DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 49TH FIGHTER WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO

OCT 2 1 2008

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT
Attn: Mr. James Bearzi
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe NM 87105-6303

FROM: 49 CES/CD
550 Tabosa Ave
Holloman AFB NM 88330-8458

Subject: Response to 25 August 08 Notice of Disapproval: Response to Notice of Disapproval For the Accelerated Closure Work Plan at Site SS-13, July, 2007 Holloman AFB, NM6572124422 HWB-HAFB-07-009

1. Holloman AFB's Accelerated Closure Work Plan at Site SS-13 incorporating response to comments is attached and is hereby submitted to NMED for review and approval.

2. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

3. If you have any questions, please feel free to contact Mr. David Scruggs at (575) 572-5395.

A. DAVID BUDAK
Deputy Base Civil Engineer

Attachment:
Accelerated Closure Work Plan

cc:

(w/Atch)
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Work Plan for Accelerated Closure Measures at Site SS-13, Holloman Air Force Base, New Mexico

Prepared for:

U.S. Army Corps of Engineers, Omaha District
Environmental Engineering Branch
106 South 15th Street
Omaha, Nebraska 68102-1618

and

Holloman Air Force Base
Building 55
550 Tabosa Avenue
Holloman Air Force Base, New Mexico 88330-8458

September 2008

NWI-5020-001

Work Plan for Accelerated Closure Measures at Site SS-13, Holloman Air Force Base, New Mexico

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550 Tabosa Avenue
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Prepared by:
North Wind, Inc.
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Las Cruces, NM 88011

CONTENTS

FIGURES

TABLES

ACRONYMS and ABBREVIATIONS

AFB	Air Force Base
amsl	above mean sea level
bgs	below ground surface
CoC	Chain-of-Custody
CQCSM	Contractor Quality Control Site Manager
DRMO	Defense Reutilization Management Office
EPA	United States Environmental Protection Agency
ft	feet
FTL	field team leader
HAFB	Holloman Air Force Base
HCl	Hydrochloric Acid
HDPE	high density polyethylene
HNO_3	Nitric Acid
HSWA	Hazardous and Solid Waste Amendments
IDW	investigation derived waste
IRP	Installation Restoration Program
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ml	milliliter
NMED	New Mexico Environmental Department
North Wind	North Wind, Inc.
oz.	ounce
PID	photoionization detector
PM	Project Manager
POC	point of contact

PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SSHO	site safety and health officer
SVOC	semi-volatile organic compound
TDS	total dissolved solids
USACE	United States Army Corps of Engineers
VOA	volatile organic analysis
VOC	volatile organic compound

Work Plan for Accelerated Closure Measures at Site SS-13, Holloman Air Force Base, New Mexico

1. INTRODUCTION

This Work Plan establishes the technical approach, procedures, and requirements for conducting the Accelerated Closure Measures at the Sodium Arsenite Spill Site (SS-13) located on Holloman Air Force Base (HAFB). The purpose of these activities is to characterize soil and groundwater and remove contaminated soil at SS-13 prior to site closure. North Wind, Inc. (North Wind) prepared this Work Plan under Contract No. W9128F-04-D-0017 for the U.S. Army Corps of Engineers (USACE), Omaha District. This document satisfies the corrective action requirements of the Hazardous and Solid Waste Amendments (HSWA) portion of the Holloman Air Force Base (AFB) Resource Conservation and Recovery Act (RCRA) permit.

1.1 General Site Description

Holloman AFB is located in Southern New Mexico, approximately 50 miles northeast of Las Cruces, NM. HAFB was originally established in 1942 as Alamogordo Air Field just six miles west of Alamogordo, New Mexico (see Figure 1-1). Initial construction began at the airfield February 6, 1942. The base was re-named in 1948 after Colonel George Holloman, who was a pioneer in early rocket and pilot-less aircraft research. The site has a rich history of aeronautical accomplishments ranging from military planes to jets to missile defense research. The site lays is an elevation of approximately 6,300 ft above mean sea level (amsl). The terrain is relatively flat with a slight slope to the east. Groundwater occurs at approximately 10 to 15 ft below ground surface (bgs). The hydraulic gradient at the site is relatively flat and varies, but generally flows to the south.

1.2 Site History

SS-13 is located in the Civil and Engineering Complex next to the Defense Reutilization Management Office (DRMO) storage facility. The approximate location of SS-13 is shown on Figure 1-2. The site was a 2-ft deep depression used to store sodium arsenite, a weed killer used to sterilize runway areas. Approximately eighty-three 30-gallon containers of sodium arsenite were stored at this location in 1979. In August of 1979, one of the cans was found empty and had a hole in the bottom. It is assumed that approximately 30 gallons of sodium arsenite was release at the site. All containers of sodium arsenite not needed at HAFB were removed from this site. The depression was backfilled and capped with asphalt in the early 1990s. The site is currently used as a storage area.

