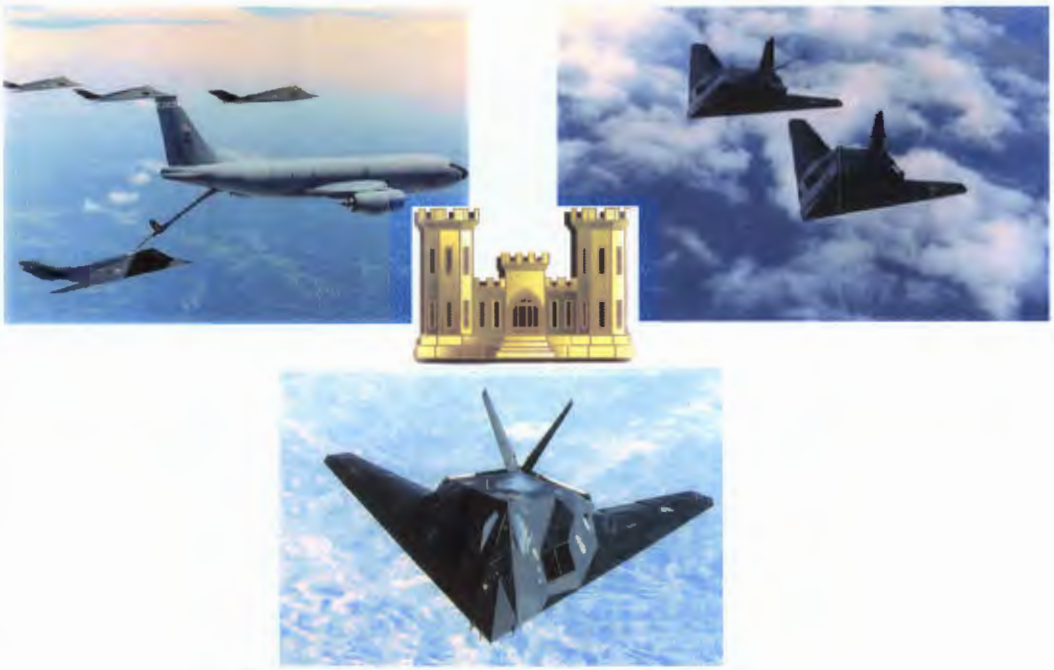
# ADDITIONAL INVESTIGATION REQUIREMENTS WORK PLAN ERP SITE SD-08 (SWMU 82 – BUILDING 131 WASHRACK)



**Holloman Air Force Base**
**New Mexico**

**May 2005**

**Contract No.: DACA45-02-D-0023**
**Task Order Nos.: 2 & 7**
**Bhate Project No.: 9040002.01.04 & 9050043.01.04**

**Headquarters, Air Combat Command**
**Langley Air Force Base, Virginia**

**49 CES/CEV**
**Holloman Air Force Base, New Mexico**

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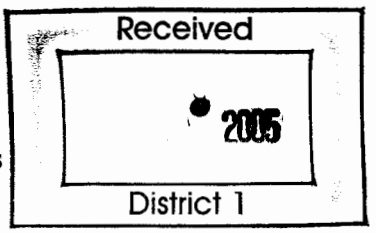


Prepared For

**U.S. Army Corp of Engineers**

**Omaha, Nebraska**

**CONTRACT NO. DACA45-03-D-0023**
**TASK ORDER NOs. 2 & 7**

Prepared By

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Bhate Project Numbers: 9040002.01.04 & 9050043.01.04

