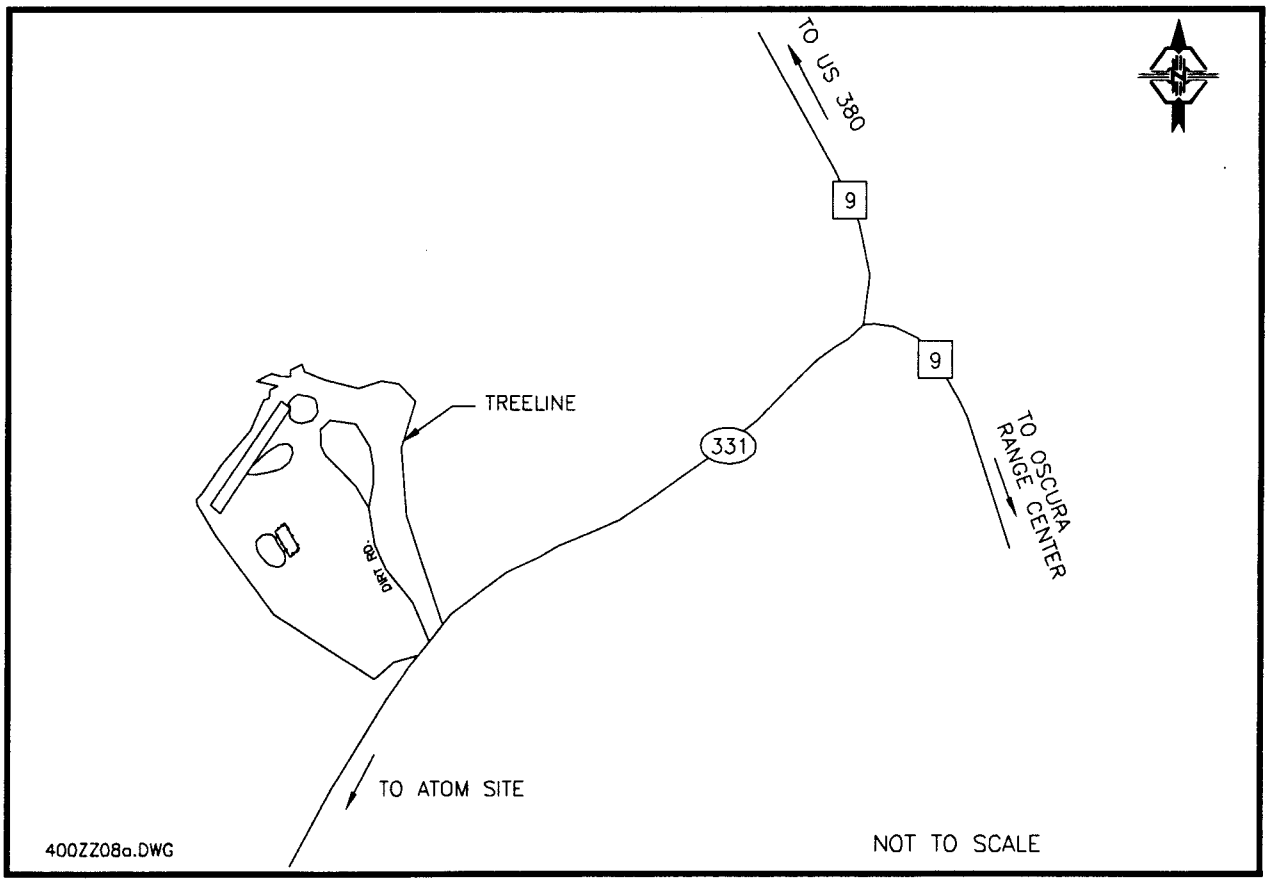


Figure C-3-1. Site Plan of the North Oscura Peak Landfill.

3.2 Project Tasks

- Waste excavation
- Removal of non-hazardous wastes to permitted landfill
- Collect confirmation soil samples
- Backfill excavations with clean soil
- Site Restoration

Personnel Requirements: Up to nine employees

Note: All personnel on this site shall have received a copy of this site-specific Health and Safety Plan and be aware of potential site hazards prior to entering the site.