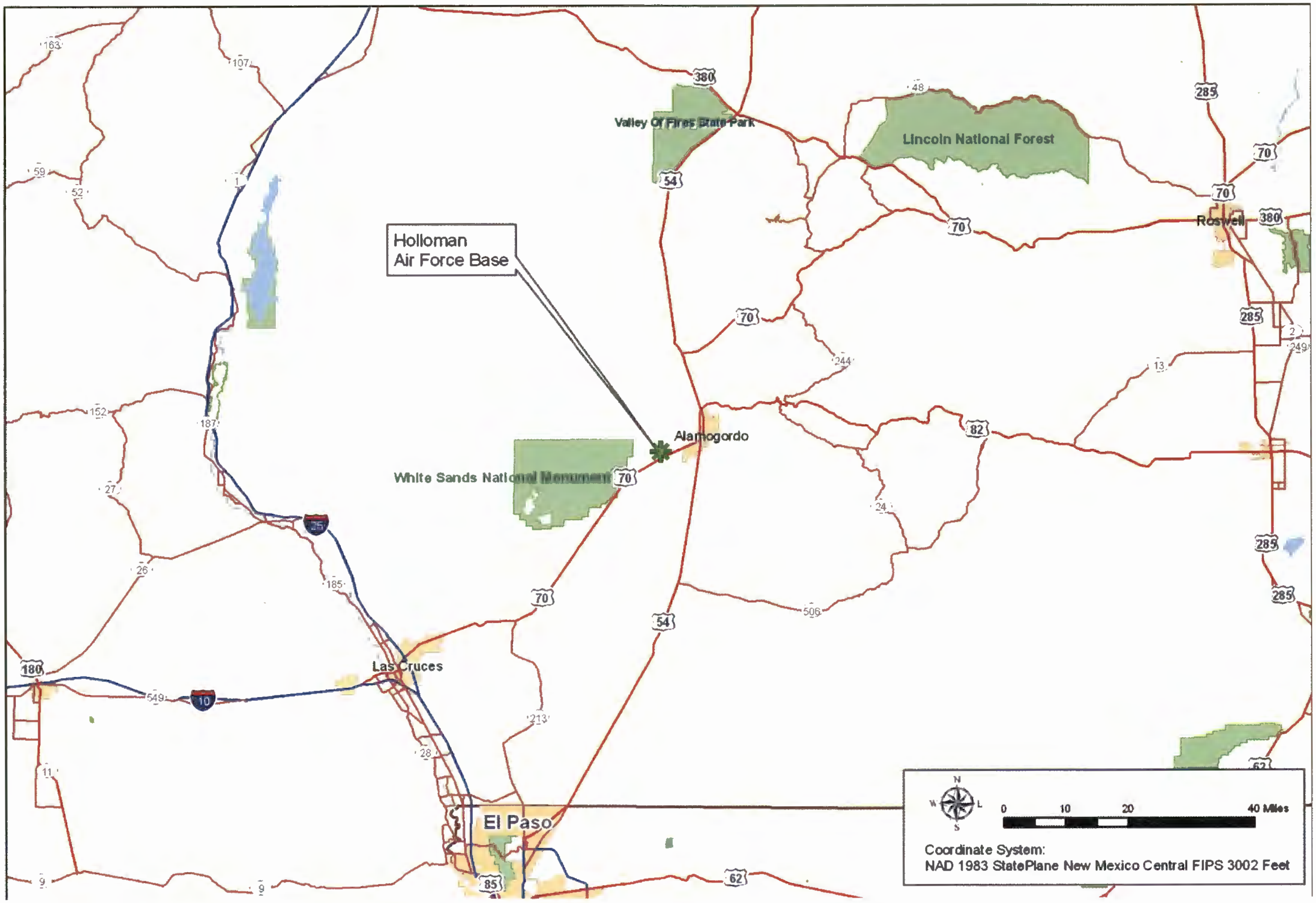


Figure 1-1. Holloman AFB location map.

Figure Number 1-2	FIGURE 1-2: APPROXIMATE LOCATION OF SS-13 ON HOLLOMAN AFB, HOLLOMAN AFB, NEW MEXICO	JOB NUMBER
REV NO. 1		W9128F-04-D-0017

North Wind North Wind, Inc. 1425 HIGHAM ST. IDAHO FALLS, ID 83402 WEB: www.northwind-inc.com Phone: (208) 528-8718 FAX: (208) 528-8714	DATE: 9-15-2008		SCALE: On Map	Prepared for the Army Corp of Engineers & Holloman AFB
	DESIGNED BY:	TF	DESIGN PHASE: Final	
	DRAWN BY:	TF		
	CHECKED BY:	DJ	NWI FILE NAME: Figure 1-2 Approximate Location of Site SS-13.mxd	
	APPROVED BY:	DJ		

Figure 1-2. Approximate location of SS-13 on Holloman AFB.

1.3 Previous Investigations

A 1983 Phase I Records Search reported that the release had occurred and that site cleanup operations could not be confirmed (CH2M HILL, 1983). In 1987 two soil borings and one monitoring well were installed and sampled during the Phase II Installation Restoration Program (IRP) investigation (Dames and Moore, 1987). The Phase II IRP results identified arsenic in groundwater at 0.01 milligram per liter (mg/L) and a maximum of 0.04 milligrams per kilogram (mg/kg) arsenic in five soil samples. The samples were analyzed for arsenic only. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, pesticides, and metals were not analyzed. Based on the low levels of arsenic found at the site, the Phase II IRP recommended no further action.

A 1993 decision document concluded that the SS-13 site does not present significant threat to the environment; therefore, the No Further Action alternative recommendation was approved and the decision document for closure was signed by New Mexico Environment Department (NMED) in April 1993 (EA 1993). In 1999, a petition to close the SS-13 site was rejected by the NMED due to lack of characterization data and delineation of the site. A data gap analysis, removal of contaminants and documentation of site conditions is required prior to closure of the site.

1.4 Purpose and Objective

The purpose and objective of the Accelerated Closure Measures activities is to characterize current soil and groundwater conditions at the SS-13 site and remove any identified contaminated soil at the SS-13 site prior to site closure. A staged approach will be used to first identify areas of soil contamination using soil borings and soil sampling. Once the approximate vertical and horizontal extent of the soil contamination has been identified, the affected soil will be excavated and disposed, estimated to be up to ten cubic yards. Finally, groundwater monitoring wells will be installed and sampled in order to determine the potential impacts to groundwater at the site.

2. PROJECT ORGANIZATION

To manage and execute task orders, North Wind will employ an integrated program organization. Our proposed organizational structure is clearly illustrated in Figure 2-1. The roles and responsibilities described below clearly identify which employees will conduct drilling, sampling, laboratory review, health and safety oversight, and deliverable and report preparation for this project.

The proposed structure is "flat" to allow for efficient execution and empower management. It represents a streamlined management approach that will result in optimal use of resources, that is cost-effective, and that is highly responsive to the interests of the USACE and HAFB.

North Wind has routinely demonstrated that a two-person field team, consisting of a sampler/Contractor Quality Control Site Manager (CQCSM) specialist and a combined Site Safety and Health Officer (SSHO)/Field Team Leader (FTL), can consistently deliver quality results on schedule and on budget. As discussed further below, the SSHO/FTL serves a dual role overseeing the safety of the operations and ensuring that the field work is accomplished according to approved project plans. More detailed descriptions of roles and responsibilities for key project personnel are provided in the following sections.

2.1 Roles and Responsibilities

All personnel are responsible and obliged to personally stop any work they determine unsafe. Project personnel are also responsible for identifying practices or conditions that are or may be adverse to quality and for recommending cessation of work to a Line Manager, Project Manager (PM), or the Quality Assurance (QA) Manager. Line Managers and PMs are responsible for assessing conditions potentially adverse to quality and for taking appropriate action, including stopping work. In all cases, these responsibilities override planning and scheduling considerations.

The following sections describe specific roles and responsibilities for key project personnel, (i.e., PM, SSHO/FTL and CQCSM/Sampler).

2.1.1 Project Manager

Mr. Doug Jorgensen will serve as the PM. Mr. Jorgensen will provide day-to-day supervision and ensure that the scope is executed according to schedule and budget. Mr. Jorgensen will frequently communicate with the USACE and HAFB, as appropriate, to discuss progress and/or to resolve any issues that may arise and will be responsible to provide required project reporting and final closeout of the project. Other duties of the PM include:

- Serving as the primary point of contact (POC) to client for all aspects of task order execution,
- Ensuring routine compliance with the project work plans,
- Verifying training and qualifications of personnel conducting quality-affecting work,
- Responding and correcting quality problems and deviations,
- Directing staff to prepare deliverables and execute field work,
- Coordinating, managing, and overseeing all subcontractors involved with the project,
- Negotiating subcontract agreements and approving subcontractor invoices,
- Reviewing and approving all task order submittals, and
- Ensuring compliance with all applicable federal, state, and local regulations.