**May 2005**

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AAF | Army Air Field |
| AF | Air Force |
| ANSI | American National Standards Institute |
| Bhate | Bhate Environmental Associates, Inc. |
| CoC | Chain-of Custody |
| CRZ | Contaminant reduction zone |
| CZ | Construction zone |
| DPT | Direct push technology |
| ERP | Environmental Restoration Program |
| ERPIMS | Environmental Restoration Program Information Management System |
| EZ | Exclusion zone |
| °F | Degrees Fahrenheit |
| FS/CMS | Feasibility Study/Corrective Measures Study |
| ft bgs | Feet below ground surface |
| $ft^2$ | Square feet |
| GPS | Global Positioning System |
| HAFB | Holloman Air Force Base |
| HASP | Health and Safety Plan |
| HAS | Hollow stem auger |
| IDW | Investigation Derived Waste |
| IRP | Installation Restoration Program |
| LTM | Long term monitoring |
| mg/L | Milligrams per liter |
| MS | Matrix spike |
| MSD | Matrix spike duplicate |
| NMAC | New Mexico Administrative Code |
| NMED | New Mexico Environment Department |
| NMWQCC | New Mexico Water Quality Control Commission |
| OSHA | Occupational Safety and Health Administration |
| OVA | Organic vapor analyzer |
| O/WS | Oil/water separator |
| POL | Petroleum, Oil, and Lubricant |
| PPE | Personal protective equipment |
| QA/QC | Quality Assurance/Quality Control |
| QAPP | Quality Assurance Project Plan |
| RCRA | Resource Conservation and Recovery Act |
| SOPs | Standard Operating Procedures |
| SSL | Soil screening level |
| SVOC | Semi-Volatile Organic Compounds |

# ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| SWMU | Sold Waste Management Unit |
| TDS | Total dissolved solids |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| VOC | Volatile Organic Compounds |
| WRCC | Western Regional Climate Center |
| WSMR | White Sands Missile Range |

# 1 INTRODUCTION

Bhate Environmental Associates, Inc., (Bhate) has been retained by the U.S. Army Corps of Engineers (USACE), under contract DACA45-03-D-0023, Task Orders No. 2 and 7, to prepare an Additional Investigation Work Plan for Environmental Restoration Program (ERP) Site SD-08 (Solid Waste Management Unit [SWMU] 82 - Building 131 Washrack) at Holloman Air Force Base (HAFB), New Mexico. The objectives of this Work Plan are outlined in correspondence dated February 9, 2005, from the New Mexico Environment Department (NMED) to Holloman AFB (see Attachment A) and are summarized as follows:

1. The location of the SWMU 82 drain field must be positively identified and additional characterization must be performed.

2. Monitoring wells must be installed in the former drain field and at or down gradient of the wash rack.

3. Groundwater shall be sampled for Volatile Organic Compounds (VOCs), Semi-Volatile Organic Compounds (SVOCs), metals, and organochlorine pesticides

4. Samples from these new wells should be collected on a quarterly or semi-annual basis over a two-year period.

This document is to provide a Work Plan that will serve as the primary working document for the site assessment and investigation activities at site SD-08, Holloman AFB and provides the relevant site specific information as it pertains to the requirements as outlined in aforementioned correspondence. The primary objective of this Work Plan is to review available information and to collect soil and groundwater data to fulfill the requirements identified by NMED. The ultimate objective is to achieve approval for site closure from NMED.

This document has been prepared to provide relevant information on the geologic, hydrologic, and other environmental conditions for HAFB and at the site. Information is provided for the entire Base and its surrounding environ as well as SD-08, specifically. Likewise, the procedures encompassing the assessment/investigation, sampling, and waste management are presented.

## 1.1 Base and Site Description

### 1.1.1 HAFB

HAFB is located in southeastern New Mexico in Otero County, New Mexico, approximately 100 miles north-northeast of El Paso, Texas and six miles west of Alamogordo, New Mexico (Figure 1-1). HAFB was first established in 1942 as Alamogordo Army Air Field (AAF). From 1942

through 1945, Alamogordo AAF served as the training grounds for over 20 different flight groups, flying primarily B-17s, B-24s, and B-29s. After World War II, most operations had ceased at the base. In 1947, Air Material Command announced the air field would be its primary site for the testing and development of un-manned aircraft, guided missiles, and other research programs. On January 13, 1948, the Alamogordo installation was renamed Holloman Air Force Base, in honor of the late Col. George V. Holloman; a pioneer in guided missile research. In 1968, the 49th Tactical Fighter Wing arrived at HAFB and has remained since. Today, HAFB also serves as the training center for the German Air Force's Tactical Training Center.