4.0 SITE CHARACTERIZATION AND ANALYSIS

4.1 General Site Information

The area for this project is located in within a forest clearing at an elevation of approximately 7,750 feet (2,360 m) in the Oscura Mountains. Due to the mountainous setting, wind and temperature conditions at the site can be extreme. The average annual rainfall of 16 inches (40.5 cm) supports a pinon and juniper community. Average relative humidity is 37 percent.

The North Oscura Peak Landfill is located in Section 5.1.4.4, T.7S., R.6E., approximately 1.35 miles (2.2 km) southeast of North Oscura Peak. The landfill site lies approximately 300 yards (275 m) northwest of Range Road 331 in a clearing occupying approximately 2 acres (0.8 hectares). The site was formerly used for the disposal of household, septic, construction and demolition, and commercial waste from the North Oscura Range Camp. The volume of septic waste is estimated at 3 cubic yards (2.3 m^3). The volume of other waste is estimated at 190 cubic yards (145 m^3). Use of the site was discontinued in the late 1980's.

Analyses of soil samples collected as part of waste characterization activities detected tetrachloroethlyene (PCE) and methyl ethyl ketone (MEK). The organic compounds were detected at non-hazardous concentrations in single, separate samples using the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311. Additionally, barium and cadmium were detected in trace amounts.

4.2 Anticipated Hazards

4.2.1 Potential Chemical Hazards

Metals, organics, and other hazardous materials may be encountered in soils during waste excavation and removal activities. Only trace amounts of PCE, MEK, cadmium, and barium have been detected in samples collected to date. However, this plan has been developed to protect workers from higher levels of these and other potential chemical hazards. The following section provides a hazard analysis of toxicity and exposure information for selected metals, ions, and organic compounds, which may be associated with the waste. The list represents chemicals

sometimes found in older solid waste landfills. The hazard analysis utilizes exposure and toxicity information generated by the Occupational Safety and Health Administration, American Conference of Governmental Industrial Hygienists, the National Institute for Occupational Safety and Health, the National Toxicology Program, and International Agency for Research on Cancer and accepted industry data.

4.2.1.1 Arsenic

Route of Entry: Inhalation, Ingestion, Skin Absorption, Skin or Eye Contact
Target Organs: Liver, Kidneys, Skin, Lungs, Lymphatic System
Hazard: Toxic
PEL: 0.01 mg/m^3
IDLH: 100 mg/m^3

Trivalent arsenic compounds are corrosive to the skin, mucous membranes, eyes, nose and mouth. Wrists, genitalia, armpits, chest and neck are sites of dermatitis. Perforation of the nasal septum may occur. Arsenic may produce keratoses, and may cause cancer. Acute inhalation may cause cough, chest pain, dyspnea, headache, weakness.

4.2.1.2 Barium

Route of Entry: Inhalation, Ingestion, Skin or Eye Contact
Target Organs: Heart, Central Nervous System, Skin, Respiratory System, Eyes
Hazard: Toxic
PEL: 0.5 mg/m^3
IDLH: 1,100 mg/m^3

Barium compounds may cause local irritation to the eyes, nose, throat and skin. When ingested, heart rate is slowed and may stop. Other effects include vascular constriction, bladder constriction and increased voluntary muscle tension. Inhalation of dust may produce baritosis, a benign pneumoconiosis.

4.2.1.3 Cadmium

Route of Entry: Inhalation, Ingestion
Target Organs: Respiratory System, Skeleton System, Kidneys, Blood
Hazard: Toxic
PEL: 0.005 mg/m^3
IDLH: 50 mg/m^3

Cadmium is an irritant to the respiratory tract, and is accumulated in the kidneys and liver. Prolonged exposure can cause loss of the sense of smell and a yellow stain on the necks of the teeth. Acute exposure may cause fever, pulmonary edema, and respiratory tract irritation. Chronic exposure may cause pulmonary fibrosis (but this is not conclusive in humans), lower back pain, kidney damage and anemia. Cadmium may cause cancer. Cigarette smoke may add to the body burden of cadmium.

4.2.1.4 Chromium

Route of Entry: Inhalation, Ingestion, Skin or Eye Contact
Target Organs: Respiratory System, Immune System
Hazard: Toxic
PEL: 0.1 mg/m^3 (hexavalent)
IDLH: 30 mg/m^3

Exposure can cause dermatitis to exposed skin and pulmonary sensitization. Acute exposure may cause coughing, headache, dyspnea, fever, weight loss. Chronic exposure may cause ulceration and perforation of the nasal septum, dermatitis, ulceration of the skin, cutaneous discoloration, and hepatic damage. Chromium can cause cancer.