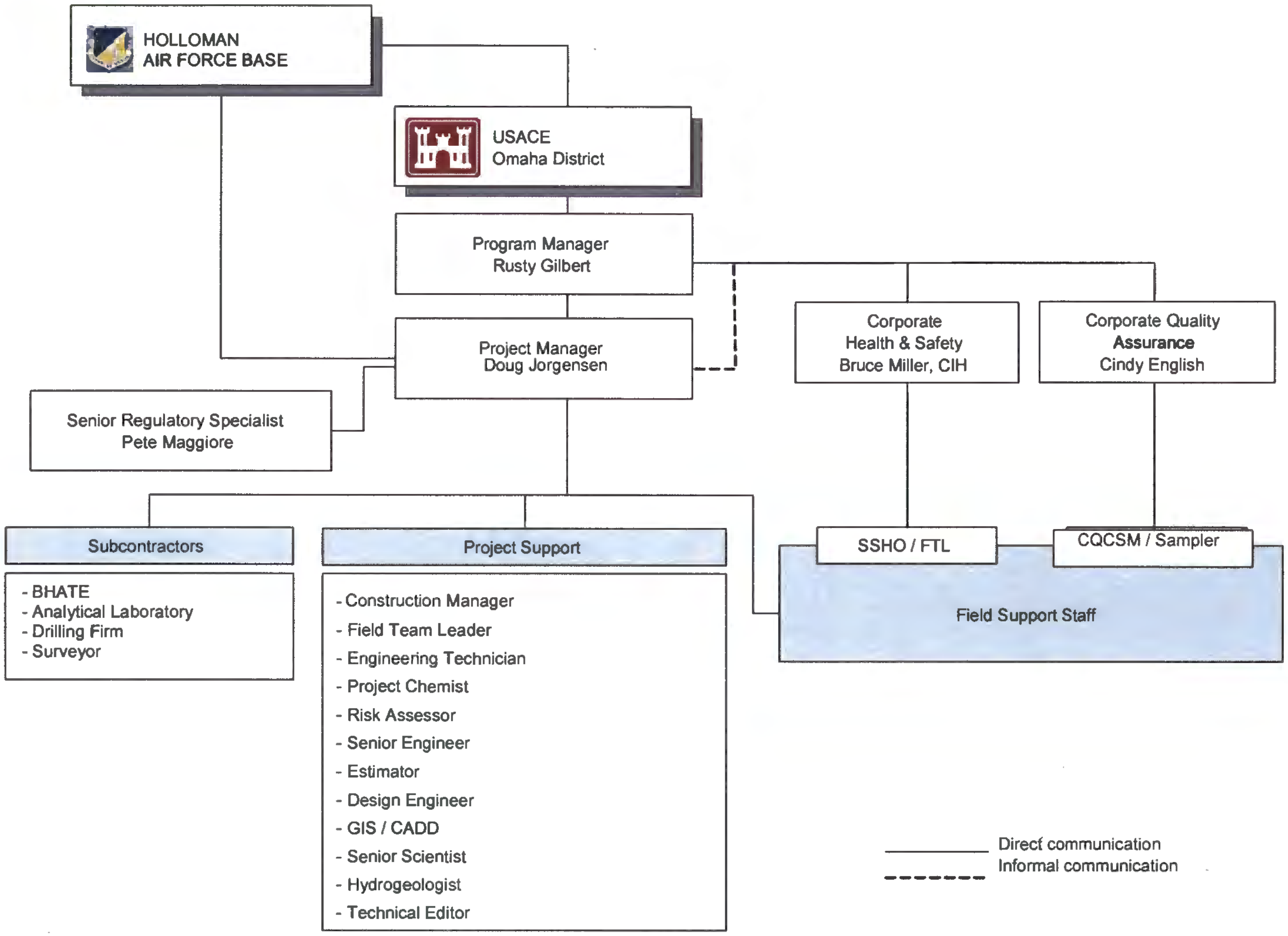


Figure 2-1. Project organizational structure.

2.1.2 Site Safety Health Officer/Field Team Leader

The SSHO/FTL will be a duel role on site when work is being performed. The SSHO/FTL is responsible for safety of the field team and oversees implementation of the Work Plan. The SSHO/FTL is often a working team member and may contribute to any aspect of the fieldwork as necessary. The SSHO/FTL is required to work cooperatively with the CQCSM to accomplish the work safely, on schedule, and in accordance with applicable quality requirements. Specific duties include:

- Supervising field activities, ensuring that health and safety procedures are understood and followed by all field personnel, and reporting and correcting any violations of policy or regulation,
- Conducting daily meetings where the tasks for the day will be outlined and explained (as necessary) and safety issues discussed,
- Verifying that all safety and health training requirements have been met,
- Ensuring that health and safety procedures are understood and followed by field personnel, and for reporting and correcting any violations of policy or regulation,
- Serving as the emergency coordinator for any safety related incidents.
- Implementing the Site Safety and Health Plan (NWI, 2007) and work scope according to the approved Work Plan. Ensuring that all procedures and QA/QC provisions are adhered to in the field,
- Ensuring that field equipment is properly calibrated and maintained and that records are maintained,
- Ensuring that individual samples are properly handled and appropriate custody documentation is prepared to allow for tracking sample possession from field collection through laboratory receipt, and
- Directing all subcontractor activities in the field, ensuring that subcontractors adhere to site-specific installation requirements as well as contractual requirements.

2.1.3 Contractor Quality Control Site Manager

The CQCSM, or alternate, will be on-site when definable features of work are being performed. The CQCSM is accountable for the quality of the fieldwork and reports directly to the PM. Responsibilities of the CQCSM include:

- Monitoring the methods used to meet the level of quality,
- Maintaining acceptable records of the QC activities, including daily QC reports,
- Communicating and coordinating any corrective actions taken with the Government on-site representative and North Wind QA Manager as applicable,
- Verifying that work performed is in compliance with Government and approved site-specific work plans,
- Ensuring that documentation (i.e., chain of custody forms, sample request forms, and labels) are complete and accurate,
- Ensuring that there are no uncorrected deviations from approved procedures, and
- Ensuring that corrective actions are taken.

3. FIELD ACTIVITIES

The objective of the field activities is to assess the soil and groundwater conditions at SS-13 and remove areas of soil contamination if found. The field activities are broken down into the following tasks:

- Subsurface soils investigation,
- Contaminated soil remediation,
- Monitoring well installation, and
- Groundwater investigation.

This Work Plan along with the Site Safety and Health Plan (SSHP) govern all field activities. The following sections include the sampling methods, locations and a summary of the number and type of samples to be collected.

3.1 Subsurface Soil Investigation

Two soil samples will be collected from each soil boring and analyzed for VOCs, SVOCs, total RCRA metals, herbicides, and pesticides. In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested. Samples will be collected from those locations most likely to have contamination based on field screening, visual, and olfactory observations. At least one sample will be collected from the groundwater interface zone.