### 1.1.2 Site SD-08 Description

Site SD-08 is located in the southeastern corner of the refuse collection yard near Building 131. The refuse collection yard is located southwest of the Petroleum, Oil, and Lubricant (POL) Storage Area and east of the Main Base area. The original yard occupied approximately one-half acre and was surrounded by a chain-link fence. The yard was unpaved with sparse vegetation only along the fence. In 1995 the entire yard area was covered with an asphalt cap as part of the remedial measures performed at the site. The topography of the site is generally flat. Figure 1-2 shows the location of SD-08 at Holloman AFB.

The washrack was installed in 1942 and consisted of a rectangular concrete pad (approximately 1,000 square feet [$ft^2$]). Refuse collection trucks were washed with soap and water at the washrack. Base records indicate that pesticides were routinely sprayed inside the trucks during the 1970s for fly control; however, this practice ceased in 1982. Drains located at the north end of the washrack connected to a sewer line that carried wastewater to an oil/water separator (O/WS) near the northwest corner of the washrack. According to site personnel, it was common for the sewer line to clog, causing the sump and O/WS to overflow onto the surrounding soil. The washrack contained cracks in the concrete and was replaced in 1992 with a new washrack in the same location. The OW/S was abandoned in place.

### 1.1.3 Site SD-08 Summary of Previous Investigations

The site was identified in the Installation Restoration Program (IRP) Phase I Records Search (CH2M Hill, 1983). As a result, the site was investigated under Phase I of the IRP as Site SD-08 in 1991. The ensuing *Remedial Investigation Report, Investigation, Study and Recommendation for 29 Waste Sites* (Radian, 1992) revealed organochlorine pesticides and metals in the shallow soils at SD-08 and organochlorine pesticides in the groundwater. The associated risk evaluation concluded that pesticide concentrations in soil pose an occupational health risk. To mitigate this risk, the site entered into the Feasibility Study/Corrective Measures Study (FS/CMS) process, which established health based cleanup criteria, estimated an area exceeding these cleanup criteria, and recommended the emplacement of an impermeable cap. The Phase II RFI (Foster Wheeler/Radian, 1995) delineated the extent of organochlorine pesticide contamination in groundwater. In 1996, SD-08 was recommended for long-term groundwater monitoring to ensure that the remedial action was preventing further degradation of groundwater. For

reference purposes, Section 4.1 of the *Draft Final Phase II RCRA Facility Investigation Report, Table 1 Solid Waste Management Units* (Foster Wheeler/Radian, 1995) is presented in Appendix A.

## 1.2 Physiography

HAFB is located within the Sacramento Mountains Physiographic Province on the western edge of the Sacramento Mountains (Figure 1-3). The region is characterized by high tablelands with rolling summit plains; cuesta-formed mountains dipping eastward and of west-facing escarpments with the wide bracketed basin forming the basin and range complex. HAFB is approximately 59,600 acres in area, and is located at a mean elevation of 4,093 feet above sea level. The Base is located in the Tularosa Sub-basin which is part of the Central Closed Basins. The San Andreas Mountains bound the basin to the west (about 30 miles) with the Sacramento Mountains approximately 10 miles to the east. At its widest, the basin is about 60 miles east to west and stretches approximately 150 miles north to south.

Site SD-08 is primarily comprised of gently crowned asphalt cap that covers the entire site. The site is located northeast of the main Base area on Arkansas Avenue.

## 1.3 Surface Water

The Tularosa Basin contains all of the surface flow in its boundaries. The nearest inflow of surface waters to the Base comes from the Lost River, located in the north-central region of the Base. The upper reaches of the Three Rivers and the Sacramento River are perennial in the basin. HAFB is dissected by several southwest trending arroyos that control the surface drainage. Hay Draw arroyo is located in the far north. Malone and Rita's Draw, which drain into the Lost River, and Dillard Draw arroyos are located along the eastern perimeter of the Base. Approximately 10,000 years ago, indications are of a much wetter climate. The present day Lake Otero encompassed a much larger area, possibly upwards of several hundred square miles. Its remains are the Alkali Flat and Lake Lucero. Lake Lucero is a temporary feature of merely a few inches in depth during the rainy season.