4.2.1.5 Lead

Route of Entry: Inhalation, Ingestion, Skin or Eye Contact
Target Organs: Gastrointestinal Tract, Central Nervous System, Kidneys, Blood, Gingival Tissue
Hazard: Toxic
PEL: 0.05 mg/m^3
IDLH: 700 mg/m^3

Inhalation or ingestion may cause headache, weakness, irritability, aching muscles, constipation, anorexia, abdominal pains, anemia, high blood pressure, fine tremors, and decreased hand grip. Exposure over an extended period causes wrist drop, convulsions, coma, kidney damage, infertility in both sexes, fetal damage and anemia. Lead is considered a cumulative toxin because the half-life of lead in the body is around 27 years.

4.2.1.6 Mercury

Route of Entry: Inhalation, Skin Absorption
Target Organs: Skin, Respiratory System, Central Nervous System, Kidneys, Eyes
Hazard: Toxic
PEL: 0.05 mg/m^3
IDLH: 28 mg/m^3

Mercury is a primary irritant to the skin and nervous membrane and is a skin sensitizer. Acute exposure can produce intestinal pneumonitis and bronchitis. Prolonged exposure may produce weakness, loss of appetite, loss of weight, diarrhea, metallic taste in the mouth, black line on the gums, loss of memory, eyelid and finger tremors, and hallucinations. Chronic exposure produces irritability, muscular tremors, and gingivitis. Long term exposure can permanently damage the brain, kidneys, and developing fetus if maternal exposure occurs.

4.2.1.7 Selenium

Route of Entry: Inhalation, Ingestion, Skin Absorption, Skin or Eye Contact
Target Organs: Upper Respiratory System, Eyes, Skin, Liver, Kidneys, Blood

Hazard:	Toxic
PEL:	0.2 mg/m^3
STEL:	None
IDLH:	Not reported

Some selenium compounds (selenium dioxide and selenium oxychloride) can cause skin damage. They are strong irritants to the upper respiratory tract and eyes, may cause irritation of the mucous membrane of the stomach. Exposure may cause a pink discoloration of the eyelids and palpebral conjunctivitis. The first sign of selenium absorption is a garlic odor of the breath. Other systemic effects include pallor, lassitude, irritability, indigestion and giddiness.

4.2.1.8 Silver

Route of Entry:	Inhalation, Ingestion, Skin or Eye Contact
Target Organs:	Nasal Septum, Skin, Eyes
Hazard:	Toxic
PEL:	0.01 mg/m^3
IDLH:	No evidence

The local effect from metallic silver can cause skin discoloration. Silver nitrate dust and solutions are highly corrosive to the skin, eyes, and intestinal tract. All forms of silver are cumulative once they enter body tissue, and very little is excreted. The face, forehead, neck, hands and forearms develop a dark, slate-gray color, uniform in distribution and varying in depth depending on the degree of exposure. The dust may be deposited in the lungs and may be regarded as a form of pneumoconiosis, although it carries no hazard of fibrosis.

4.2.1.9 Tetrachloroethylene (PCE)

Route of Entry:	Inhalation, skin absorption, ingestion, and/or eye contact
Target Organs:	Eyes, skin, respiratory system, liver, kidneys, central nervous system
Hazard:	Carcinogen
PEL:	25 parts per million [170 mg/m^3]
IDLH:	150 parts per million

Moderate exposures to PCE can cause symptoms similar to alcohol inebriation. Higher concentrations can have a narcotic effect. Moderately toxic to humans by inhalation with the following effects: local anesthetic, conjunctiva irrigation, general anesthesia, hallucinations, distorted perceptions, coma, and pulmonary changes.

4.2.1.10 Methyl ethyl ketone (MEK)

Route of Entry:	Inhalation, skin absorption, ingestion, and/or eye contact
Target Organs:	Eyes, skin, respiratory system, central nervous system
Hazard:	Moderately toxic
PEL:	200 ppm
IDLH:	3000 ppm

Also known as 2-butanone. Colorless, flammable liquid with an acetone-like odor. In the breathing space MEK causes irritation of the eyes, skin, and nose. Ingestion can cause headache, dizziness, vomiting, and dermatitis.