Soil borings will be drilled using a direct push method or a hollow stem auger with a split spoon sampler. Deeper soil borings to be completed as groundwater monitoring wells will be sampled using a hollow stem auger with a split spoon sampler. Borings will be sampled on a continuous basis. The auger or core tip will be drilled to the desired depth at the top of the sampling interval, the corer, split spoon, or thin walled tube is then driven into the undisturbed soil and withdrawn with the sample. The corer, split spoon sampler, or tube is then opened and the sample is collected.

A photoionization detector (PID) will be used as a field screening tool to measure the organic vapor concentrations during soil sampling and soil excavation activities. The PID will be calibrated to "fresh air" and to a calibration standard of 100 parts per million isobutylene gas prior to use. Soil samples for field screening will be collected in clean, new, Ziploc™ bags, warmed to approximately 60 to 80 degrees Fahrenheit, and then the volatiles will be measured directly from the bag using a PID.

In general, near-surface soil will be collected with unused disposable spoons and placed into appropriate sample containers. Soil obtained from borings using split spoons or direct push tooling will be collected from freshly opened tubes or sleeves. Samples to be analyzed for VOCs will be collected first followed by samples to be analyzed for less volatile parameters. Samples will be collected and placed into appropriate containers using the sampling methods outlined in Sections 3.1.1 and 3.1.2. The anticipated soil boring locations are discussed in Section 3.1.3.

All personnel handling sampling equipment or opening sample containers will don a new pair of nitrile gloves prior to collecting each sample. Soil samples will be collected with decontaminated or new disposable equipment.

Sampling tools used to collect samples (i.e., spoons, drill sleeves, sample trays, etc.) will be disposable and only used once to ensure integrity of the samples. Drilling equipment will be decontaminated following completion of each boring or well by scrubbing drilling equipment that came in contact with soils with soap and water to removes all visible particulate matter and residual oils and grease followed by a final rinse with tap water. This cleaning process may be preceded by a steam or high pressure water wash to facilitate additional residuals removal. Water generated from decontamination processes will be containerized in 55-gallon drums and managed in accordance with protocol discussed Section 7 of this Work Plan.

3.1.1 Collection of VOC Samples

The following describes the protocol for collection of volatile organic samples from the soils investigation:

1. Collect samples in one (1) tared 4 oz glass jar with septa lined lid.

2. Ensure empty jars are weighed with lid and label in place and mark weight on container if not already done so by laboratory.

3. Add entire contents of methanol preservative provided by laboratory (if not already placed in jar by laboratory).

   NOTE: *Only use methanol specified for VOC analysis and provided by the appropriate laboratory.*

4. Fill the container approximately 1/4 full of soil using a disposable spoon (soil must be completely submerged). Use caution to not splash preservative.

   NOTE: *As with any sampling procedure for volatiles, care must be taken to minimize the disturbance of the sample in order to minimize the loss of the volatile components. The sample should be collected as soon as possible after the surface of the soil or other solid material has been exposed to the atmosphere; generally in less than a few minutes at most.*

5. Place lid on sample container (ensure lid and top of jar are free of soil particles).

6. Place container on flat surface and mark meniscus on sample label.

7. Complete sample label.

NOTE: *Do not add custody seal, tape, parafilm, or other material to tared sample container*

3.1.2 Collection of Non-Volatile Samples

The following describes the protocol for collection of non-volatile samples from the soils investigation:

1. Collect all other soil samples in 8 oz glass amber jars with no preservative.

2. Remove lid from sample container.

3. Fill container completely full of soil using an unused disposable spoon.

4. Replace container lid (make sure lid and top of jar are free of soil particles).

5. Complete sample label.

6. Place container in cooler with ice or refrigerator until it can be packaged for shipment.

3.1.3 Anticipated Soil Boring Locations

The anticipated soil boring locations are shown on Figure 3-1. The four soil borings locations are centered around the previous soil boring (13B-1), near the presumed release site. The soil borings are anticipated to extend to a depth of 15 ft bgs. All anticipated soil boring locations are approximate and may be adjusted based on overhead, surface or subsurface factors. The actual locations of all soil borings will be surveyed.

3.2 Contaminated Soil Remediation

The location and amount of soil (estimated to be ten cubic yards) to be excavated and disposed of will be based on the results of the subsurface soils investigation. Contaminated soil will be excavated using standard construction equipment and in compliance with USACE EM 385-1-1 Section 25 Excavations (USACE 2003), and the Code of Federal Regulations (CFR) Title 29 Part 1910. The soil will be stockpiled onsite or placed directly into shipping containers. Confirmation samples will be collected from the bottom and sidewalls of the excavation from those areas most likely to have contamination. The frequency of confirmation samples shall be as follows: one sample per 20 linear feet of excavation sidewall with a minimum of one sample per sidewall; a minimum of two soil samples from any sidewall greater than 18 ft in length; and a minimum of one soil sample per every 200 square feet of excavation bottom. During excavation activities, sidewall and excavation closure sample collection and analysis will be performed in accordance with NMED regulations.

Confirmation samples will be collected in the same manner as described in Section 3.1. Decontamination of sampling equipment used to collect samples will not be required as only disposable equipment will be used.

Soil samples collected for confirmation will be analyzed for VOCs, SVOCs, RCRA metals, herbicides, and pesticides and all hazardous constituents that were discovered during the investigation sampling at levels either above the background levels for inorganic constituents or above the detection limits for organic constituents. All confirmation samples will be analyzed under an expedited turn around time. In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested. The excavation will remain open until confirmation sample results are received and indicate that the remaining soil are at or below the residential Soil Screening Levels, provided in Appendix A of the revised NMED guidance document *Technical Background Document for Development of Soil Screening Levels, Revision 4,* June 2006 (NMED, 2006). Additional excavation and confirmation sampling may be required prior to meeting the soil screening levels. Once the confirmation sample results indicate that the soil screening levels have been met, the excavation will be backfilled with clean fill and re-graded to its original elevation.