Ancient lakes and streams deposited water bearing deposits over the older bedrock basement material. Fractures, cracks, and fissures in the Permian and Pennsylvanian bedrock yield small quantities of relatively good quality water in the deeper peripheral. Potable water is only found from a handful of wells near the edges of the basin with more saline water towards the center. Two of the principal sources of potable water are a long narrow area on the upslope sides of Tularosa and Alamogordo with the other in the far southwestern part of the basin. Alamogordo's water, as well as the Base's, is supplied from Lake Bonito (which is in the Pecos River Basin).

Within the boundaries of SD-08 and the surrounding area, surface flow is to the southeast towards Dillard Draw.

## 1.4 Groundwater

The predominance of the groundwater occurs as an unconfined aquifer in the unconsolidated deposits of the central basin, with the primary source of recharge as rainfall percolation and minor amounts of stream run-off along the western edge of the Sacramento Mountains. Surface water/rainfall migrates downward into the alluvial sediments at the edge of the shallow aquifer near the ranges, and flows downgradient through progressively finer-grained sediments towards the central basin. Because the Tularosa Basin is a closed system, water that enters the area only leaves either through evaporation or percolation. This elevated amount of percolation results in a fairly high water table. Beneath HAFB, groundwater ranges from 5 to 50 feet. Flow for the Base is generally towards the southwest with localized influences from the variations in the topography of the Base. Near the arroyos, groundwater flows directly toward the surface drainage feature.

Previous investigations at SD-08 (presented in Appendix A) concluded groundwater flow was east and northeast. However, recent survey and water level data from SD-08 and other sites in the vicinity (LF-10) would suggest a southeastern flow direction toward Dillard Draw (Figure 1-4). The difference in groundwater flow directions is attributed to errors in the original physical survey of the initial monitoring wells that were compounded as surveyors used incorrect well casing elevations as monuments.

Previous analyses indicate total dissolved solids (TDS) of greater than 10,000 milligrams per liter (mg/L) in groundwater beneath Holloman. This exceeds the New Mexico Water Quality Control Commission (NMWQCC) limit for potable water and thus, the groundwater beneath HAFB has been designated as unfit for human consumption. Likewise, United States Environmental Protection Agency (USEPA) guidelines have identified the groundwater as a Class IIIB water source, characterized by TDS concentrations exceeding 10,000 mg/L. Long term monitoring (LTM) data for SD-08 suggest a TDS concentration that ranges from 1,900 to 59,200 mg/L (Tetra Tech FW, January 2004).

## 1.5 Climate

As a whole, New Mexico has a mild, arid to semi-arid continental climate characterized by light precipitation totals, abundant sunshine, relatively low humidity and relatively large annual and diurnal temperature range (Western Regional Climate Center [WRCC], 2003). The climate of the Central Closed Basins varies with elevation. The Base is found in the low areas and is characterized by warm temperatures and dry air. Daytime temperatures often exceed 100 degrees Fahrenheit (°F) in the summer months and middle 50s in the winter. A preponderance of clear skies and relatively low humidity permits rapid night time cooling resulting in average diurnal temperature ranges of 25 to 35°F. Potential evapotranspiration, at 67 inches per year,

significantly exceeds annual precipitation, usually less than 10 inches (Foster Wheeler/Radian, 1995). The very low rainfall amounts resulting in the arid conditions, which with the topographically induced wind patterns combining with the sparse vegetation, tend to cause localized "dust devils". Much of the precipitation falls during the mid-summer monsoonal period (July and August) as brief, yet frequent, intense thunderstorms culminating to 30 – 40% of the annual total rainfall.

## 1.6 Geology

The sedimentary rocks which make up the adjacent mountain ranges are between 500 and 250 million years old (White Sands Missile Range [WSMR], 2003). During the period when the area was submerged under the shallow intra-continental sea, the layers of limestone, shale, gypsum, and sandstone were deposited. In time, these layers were pushed upward through various tectonic forces forming a large bulge on the surface. Approximately 10 million years ago the center began to subside resulting in a vertical drop of thousands of feet leaving the edges still standing (the present day Sacramento and San Andreas mountain ranges). In the millions of years following, rainfall, snowmelt, and wind eroded the mountain sediments depositing them in the valley (i.e. Tularosa Basin). Water carrying eroded gypsum, gravel, and other matter continues to flow into the basin.