4.2.2 Physical Hazards

Excavation activities include possible physical hazards which could result in cuts or punctures from sharp objects, falls from uneven terrain, steep grades or slippery surfaces, sprains and strains from lifting activities, noise, and detonation of unexploded ordnance. Personnel should be aware that as the level of personal protective equipment increases, dexterity and visibility may be impacted and performing some tasks may be more difficult.

Excavation and other heavy equipment operations present inherent safety hazards. Employee experience in the use of such equipment and awareness to potential hazards will reduce risk. All equipment operations must be in accordance with guidelines set forth in applicable OSHA regulations. The primary hazards to be encountered during the landfill waste removal project will be those associated with trenching and heavy equipment operation. Trenches will be marked with caution tape to prevent accidental entry. Workers will not enter excavations or stand near the edges unless the excavations have been sloped, benched, or shored in accordance with OSHA regulations. All confirmation samples will be collected from the decontaminated excavator bucket unless the OSHA requirements are met.

The Accident Prevention Plan provided in Section 5.0 contains specific practices used to reduce or eliminate anticipated hazards which may be present and encountered during the site operations. Below each indicated hazard is a list of operations and/or tasks which may involve the indicated hazard. Specific actions that will be taken to control the respective hazards are indicated by an "X". These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment.

4.2.3 Unexploded Ordnance

There is the potential that unexploded ordnance (UXO) or explosive materials may be present at the work areas. Prior to beginning any intrusive work at each site, White Sands Missile Range EOD personnel will be contacted to survey the area to evaluate the presence or absence of potential subsurface UXOs. All field personnel are required to review the UXO Orientation video and sign the orientation sheet prior to the start of field activities. Additionally, all field personnel will receive a UXO Range Hazards Card that must be kept on hand at all times. Finally, all field personnel will be verbally briefed daily regarding procedures to follow if ordnance is discovered.

4.2.4 Noise

Noise may be generated during site activities. Hearing protection, either ear muffs or ear plugs are mandatory in areas where the noise level exceeds 85 dBA steady-state or 120 dBA impulse.

4.3 Personal Protection For Site Work

All personnel entering the area of activity will be required to read and verify compliance with the provisions of this Site Specific Health and Safety Plan. The level of protection expected for this site work will be modified Level D; disposable coverall (Tyvek), gloves, hard-hat, steel-toed boots, and safety glasses. Visitors are expected to comply with relevant OSHA regulations and provide their own protective equipment. Continuous monitoring will be conducted to verify the safety of all site personnel.