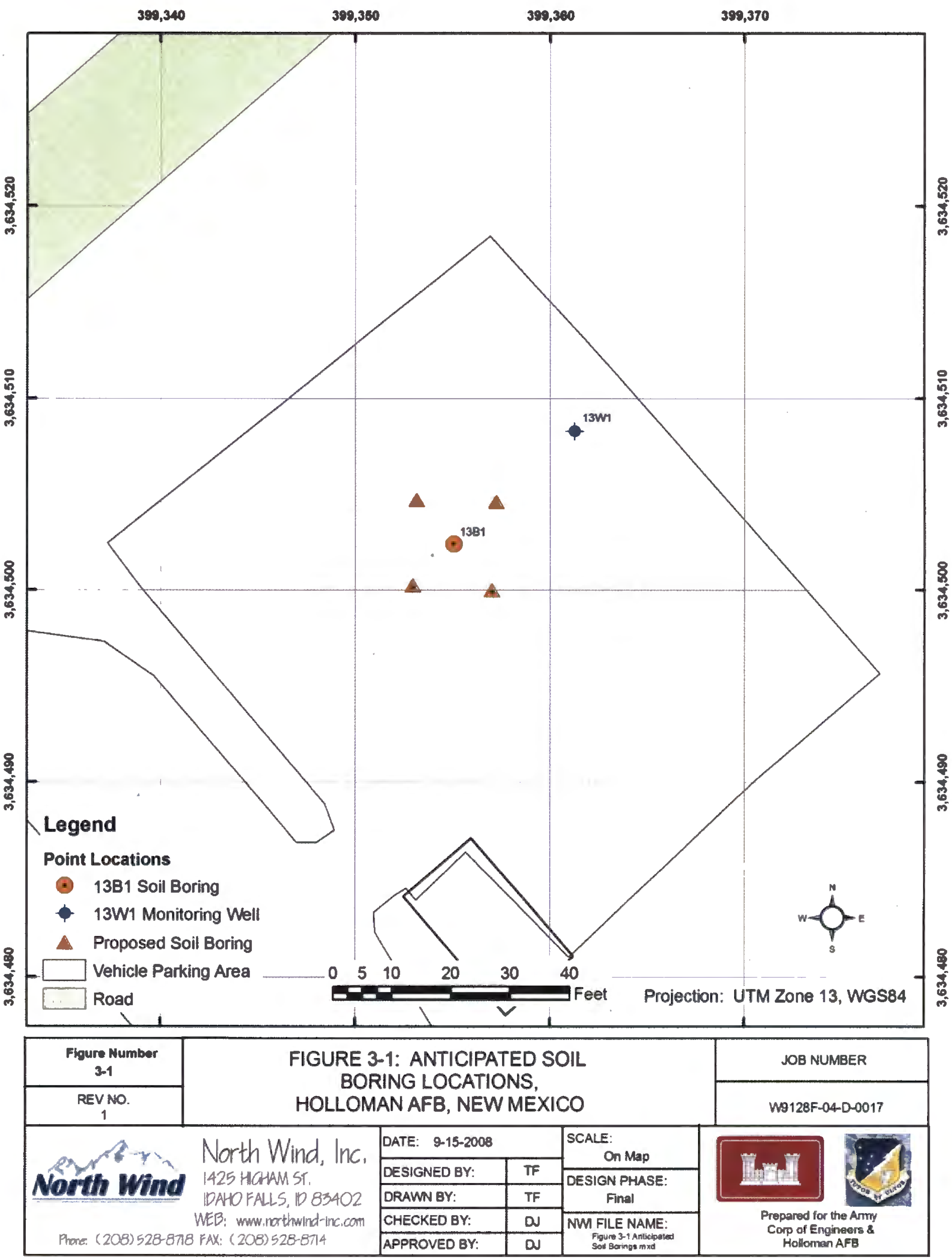


Figure 3-1. Anticipated soil boring locations.

3.3 Groundwater Monitoring Well Installation

Groundwater monitoring activities will be performed with the use of direct push and/or hollow stem auger technology. Drilling equipment will be operated under manufactures guidelines, and will be operated by qualified and experienced personnel.

3.3.1 Anticipated Monitoring Well Locations

The anticipated monitoring well locations are shown on Figure 3-2. All anticipated monitoring well locations are approximate and may be adjusted based on overhead, surface or subsurface factors. The actual monitoring well locations will be determined by results and observations gathered during the soil boring investigation. The direction of groundwater flow is reported and assumed to be generally to the south, although groundwater flow direction may vary depending on a variety of factors.

One nested groundwater well pair comprised of one shallow well (approximately 30 ft total depth) and one deep well (approximately 100 ft total depth) will be installed. Two additional shallow groundwater monitoring wells will also be installed. The elevation and location of all monitoring wells will be surveyed. One soil sample shall be collected from each monitoring well during drilling activities. Samples shall be collected, handled, and labeled as described in Section 3.1.

3.3.2 Monitoring Well Construction and Development

Boreholes for groundwater monitoring wells will be extended to approximately 5 ft below the groundwater interface, with the exception of the deep monitoring well which will be drilled to a depth of approximately 100 ft bgs. Monitoring wells installed using a hollow stem auger shall be completed with a schedule 40, two inch diameter polyvinyl chloride (PVC) monitoring well pipe with approximately 10 ft of 0.020 slot size screen section placed into the borehole after the auger rods have been removed. The lengths of the screen section and screen slot size are estimated, and may be adjusted in the field based on the field technician classification of the subsurface materials.

An appropriate size sand pack will then be placed into the annular space to a depth at least 2 ft above the top of the screen. Above the screen pack, a bentonite or equivalent seal will be placed. The seal will be a minimum of 2 ft thick. The remainder of the borehole will be filled with sand pack to the ground surface, where a second 2-ft thick seal will be placed. The top of the well casings will then be protected using a steel lockable casing that is secured in the ground by either concrete or asphalt.

If direct push technology is used, monitoring wells installed with this technology will be completed using a two inch diameter monitoring well pipe with 10 ft of pre-packed screen section. Above the screen pack, a bentonite or equivalent seal will be placed. The seal will be a minimum of 2 ft thick. The remainder of the borehole will be filled with sand pack to the ground surface, where a second 2-ft thick seal will be placed. The top of the well casings will then be protected using a steel lockable casing that is secured in the ground by either concrete or asphalt.

Upon completion of well installation activities, monitoring wells will be developed. Well development is necessary to restore the aquifer's hydraulic conductivity and remove drilling fluids and fine grained material. Development shall be completed using a low-flow pump with new disposable tubing, or a bailer. Water shall be removed from the well during development until the removed groundwater is clear, approximately 50 gallons of water have been removed, or the well is purged dry and allowed to recover twice. Development water removed from each well will be containerized in 55-gallon drums and managed in accordance with protocol discussed Section 7 of this Work Plan.