As the Tularosa Basin is a bolson, which is a basin with no surface drainage outlet, sediments carried by surface water into a closed basin are bolson deposits. The overlying alluvium generally consists of unconsolidated gravels, sands, and clays. Soils in the basin are derived from the adjacent ranges as erosional deposits of limestone, dolomite, and gypsum. A fining sequence from the ranges towards the basin's center characterizes the area with the near surface soils as alluvial, eolian, and lacustrine deposits. The alluvial fan deposits are laterally discontinuous units of interbedded sand, silt, and clay while the eolian deposits consist primarily of gypsum sands. The eolian and alluvial deposits are usually indistinguishable due to the reworking of the alluvial sediment by eolian processes. The playa, or lacustrine deposits, consist of clay containing gypsum and are contiguous with the alluvial fan and eolian deposits throughout HAFB. There has been the identification of stiff caliche layers, varying in thickness, at different areas of the Base. At the site, soils are predominantly silty sands and interbedded clays.

Based on drilling logs from previous investigations, the site geology is comprised primarily of silty and clayey sands. A discontinuous layer of poorly graded sand interbedded with thin layers of caliche and clayey sand was observed in borings near the washrack. A complete description of site lithology is presented in the drilling logs from previous investigations which are included in Appendix B.

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# 2 INVESTIGATION ACTIVITIES

The objective of the investigation activities at the site is to fill data gaps identified by NMED (Attachment A presents NMED correspondence dated February 9, 2005). Specifically, these are to: 1) establish upgradient water quality with a new well, 2) locate and characterize the drainage pits associated with the washrack), 3) assess groundwater quality under the drainage pits, 4) install a new well downgradient of the drainage pits, and 5) collect groundwater samples from selected wells every 6 months for a 2-year period. The investigation for SD-08 will be conducted in accordance with the State of New Mexico requirements. Upon conclusion of the investigative activities; a report will be developed in accordance with Section 3 of this Work Plan.

## 2.1 Investigation Activities

Prior to the initiation of any sampling activities, Air Force (AF) Form 322 and utility clearance permitting will need to be completed. To meet the investigation objectives, the following activities will be performed:

- Install upgradient monitoring well
- Advance two soil borings and install one monitoring well to characterize soil and groundwater conditions under the drainage pits
- Install one monitoring well downgradient of drainage pits
- Analyze the soil and groundwater samples for organochlorine pesticides, VOCs, SVOCs, Resource Conservation and Recovery Act (RCRA) metals, and TDS (water only)
- Perform physical survey of soil borings and monitoring wells with survey grade Global Positioning System (GPS)

### 2.1.1 AF Form 332

AF Form 332, included in Attachment B, authorizes construction work at HAFB and is required for the initiation of any construction work. This work request form describes what activities will take place at the location. The AF Form 332 also is the mechanism by which the utility clearance/dig permit is authorized. AF Form 332 will be initiated by Bhate. Both the AF Form 332 and dig permit will be reviewed by required Base personnel for their approvals to begin work in their area or that which may affect a utility under their authority. Prior to the submittal of AF Form 332, the sampling locations will be clearly indicated with marker flags or stakes.

## 2.1.2 Dig Permit/Utility Clearances

As noted above, utility clearance approvals will be completed by Base personnel. Upon receipt of the approved dig permit with the utility clearances, the site supervisor or other authorized project personnel will complete a site walk-down confirming the dig permit authorizations and will make any required changes.

The following subsections provide detailed descriptions for completing each activity.

## 2.1.3 DPT Soil Assessment

The field work for the investigation will be conducted in accordance with HAFB Standard Operating Procedures (SOPs) provided in the Basewide Quality Assurance Project Plan (QAPP) (Bhate, 2003a). These SOPs outline methodologies for soil boring advancement, soil sampling, soil sample description, field screening, sample management, equipment decontamination, and chain-of-custody procedures.