4.4 Emergency Contact Numbers

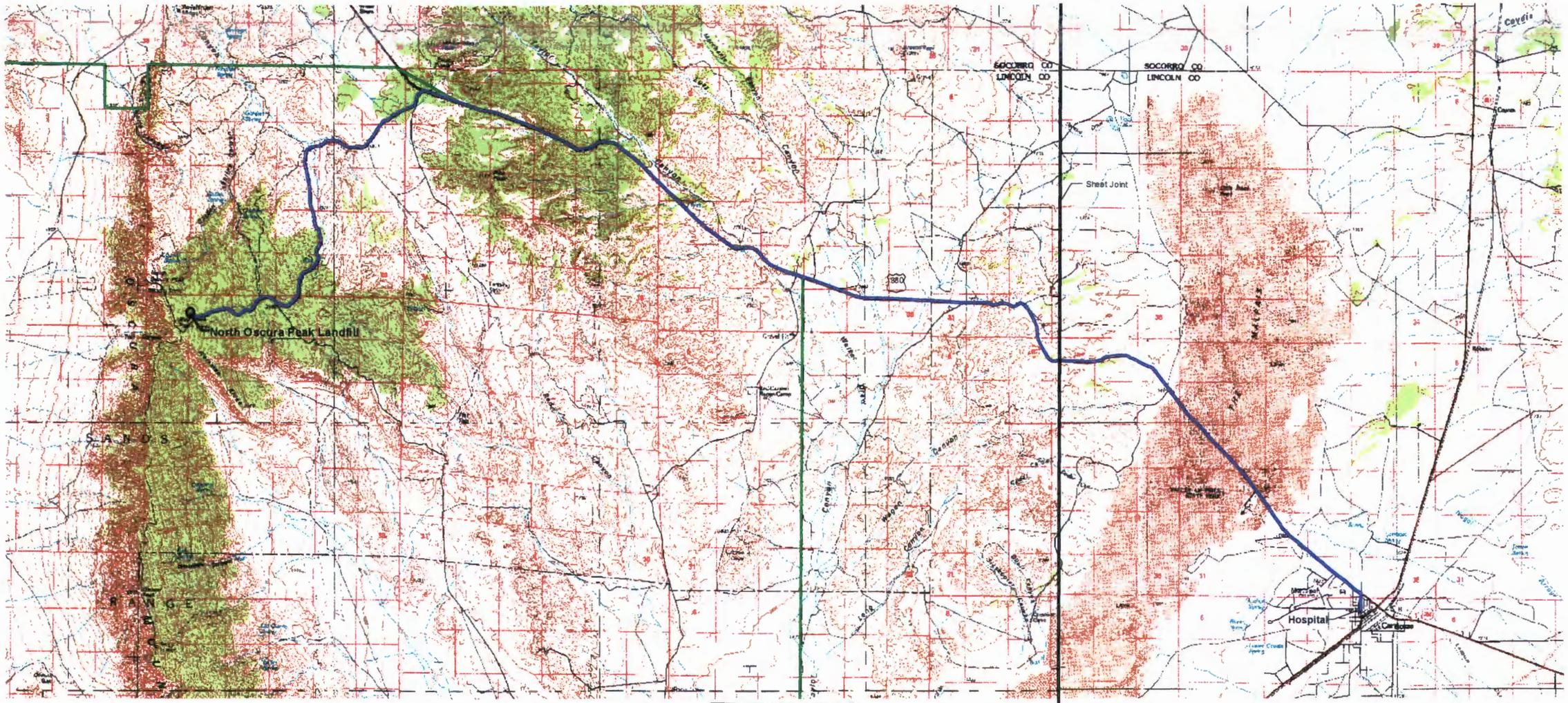
Table C-4-1 provides name and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the on site senior responsible individual and notify the appropriate emergency organization. In the event of a fire or spill, the same individual will notify the White Sands Missile Range Fire Department followed by the Emergency Operations Center. In the case of a spill of hazardous materials, the White Sands Missile Range representative will be responsible for notification of the appropriate local, state, and federal agencies.

Table C-4-1. Emergency Contact Telephone Numbers.

Organization	Contact	Telephone
Fire Department		(505) 678-1234
Carrizozo Health Center		(505) 648-2317
Medevac Helicopter		(505) 678-1234
Ambulance Service		(505) 678-1234
Police		(505) 678-1234
Emergency Operations Center After Hours - Staff Duty Officer		(505) 678-3803 (505) 678-2031
National Range Directorate of Environment and Safety - Environmental Services Division		(505) 678-2224
MEVATEC Office		(505) 678-0263
MEVATEC Safety and Health Representative	Joel Giblin	(505) 678-0910
Environmental Services Group Project Manager	Nicholas Barrón	(505) 678-7907 (505) 382-7655 (H)

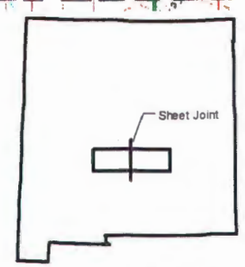
4.5 Route To Emergency Medical Treatment

Medical emergencies that occur at North Oscura Peak can be treated at the Carrizozo Health Center. The town of Carrizozo is located 27 miles (43 km) east on US Hwy. 380 from the intersection with Range Road 9 (Figure C-4-1). The Carrizozo Health Center is located at the intersection of E Avenue and 8th Street. Traveling east on US Hwy. 380 from White Sands Missile Range, turn right onto E Avenue 1/10 mile (160 m) before Mile-marker 65. Proceeding south on E Avenue from US Hwy. 380, 8th Street is 3 blocks south. The Carrizozo Health Center is on the northwest corner of E Avenue and 8th Street (Figure C-4-1, next page).