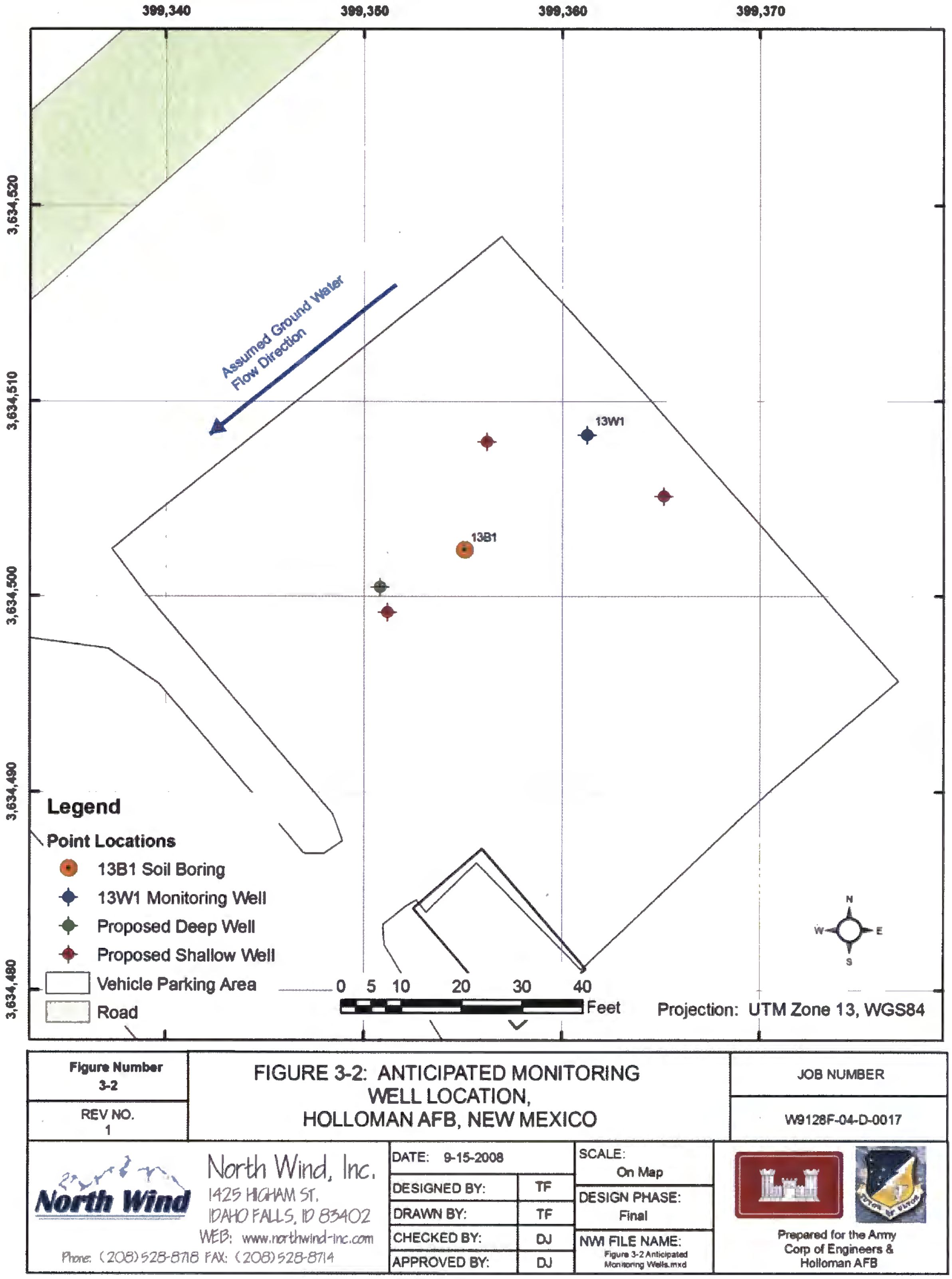


Figure 3-2. Anticipated monitoring well locations.

3.4 Groundwater Investigation

The static water levels will be measured following well completion and development. The water levels in groundwater monitoring wells will be allowed to stabilize for a minimum of 24 hours after well construction and development prior to obtaining the static water level and conducting sampling. Measurements will be taken from the top of the casing on the highest side of the casing, which will then be marked. If the casing top is essentially level, the measurement will be taken from the north side of the casing. All water level measurements will be collected prior to sample collection.

Various instruments may be utilized to measure groundwater quality during the purging of monitoring wells prior to sampling. These instruments may be individual sensors or a multi-probe system. Field parameters to be measured during well purging include: pH, temperature, conductivity, turbidity, and dissolved oxygen. These parameters will be used to determine when the well has stabilized during purging. Stabilization will be considered complete when the criteria in Table 3-1 are met, or the well is purged dry. If the well is purged dry, samples will be collected following recharge.

Table 3-1. Purge parameter stabilization criteria.

Parameter	**Stabilization Criterion (Maximum difference in three values measured at an interval of 3 to 5 minutes)**
pH	+/- 0.1 standard units
Conductivity	+/- 3% Sm^{-1} (siemens per meter)
Redox Potential/ Oxidation Reduction Potential (ORP)	+/- 10 mV (millivolts)
Dissolved Oxygen (DO)	+/- 10% for DO > 1 mg/L (milligrams per liter) +/- 0.1 mg/L for DO < 1 mg/L
Turbidity	+/- 10% NTU (Nephelometric Turbidity Units)
Temperature	+/- 0.5 degrees Celsius

Samples will be collected either after a well in a low-yielding formation has recovered enough that it contains sufficient volume to fill the required sample containers, or after completing purging and stabilization of a well in a high-yielding formation. Groundwater samples will be collected using a new, disposable bailer that is lowered into the well, filled, and retrieved from the well, or using a specialized low-flow sampling pump with dedicated, disposable tubing.

Reusable sampling equipment (pumps, water level meter, etc.) will be decontaminated prior to mobilization to the sampling site and in between each well. A description of equipment decontamination is included in Section 3.1 of this Work Plan.

All groundwater wells will be sampled and analyzed for VOCs, SVOCs, RCRA metals, herbicides, pesticides and total dissolved solids (TDS). In addition, one field duplicate sample for every ten primary samples will be collected for laboratory analysis. Trip blanks will also be submitted for analysis for each set of samples where VOC analysis is requested.

4. FIELD OPERATIONS DOCUMENTATION

The SSHO/FTL will be responsible for controlling and maintaining all field documents and records. Sample documentation, shipping, and custody procedures for this project are based on the Environmental Protection Agency (EPA) recommended procedures that emphasize careful documentation of sample collection and sample transfer. Any necessary changes to forms, labels, or logbooks will be made by striking out the error with a single straight line and re-entering the correct information. The new entries will be initialed and dated by the person making the change. The following sections describe requirements for maintaining field logbooks, photographs, and chain-of-custody (CoC) records during sampling.

4.1 Field Logbooks

All field logbooks will be constructed from bound, waterproof, serial numbered pages and will be used to record field activities. Typically, one field logbook will be maintained; however, any number of logbooks may be maintained if the need arises and the SSHO/FTL determines it is necessary.

NOTE: *Preprinted field forms, separate from the field logbook, may be used by any member of the field team to record repetitive information (e.g., equipment checklists, sample information, well logs, etc.). Completed field forms may be transcribed into electronic form or simply retained in the project file.*

Only the SSHO/FTL may authorize the start of a new logbook. The project name, project number, SSHO/FTL name, telephone number, and office address will be listed on the inside cover of all field logbooks. The logbook will only be used to document daily field activities in sufficient detail to allow field personnel to reconstruct events that transpired during the project. This document will contain information pertaining to:

- Daily activities and chronology,
- Observations made during the environmental investigation,
- Equipment calibration results, and
- Significant events.

Logbook entries must be dated, legible, made in black, indelible, ink, and contain accurate documentation. Language used will be objective, factual, and free of personal opinions. Hypotheses for observed phenomena may be recorded; however, they must be clearly indicated as such and only relate to the subject observation. Corrections to erroneous data will be made by crossing through the entry and entering the correct information. The person making the correction must initial and date where the error occurred. Unused portions of logbook pages will be crossed out, signed, and dated at the end of each workday. Care should be taken to ensure that no lines are skipped on a page. In the event that lines are skipped they should be lined out, signed, and dated.