Location of the drainage pits will be determined from site drawings (Appendix A). Confirmation of the drainage pits will be performed using direct push technology (DPT) borings.

Two DPT soil borings (Figure 2-1) will be advanced at the site to an anticipated depth of 15 feet below ground surface (ft bgs) using DPT methodology in accordance with HAFB SOP No. 4. Continuous soil samples will be collected from these borings with lithologic descriptions per HAFB SOP No. 7. A total of 5 soil samples, including one field duplicate sample, will be submitted to the laboratory for analysis. The samples will be placed on ice and shipped under strict chain-of-custody to Associated Labs in Orange, California.

Soils will be field screened in accordance with HAFB SOP No. 6 using an organic vapor analyzer (OVA) utilizing soil-headspace screening techniques. Notation will also be made of any visual (discoloration) and/or aromatic indicative of potential contamination.

Based on headspace screening results, two soil samples from each soil boring with the highest OVA readings will be selected for laboratory analyses. Should the screening not identify one or more intervals in which to select, then the lower most interval at the soil-water interface and uppermost, or single OVA detection shall be retained for laboratory analysis.

## 2.1.4 Monitoring Well Installation

Two monitoring wells will be installed as part of this investigation. The wells will be advanced and installed using hollow stem auger (HSA) drilling technology. The first well will be installed upgradient of the site to establish background water quality. A second well will be installed immediately downgradient of the drainage pits to evaluate groundwater quality at the suspected source of organochlorine pesticides.

## 2.1.5 Groundwater Sampling

The two new wells will be sampled along with three existing wells (MW08-03, MW08-05, and S10-MW01) illustrated in Figure 2-1. These wells will be sampled two times per year for a period of 2 years. Well MW08-02 was gauged in February 2005 and found to be dry and, therefore, will not be included in the sampling program. Wells MW08-01, MW08-04, and MW08-06 are cross gradient to the suspected source and, thus, not included in the sampling program. A total of seven groundwater samples, including one field duplicate sample, a matrix spike (MS) / matrix spike duplicate (MSD) will be submitted to the laboratory for analysis from each sampling event. All samples for VOC analysis will require a trip blank. The samples will be placed on ice and shipped under strict chain-of-custody to Associated Labs in Orange, California.

## 2.1.6 Laboratory Analysis

Each soil and groundwater sample (including the field duplicates) will be analyzed for their respective analytes in accordance with Table 2-1. Soil and groundwater samples will be analyzed for organochlorine pesticides by Method 8081A, VOCs by Method 8260B, SVOCs by Method 8270C, and RCRA metals (arsenic, barium, chromium, cadmium, lead, mercury, selenium, and silver) by Method 6010B with the exception of mercury, which will be analyzed by Method 7470A/7471A. Groundwater samples will additionally be analyzed for total dissolved solids by Method 160.1. Field filtration will be performed for the fraction of groundwater samples submitted for metals analysis.

**Table 2-1. Sample Analytes and Methodologies**

| Analysis | Water | Soil |
|---|---|---|
| Organochlorine Pesticides | EPA Method 8081A | EPA Method 8081A |
| VOC | EPA Method 8260B | EPA Method 8260B |
| SVOC | EPA Method 8270C | EPA Method 8270C |
| RCRA Metals | EPA Methods 6010B/7470A | EPA Methods 6010B/7471A |
| Total Dissolved Solids | EPA Method 160.1 | Not Applicable |

Appendix D details the method detection limits by method for chemical constituents indicated for SD-08. Table 2-2 is a matrix indicating the analytical requirements for SD-08.