White Sands Missile Range Boundary
Emergency Route

2 0 2 4 6 8 Kilometers



Quadrangle Location

Oscura Mountains 1982 New Mexico 30x60 Minute Quadrangle Contour Interval 20 meters	Carizozo 1982 New Mexico 30x60 Minute Quadrangle Contour Interval 50 meters

Figure C-4-1 also shows the location of the helipad to be used in the case of a more serious injury requiring Medevac. The helipad is located approximately 0.5 mile (0.3 km) southwest of the North Oscura Peak landfill site. **Route to helipad:** leaving the landfill site south on the access road, make a right (west) onto Range Road 331. Entrance to the helipad will be on the left-hand side of Range Road 331 at the sharp right-hand curve, nearly 0.5 mile (0.3 km) southwest of the landfill site.

5.0 ACCIDENT PREVENTION PLAN

Prior to beginning work, the Site Safety and Health Officer will conduct a site safety meeting to alert workers to potential hazards at the work site. In addition to attending the site safety meeting, each worker must read this Health and Safety Plan before working at the site. The Site Health and Safety Officer must conduct a daily safety briefing each morning at the start of work. The maps, directions, and phone numbers for medical emergency response will be verified prior to starting work at the site. The contractor will be required to designate its own Site Safety and Health Officer. That person will be responsible for conspicuously posting the emergency telephone numbers, route maps, and directions in the contractor's vehicles.

Below are some anticipated potential hazards that workers must avoid at the site. Additional hazards discovered on site should be identified and minimized or eliminated at the daily safety briefing.

Hazards Associated with Potential Exposure to Hazardous Chemicals or Materials:

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Minimize free liquids to reduce airborne vapor concentrations.
____ Tops shall be securely attached to chemical containers when not in use to minimize airborne vapor concentrations.
_X_ Utilize wet methods to control airborne dust emissions.
_X_ Delineate and control access into the Exclusion Zone(s) and Contamination Reduction Zone(s).
____ Utilize Chemical Protective Clothing and Equipment
____ Decontaminate or remove outer protective clothing in the Contamination Reduction Zone, prior to entering the Support Zone from the Exclusion Zone.
_X_ Decontaminate all equipment leaving the Exclusion Zone in the Contamination Reduction Zone, prior to entering the Support Zone.
_X_ Wash hands and face prior to drinking/smoking breaks.
____ Personnel working in the Exclusion Zone will be required to shower out at the end of the workday, prior to leaving the work site to go home.

Fire Hazards Associated with Handling or Working near Flammable or Combustible Materials:

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Monitor work environment as necessary with a combustible gas meter to determine the percent LEL concentration of combustible gases and vapors.
_X_ Should concentrations exceed 10 percent LEL in a work area, operations within the area will cease immediately, and all potential sources of ignition removed from the area.
____ All "Hot Work" performed in hazardous locations shall require the issuance of a Hot Work Permit issued by White Sands Missile Range safety office. Combustible or flammable materials shall be purged of combustible gasses and vapors (less than 10 percent LEL) prior to being cut.
_X_ Smoking shall not be permitted on-site, except in designated areas.
_X_ All containers of flammable or combustible materials must be properly labeled to indicate their contents and appropriate fire hazard.

Slip, Trip, Fall Hazards:

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Workers shall ensure that walking/working surfaces are kept free of potential slip, trip, fall hazards.
_X_ Whenever possible, avoid routing cords, ropes, hoses, etc. across aisles and walking paths.
_X_ Flag and/or cover inconspicuous holes to protect against accidental trips and falls.
_X_ Delineate and/or guard open excavations to protect against falls.

Hazards Associated with Elevated Work (i.e., All Work Performed Greater Than Four Feet Above the Ground or Adjacent Work Area)

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

____ Ladders will be ascended and descended facing the ladder with both hands free.
_X_ Tools, supplies, and equipment will be raised and lowered with a rope, and not carried while traversing a ladder.
_X_ All work performed above the ground shall be from a secure platform.
____ If work is being performed from a location more than four feet above the floor or ground, workers will be protected from falling by Class-three (Parachute-type) body harnesses and lanyard, or by a standard guardrail.
____ Scaffolds will be ascended and descended by a secure ladder.
____ All scaffolds will be inspected at the beginning of such work shift.