Only field team members may be in custody of the logbook during field activities. Personnel with custody of a logbook will sign and date the logbook prior to initiation of each day's fieldwork. If it is necessary to transfer custody of the logbook during the course of fieldwork, the person relinquishing the logbook will sign and date the logbook at the time the logbook is transferred, and the person receiving the logbook will do likewise.

4.2 Photographs

Photographs will be used to supplement written descriptions of field activities. Photographs will be recorded on digital media and backed up to secondary media on a daily basis. The first photograph of a new location series will include the site name or location identifier as appropriate. Photographs will be stored as individual JPG files. All photograph files will be named with site name or location identifier, date of photograph, and sequential photograph number.

4.3 CoC Documentation

Chain of Custody (CoC) forms will be used to document the transfer of samples from one person's custody to another (e.g., from the sampler to the laboratory). The sampler will complete the CoC following sample collection, noting the sample identification, time and date of collection, sample matrix, project and sampler information, preservation, number of containers, and the requested analysis. Each person handling the sample collection will sign for receipt and acknowledge release of the collection to the next person, until the samples are received at the laboratory.

Sample information may also be recorded in field logbooks or field forms. All sample information will be checked to minimize transcription errors prior to sample shipment. Because the CoC is the formal record of sample identification information and custody, the information contained on the CoC will take precedence over other field documentation.

When custody of the samples is transferred, or when samples are relinquished to a common carrier, the sampler will sign, date, and note the time on the form. A separate form will accompany each delivery of samples to the laboratory. The CoC form will be included inside the cooler used for transport of the samples. In addition to the standard information noted on the CoC, the following project specific requirements apply:

- Include the laboratory subcontract number,
- Include the USACE project number (obtained from USACE chemist),
- Include the Location Identifier for purposes of completing the electronic deliverable,
- Indicate the sample collection type (e.g., grab vs. composite), and
- Use a checklist to verify the accuracy and completeness of the form prior to sample shipment.

All entries on the CoC will be recorded in indelible, black ink. Any necessary changes to the CoC will be made by striking out the error with a single straight line and re-entering the correct information. The new entries will be initialed and dated by a sampler.

5. SAMPLE HANDLING

The following sections describe requirements for sample identification, sample containers and preservation, and sample packaging and shipping.

5.1 Sample Identification

Sample labels are required for properly identifying samples. All field samples will be labeled with the label affixed to the container before or shortly after it is filled and prior to transportation to the laboratory. The sample label will include the following information:

- Sample identification number,
- Location identification,
- Date and time of sample collection,
- Initials of person collecting the sample,
- Analysis requested,
- Preservation method
- Any other information pertinent to the sample.

A sample number will be used to identify each sample collected and submitted for analysis. Samples will be numbered in such a manner as to prevent the laboratory from distinguishing the QC samples from other site samples. The sample identification number will be a unique number to which all information pertaining to the sample can be correlated.

5.2 Sample Containers and Preservation

Sample container types will be consistent with EPA and NMED requirements for the specific parameters of interest, and are identified in Tables 5-1 and 5-2 for the associated analytical methods. Sample containers will be obtained directly from the analytical laboratory in sealed boxes and will be verified as pre-cleaned by the analytical laboratory with the appropriate certificates. Extra containers will be available in case of breakage, contamination, or collection of additional samples.

All samples collected will be preserved according to EPA and NMED protocols. Chemical preservatives and chilling will be used for samples, where required. Appropriate measures will be taken to ensure that storage requirements, with respect to temperature, are maintained in the field, during transport to the laboratory, and during storage at the laboratory. Tables 5-1 and 5-2 identify required sample container types, preservative requirements, and hold times for soil and groundwater samples, respectively, collected under this project.

Table 5-1. Sample containers, preservation, and holding times for soil samples.

Analysis	Method Number	Container[a]	Preservative	Maximum Holding Times
VOCs	EPA SW8260B	4 oz. septa, tared amber glass	Methanol	14 days
SVOCs	EPA SW8270C	4 oz. amber glass	4°C +/- 2°C	7 days to extraction, 40 days to analysis
RCRA Metals	EPA 6010B, EPA 7470A	8 oz. glass, 4 oz. glass	4°C +/- 2°C	180 days, 28 days for mercury
Pesticides	EPA SW8081A	8 oz. amber glass	4°C +/- 2°C	7 days to extraction, 40 days to analysis
Herbicides	EPA SW8151	8 oz. amber glass	4°C +/- 2°C	7 days to extraction, 40 days to analysis

a. Sample material for multiple non-volatile analyses may be combined as approved by the laboratory.

Table 5-2. Sample containers, preservation, and holding times for groundwater samples.

Analysis	Method Number	Container	Preservative	Maximum Holding Times
VOCs	EPA SW8260B	Three 40-ml VOA vials	No headspace, HCl to pH < 2; 4°C +/- 2°C	14 days
SVOCs	EPA SW8270C	Two 1-L amber jars	4°C +/- 2°C	7 days to extraction; 40 days to analysis
RCRA Metals	EPA 6010B, EPA 7471B	500 ml HDPE, 250 ml HDPE	HNO_3 to pH <2; 4°C +/- 2°C	180 days, 28 days for mercury
Pesticides	EPA SW8081A	Two 1-L amber jars	4°C +/- 2°C	7 days to extraction; 40 days to analysis
Herbicides	EPA SW8151	Two 1-L amber jars	4°C +/- 2°C	7 days to extraction; 40 days to analysis

5.3 Sample Packaging and Shipping

Coolers for sample shipments will be inspected and clean prior to sample packing. The cooler will be lined with a large plastic bag or individual samples will be placed in sealable, plastic bags. The individual sample containers will be wrapped with bubble wrap or plastic bags for protection and placed upright in the coolers for shipment. To maintain the sample temperature at 4°C, blue ice packs or double-bagged wet ice will be placed around the sides and top of the liner bag or inside the bag and in between samples. The liner shall be sealed and the CoC placed in the cooler prior to being sealed. The cooler shall be sealed using shipping tape, and signed custody seals will be placed along the cooler seams to ensure the cooler has not been opened during transport.

An experienced SSHO/FTL will provide oversight of all sampling activities to ensure that all samples are properly preserved and protected from breakage or loss. Prior to every sampling event, the SSHO/FTL will ensure that the laboratories are aware of the pending shipments and are prepared to meet all requirements. Prior to the end of each sampling event, the SSHO/FTL will review all field documentation to ensure that instructions to the analytical laboratory are clear and complete and that all of the necessary information to interpret the results is properly recorded (a checklist should be used).

6. REPORTING

Upon completion of the field activity, an Accelerated Corrective Measures Report will be prepared and submitted. The report will contain, at a minimum, the following information:

- A detailed description of the site activities performed in support of the investigation,
- A photographic log that details site activities,
- Maps of soil borings, test pits, and groundwater monitoring wells,
- Maps with soil sample locations and results,
- Tables with sample results, along with copies of all the laboratory sample reports and Quality Control data, and
- A Risk Based Evaluation of the site.