**Table 2-2. Summary of Analytical Parameters for SD-08**

| Analytical Constituents | Soil Samples | Water Samples |
|---|---|---|
| Organochlorine Pesticides<br>Method 8081A | 6 samples (including 1 duplicate and 1 MS/MSD) | 7 samples (including 1 duplicate and 1 MS/MSD) |
| Volatile Organic Compounds<br>Method 8260B | 7 samples (including 1 duplicate, 1 trip blank, and 1 MS/MSD) | 8 samples (including 1 duplicate, 1 trip blank, and 1 MS/MSD) |
| Semi-Volatile Organic Compounds<br>Method 8270C | 6 samples (including 1 duplicate and 1 MS/MSD) | 7 samples (including 1 duplicate and 1 MS/MSD) |
| RCRA Metals<br>Methods 6010B and 7470A/7471A (mercury) | 6 samples (including 1 duplicate and 1 MS/MSD) | 7 samples (including 1 duplicate and 1 MS/MSD) |
| Total Dissolved Solids<br>Method 160.1 | Not Applicable | 7 samples (including 1 duplicate and 1 MS/MSD) |

## 2.1.7 Site Restoration

Upon completion of the site investigation activities, the site will be restored to the original condition. Sampling locations will be backfilled or grouted to the surface. The site will be canvassed for trash, debris, etc.

# 3 INVESTIGATION REPORT

The summary report will evaluate the newly collected data as well as the historical information so that decisions regarding the need for further action can be made.

## 3.1 Evaluation of Soil Contaminants

For any pesticides, VOCs, SVOCs, or metals that are detected in the soil, the concentration will be evaluated against the screening levels provided in the NMED guidance document *Technical Background Document for Development of Soil Screening Levels* (NMED, 2004). Tables containing the soil screening levels (SSLs) from this guidance document are provided in Appendix A of the NMED SSLs document. Laboratory data from each of the collected soil samples will be compared to these SSLs. If the completed evaluation indicates an acceptable risk, then no further excavation will be required and the site can be considered for closure with no further action.

## 3.2 Evaluation of Groundwater Contaminants

Groundwater shall meet the standards of Subsection A and B of Section 20.6.2.3103 Standards for Groundwater of 10,000 mg/L TDS concentration or less of the New Mexico Administrative Code (NMAC). If ~~more than~~ one water contaminant affecting human health is present, the toxic pollutant criteria as set forth in the definition of toxic pollutant in Section 20.6.2.1101 NMAC for the combination of contaminants shall apply, which ever is more stringent. Non-aqueous phase liquid shall not be present floating atop of or immersed within groundwater, as can be reasonably measured.

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# 4 HEALTH AND SAFETY REQUIREMENTS

Health and Safety practices during the investigation activities as SD-08 will adhere to the *Basewide Health and Safety Plan* (HASP) (Bhate, 2003b), and the project Site-Specific Addendum to the Basewide Health and Safety Plan which is included in Appendix C of this Work Plan. It is anticipated that no greater than modified level D personal protective equipment (PPE) will be required to complete the investigation and sampling activities. This includes: Occupational Safety and Health Administration (OSHA) approved safety shoes, American National Standards Institute (ANSI) approved safety glasses (Z87.1) and hard hat (Z89.1-1997: Type I), sleeved shirt and long pants, and as required, hearing protection, leather work gloves, and/or nitrile gloves during sampling.

Site security during the investigation is part of safety at the site. Items of concern include the proper designation and demarcation of the investigation boundaries (i.e. exclusion zone [EZ], contaminant reduction zone [CRZ], and construction zone [CZ]), as appropriate. Likewise, compliance with any intrusive work requirements, posting of potential hazards, and control of un-authorized site personnel will be completed. This is discussed at length in the *Basewide Health and Safety Plan* (Bhate, 2003b).

At a minimum, the site will be secured with caution tape surrounding the perimeter of the site delineating the outer boundary of the CZ. This is essential in the utility clearance process and it serves as the demarcation of the site for both project and non-project persons. Presently, there exists a fence surrounding the immediate presumed boundaries of the site. This shall be used as the CZ. Because there is little information regarding the possible hazardous substances at the site at this time, a CRZ and/or EZ will be established during field work as guided by the HASP and site prevailing conditions.

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# 5 IDW MANAGEMENT AND DECONTAMINATION

Investigation Derived Waste (IDW) generated by the activities of this investigation (Table 5-1) will be managed and characterized according to the following guidelines. All removed soils will be returned to their respective boring as backfill. Liquid wastes, such as decontamination rinses, are anticipated to be non-hazardous and as such, can be disposed of through the Base water treatment facility. PPE and other site non-hazardous debris/waste shall be disposed in standard trash receptacles.