Hazards Associated with Operations of Heavy Equipment or Motor Vehicles

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Personnel operating heavy equipment or vehicles shall maintain a constant awareness of personnel and stationary objects in the areas adjacent to its operation.
_X_ Spotters shall be utilized to assist operators in manipulating vehicles and equipment into tight or confined areas.
_X_ Equipment operators shall inspect their equipment prior to and during each use, to ensure it is working properly, and that all safety devices are functioning as they should.
_X_ Ensure operators are adequately trained and/or licensed as necessary to operate their equipment or motor vehicles.
_X_ All moving heavy equipment must have properly functioning backup alarms.
_X_ Motor vehicle operators are responsible for conducting a pre-trip vehicle safety inspection prior to its use. No motor vehicle with any known mechanical defect that endangers the safety of the driver or passengers shall be used.

Hazards Associated with Working in Hot Environments

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be taken to control heat stress:

_X_ Drink plenty of fluids (preferably Gatorade or equiv) before, during, and after each activity
_X_ Acclimate to site conditions by slowly increasing workloads
_X_ Use cooling devices to aid natural body ventilation
____ Conduct field activities in early morning or evening
____ Use shelter to protect against heat stress
____ Rotate shifts of workers

Hazards Associated with Working in Cold Environments

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Adequate protective clothing shall be worn at all times
_X_ Provide shelter from wind and cold temperatures
____ Do not remove chemical-protective equipment unless sheltered from wind and cold temperatures.
_X_ Field activities shall be curtailed if equivalent chill temperature is below zero degrees F.

Hazards Associated with Insects, Snakes or Wild Animals

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Ensure that personnel are aware of such hazards, and encourage them to be constantly on the lookout.
_X_ Maintain a supply of insecticide sprays to be used as necessary to kill flying or crawling insects.
_X_ Utilize heavy equipment to clear areas where high grass and brush have grown, prior to accessing these areas on foot.

Hazards Associated with Falling Objects

Operations and/or Tasks Associated with the Above-Referenced Hazards

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Require that hard hats be worn at all times by on-site personnel except in break areas.
_X_ Whenever possible, personnel will avoid walking or working beneath areas where overhead work is being performed.
____ All overhead work platforms will be equipped with standard toe board to reduce the potential of objects falling from them.

Hazards Associated with Excavating and/or Trenching

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards

_X_ Excavating equipment shall possess back-up alarms
_X_ Operator shall be trained and experienced in the use of equipment
_X_ Excavation or trench shall be barricaded to avoid accidental entry

Hazards Associated with Working Over or Near Water

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- None

Actions to be Taken to Control Hazards:

____ Employees working over or near water, where the danger of drowning exists, shall be provided with, and required to wear a US Coast Guard-Approved life jacket or buoyant work vest.
____ Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations.
____ At least one life saving skiff shall be available where workers working over or adjacent to water.

Hazards Associated with Poison Ivy, Oak, Sumac, etc.

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ If available, heavy equipment should be used to clear heavily weeded work areas prior to accessing on foot.
_X_ Train on-site personnel in identifying these plants.
_X_ Where such hazards exist, personnel working in the area shall wear adequate protective clothing to avoid potential contacts with these plants, especially those personnel who are known to be allergic.

Hazards Associated with Electricity

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Backfill excavations and site grading

_X_ Ground Fault Circuit Interrupters (GFCIs) shall be used whenever possible, to protect workers from shock or electrocution while working with electrical equipment.
_X_ Repair or remove from service all damaged electric cords.
_X_ Route extension cords in a manner and/or location which would prevent potential damage to the cord.
_X_ All electrically powered hand tools shall be of the grounded, or double-insulated type.

Hazards Associated with Confined Space Entry

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- None

____ All entries into confined spaces shall be in accordance with ITC Pro 9532.B -"Confined Spaces Industrial," and Chapter 4 of this site health and safety plan.
____ Explosion proof lighting shall be utilized as necessary to illuminate confined spaces.
____ Confined space entry shall be avoided whenever possible.

Hazards Associated with Materials Handling

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Mechanical equipment (i.e., dolly, hoist, fork lift) shall be utilized whenever possible to minimize manual labor.
_X_ Size up the job before lifting and get help if needed. The maximum weight to be manually lifted by MEVATEC and/or subcontractor personnel is 60 pounds (27.2 kilograms).
_X_ Personnel will be reminded during daily safety meeting to utilize proper lifting methods to avoid muscle or back strains.