This report, in Draft and a Draft -Final version, will be submitted to the USACE/HAFB for review. HAFB will submit the final version to NMED.

7. WASTE DISPOSAL

Wastes generated during this investigation will include excavated soil, general refuse, soil cuttings from soil borings, groundwater retrieved during well development and sampling activities, and decontamination wastes, including wash water, plastic sheeting, etc. Potentially hazardous investigation derived waste (IDW) will be containerized (e.g., 55-gallon drums, over-packs, supersacks, etc.) or otherwise secured. Hazardous waste determinations will be made in accordance with the Code of Federal Regulations Title 40 Part 261 and NMED Regulations. Table 7-1 summarizes the anticipated waste streams and disposal paths.

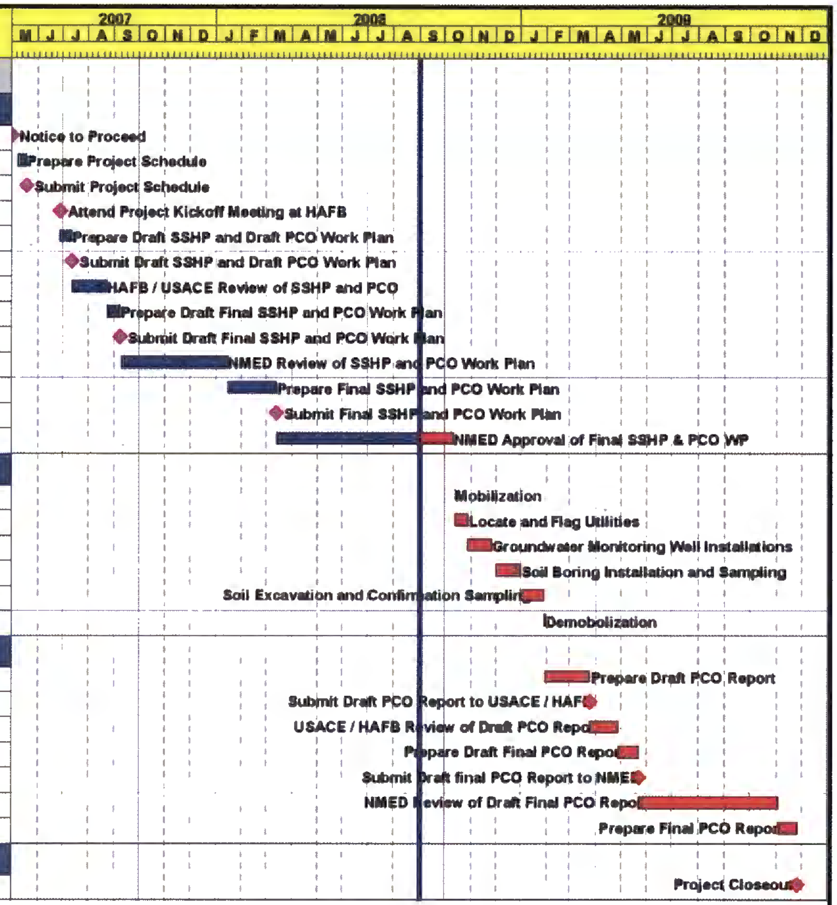
Table 7-1. Anticipated waste streams and disposal paths.

Waste Stream	Disposition
Refuse	All general refuse such as personal protective equipment, gloves, paper towels, plastic sheeting, scrap metal, etc., that do not have the potential to contain hazardous material will be placed in a base dumpster.
Waste water	Waste water from decontamination operations, well development, groundwater sampling, etc., will be containerized and managed on site until analytical results are available after which it will be properly disposed. It is anticipated that project waste water will be disposed of at the base waste water treatment plant.
Soil	Excavated soil and soil cuttings generated during drilling will be containerized and managed on site until analytical results are available after which it will be properly disposed. Non-contaminated and petroleum contaminated soil may be spread on site. RCRA hazardous soil will require transportation off-site for appropriate disposal.

8. PROJECT SCHEDULE

The anticipate project schedule is shown in Figure 8-1.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish
Accelerated Closure Measure at Site SS-13						
Project Planning						
1000	Notice to Proceed	0	0	100	01MAY07A	
1005	Prepare Project Schedule	9	0	100	08MAY07A	18MAY07A
1015	Submit Project Schedule	0	0	100		18MAY07A
1020	Attend Project Kickoff Meeting at	0	0	100	28JUN07A	
1025	Prepare Draft SSHP and Draft	19	0	100	28JUN07A	11JUL07A
1030	Submit Draft SSHP and Draft	0	0	100		11JUL07A
1035	HAFB / USACE Review of SSHP	20	0	100	12JUL07A	22AUG07A
1040	Prepare Draft Final SSHP and	11	0	100	23AUG07A	07SEP07A
1045	Submit Draft Final SSHP and	0	0	100		07SEP07A
1050	NMED Review of SSHP and PCO	116	0	100	10SEP07A	15JAN08A
1055	Prepare Final SSHP and PCO	11	0	100	16JAN08A	13MAR08A
1060	Submit Final SSHP and PCO	0	0	100		13MAR08A
1065	NMED Approval of Final SSHP &	90	39	57	14MAR08A	10OCT08
Post Closure Operation - Consturction Field Work						
2000	Mobilization	1	1	0	13OCT08	13OCT08
2005	Locate and Flag Utilities	11	11	0	14OCT08	28OCT08
2010	Groundwater Monitoring Well	21	21	0	29OCT08	26NOV08
2015	Soil Boring Installation and	21	21	0	01DEC08	30DEC08
2020	Soil Excavation and Confirmation	20	20	0	31DEC08	28JAN09
2025	Demobolization	1	1	0	29JAN09	29JAN09
PCO Report						
3000	Prepare Draft PCO Report	39	39	0	30JAN09	25MAR09
3005	Submit Draft PCO Report to	0	0	0		25MAR09
3010	USACE / HAFB Review of Draft	23	23	0	26MAR09	27APR09
3015	Prepare Draft Final PCO Report	18	18	0	28APR09	21MAY09
3020	Submit Draft final PCO Report to	0	0	0		21MAY09
3025	NMED Review of Draft Final PCO	116	116	0	22MAY09	02NOV09
3030	Prepare Final PCO Report	18	18	0	03NOV09	26NOV09
Project Close-out						
4000	Project Closeout	0	0	0		26NOV09



Start Date 01MAY07	Early Bar	SS07	Sheet 1 of 1	Date / Revision / Checked / Approved
Finish Date 26NOV09	Progress Bar	North Wind Inc		
Data Date 01SEP08	Critical Activity	Holloman Air Force Base		
Run Date 18SEP08 13:18		Classic Schedule Layout		

Figure 8-1. Anticipated project schedule.

9. REFERENCES

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NWI, 2008. *Site Safety and Health Plan for SS-13 and DP-64 at Holloman Air Force Base*, North Wind, Inc., March 2008.

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