**Table 5-1. Proposed Waste Streams for SD-08**

| Activity | Waste Stream | | |
|---|---|---|---|
| | PPE | Soil | Water |
| Equipment Decontamination | X | | X |
| Soil Sampling | X | X | |
| Groundwater Sampling | X | | X |

## 5.1 General Decontamination Procedures

All equipment, inclusive of small hand and sampling tools and down hole tooling will require decontamination. Small items can be decontaminated in five-gallon buckets and the like at the site (Bhate, 2003a). The larger equipment will be decontaminated at the subcontractor staging area using high temperature – high pressure water cleaner and scrub brushes.

### 5.1.1 Personal Protective Equipment

Prior to disposal, used PPE, disposable items, and the decontamination pad liner will be rinsed clean with tap water and diluted detergent solution. Cleaned PPE and presumed clean, based upon non-contact with contaminated soils, water or equipment, and other disposable clean items will be contained in trash bags and disposed of at the applicable receptacle.

### 5.1.2 Hazardous and Special Waste

There is not expected to be any hazardous or special waste generated during the completion of this project.

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# 6 QAPP ADDENDUM

The laboratory performing the chemical sample analysis will follow the Final Quality Assurance Project Plan Addendum provided as Appendix D to this Work Plan.

## 6.1 Sample Identification

Each environmental sample will be identified on the sample label and chain-of-custody (CoC) records for each sample collected, regardless of type. USACE duplicates will be paired with another random sample and will be blind samples. The duplicate samples will appear in sequence with the regular samples. The identifier nomenclature will adhere to the procedures and guidelines established in the Basewide QAPP.

## 6.2 Standard Operating Procedures

Applicable SOPs for completing this excavation are located in Appendix A of the Basewide QAPP.

## 6.3 Sample Documentation

Sample documentation, identification, and tracking will adhere to the prescribed methods found in the Basewide QAPP and/or its respective project specific addendum. All sampling activities will include documentation of significant activities and sample identification information. At a minimum, field log books will be utilized to record dates and times, sampling protocols, project numbers, and sampler's name. Other pertinent information will include CoC numbers and air-bill tracking numbers. Chain-of-custody forms will be completed and included with each sample shipment; one CoC per cooler.

## 6.4 Data Reporting

Data obtained during the investigation will be reported according to the Basewide QAPP and/or its respective project specific addendum. Risk evaluation and sampling results will be tabulated and summarized in the closure report for the site. An Environmental Restoration Program Information Management System (ERPIMS) submittal is not required for this project.

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# 7 ORGANIZATION

During the investigation activities at Site SD-08, Mr. John Hymer will serve as the Bhate Site Manager overseeing and directing all investigation sampling activities. Mr. Hymer will also provide on-site management of any sub-contractor for the project. Mr. Frank Gardner is the Bhate Program Manager and will ensure required project documents, permits, contractual agreements, and other program tasks are completed. Key project personnel and their responsibilities are listed in Table 7-1.

**Table 7-1. Key Personnel and Responsibilities**

| Name | Project Title/Assigned Role | Phone Numbers |
|---|---|---|
| Mr. John Hymer | Field Team Leader/Site Health and Safety Officer | Work: (505) 491-9171 |
| Mr. Jerry Pelfrey & Mr. Kevin Germann | Field Samplers | Work: (505) 491-8261 |
| Mr. John Hymer | First Aid Personnel (Note-all onsite personnel are required to be trained in cardiopulmonary resuscitation and first aid) | Work: (505) 491-9171 |
| **Other Project Personnel** | | |
| Mr. Frank Gardner | Bhate Program Manager | Work: (970) 216-7819 |
| Mr. Eric Lehnertz | Health and Safety Specialist | Work: (205) 918-4000 |
| Mr. Mike D'Auben | QA/QC Specialist/Chemist | Work: (205) 918-4000 |
| QA/QC = Quality Assurance/Quality Control | | |

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# FIGURES