Hazards Associated with Limited Communication Due to Location, Distance or Noise

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ Where direct verbal communication is limited, portable 2-way radios, and/or hand signals shall be utilized to facilitate communication among workers.
_X_ Where work sites are in remote locations without access to nearby existing telephones, a cellular telephone (if service is available) or two-way radios shall be maintained on-site for use in the event of an emergency.

Hazards Associated with Poor or Inadequate Lighting

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- None - All work activities will be conducted during daylight hours

____ If practical and feasible, all outdoor field work shall be performed during daylight hours.
____ In areas where natural or existing lighting is not sufficient to perform the required work safely, auxiliary lighting shall be installed.
____ Only explosion proof auxiliary lighting is permitted for confined spaces.

Hazards Associated with Noise

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

_X_ Appropriate hearing protection shall be provided to and worn by personnel working in areas where noise levels are known or suspected to exceed 85 dBA.
_X_ Inspect noise control devices (i.e., mufflers) on equipment to ensure they are working properly.
_X_ Periodically inspect pressurized systems (i.e., compressed air or steam) for leaks which create potential noise hazards, and if any are found, repair as soon as possible.
_X_ Whenever possible, start noise equipment in a remote area to reduce the potential for personnel exposure to noise, and to facilitate verbal communication among personnel.

Hazards Associated with Underground or Overhead Utilities

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

_X_ White Sands Missile Range National Range Support shall be contacted to establish the location of underground utilities and communication lines through the area of anticipated excavation.
_X_ When excavating with heavy equipment near underground utilities, personnel on the ground will assist in probing to find the exact location of lines, and will use hand shovels to carefully remove the soil immediately adjacent to the lines.
_X_ When operating machinery near overhead electrical distribution and transmission lines, refer to 29 CFR 1926.550 (a)(15)(I)-(vii) for minimum clearances, and safe work practices.

Hazards Associated with Unauthorized Personnel On-Site and in Controlled Work Zones

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading
- Actions to be Taken to Control Hazards:

_X_ Install temporary fencing, traffic cones, or other appropriate barriers to delineate the work site, and to deter unauthorized personnel from entering the work site. If necessary, post security guards at each point of access into the work site.
____ Maintain a visitors sign in/out log.
____ Post warning signs "Authorized Personnel Only" at all entrances to the work site.
____ Utilize badge identification system.
_X_ Delineate controlled work zones with temporary fencing and/or caution tape.
____ Post hazard warning sign at the entrances into controlled work zones.
____ Utilize security guards to provide site security during off hours.

Hazards Associated with Traffic Through or Near the Work Site

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

Actions to be Taken to Control Hazards:

____ Personnel working in areas where traffic hazards exist shall wear brightly colored orange traffic vest.
____ Flagmen will be utilized as necessary to direct traffic through or around the work site.
____ Barricades and traffic cones and signs shall be utilized as necessary to aid in directing traffic through or around the work site.
_X_ Warning signs will be posted controlling speed on arterial road(s) accessing worksite.

Hazards Associated with Unexploded Ordnance

Operations and/or Tasks Associated with the Above-Referenced Hazards:

- SWMU excavation and removal
- Waste characterization and vapor screening
- Collection of soil confirmation samples from excavation
- Backfill excavations and site grading

_X_ All field personnel will review the UXO Orientation Video prior to field activities.
_X_ All field personnel will be required to sign the UXO Orientation sheet following review of orientation video.
_X_ All field personnel will receive a UXO Range Hazards Card and will be required to keep the card on-hand at all times.
_X_ If UXO is identified, all field personnel will be verbally notified to follow directions listed on UXO Range Hazards Card.

SITE HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT

Each contractor on site is responsible for its own OSHA compliance and the health and safety of its workers. MEVATEC Corporation accepts no such responsibility for the contractor. MEVATEC does require that each person entering the jobsite read and be briefed in the requirements of this Health and Safety Plan. Each person shall sign below to acknowledge understanding of the plan.

NAME	SIGNATURE	DATE

APPENDIX D

Site Restoration Plan

TO VIEW THE MAP AND/OR MAPS WITH THIS DOCUMENT, PLEASE CALL THE HAZARDOUS WASTE BUREAU AT 505-476-6000 TO MAKE AN APPOINTMENT