

Remedial Action Plan
Tucumcari Truck Stop
3700 West Tucumcari Boulevard
Tucumcari, New Mexico
Contract No. 24-667-2030-27722
NMED Subaccount Code: ZGWQB

Prepared for
New Mexico Environment Department
Ground Water Quality Bureau
Santa Fe, New Mexico

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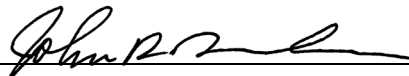
Approval Sheet

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1. Introduction

As requested by the New Mexico Environment Department (NMED), Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this remedial action plan (RAP) outlining remedial action (RA) activities to be performed at the Tucumcari Truck Stop property (the site), located at 3700 West Tucumcari Boulevard in Tucumcari, New Mexico (Figure 1). The RAP will be conducted in accordance with Contract #24-667-2030-27722 and work order number DBSA08-ROS-26 (NMED, 2026).

This RAP details the implementation of the RA strategy, with the overall objective being the excavation and disposal of contaminated soil at the site.

This RAP summarizes the tasks and procedures to complete the following:

- Install barriers for security and safety which will preclude public access to the excavation area during the RA
- Excavate and remove the contaminated soil
- Collect confirmation samples within the excavation for laboratory analysis
- Backfill the excavation to approximate pre-excavation grade with clean fill

Upon completion of the RA activities, an RA report will be prepared and submitted to NMED to document the completion of the soil removal, restoration activities, and waste disposal. DBS&A has prepared a health and safety plan (HASP) in accordance with 29 CFR 1910.120 for this RA to ensure the safety of field personnel during field implementation of the RAP (Appendix A).

This RAP is required to be reviewed by DBS&A staff, DBS&A's RA subcontractor EnviroWorks, LLC (EnviroWorks) and NMED staff participating in the work effort. This RAP will be in the possession of the RA field team for the duration of the RA activities. All involved contractors, subcontractors, and NMED staff will have access to this RAP and are required to comply with the procedures documented herein. DBS&A standard operating procedures (SOPs) will be referenced and followed for the appropriate RA tasks. The SOPs are provided in Appendix B.

1.1 Site Summary

The parcel of land has a total area of approximately 28 acres. The site is currently not in use, but was formerly used as a retail petroleum facility with convenience store and truck maintenance

terminal. Due to past activities at the site, there is soil and groundwater contamination on the property.

The site is currently listed in the NMED Petroleum Storage Tank Bureau (PSTB) leaking underground storage tank (LUST) database (Release ID #730, Facility #31248). There are currently no activities being performed at the site for remediation or monitoring purposes.

According to previous site investigations and documentation, there was a previous diesel truck rollover at the site, as well as a truck accident involving one of the fuel dispensing pumps.

There is a large area of staining associated with two used oil aboveground storage tanks (ASTs), approximately 1,500 gallons each, that extends from the east-central side of the historical service center to the generator building. There was pooled oil near the ASTs. NMED investigated the soil staining on September 20, 2023, and it was determined that pipes had been cut and a valve at the base of one of the tanks had been forcibly separated from the tank wall, allowing the used oil to drain out. The oil flowed approximately 400 feet across the property and a further 30 feet parallel to the highway, where it flowed into a culvert and under the roadway. The oil flowed out of the culvert and into a surface water drainage between the highway and the railroad tracks, terminating in a vegetated area. During the investigation by NMED, actions were taken to clear the pools of oil and impacted soil and to block the culvert.

A Phase II environmental site assessment (ESA) was completed by Es² and Leaf Environmental in August 2024 and included the installation of 9 soil borings, which were all completed as temporary monitor wells at the site. Analytical results from soil and groundwater samples collected during the investigation confirmed both soil and groundwater contamination at concentrations above state regulatory standards in multiple locations across the site.

Four ASTs were permanently closed and removed from the site on February 27 and 28, 2025. The NMED PSTB inspector noted that fuel and water was flowing out of fuel conveyance lines, which were then removed; some soil and contaminated water was contained and removed by the contractor. The inspector also noted multiple areas of strong petroleum odor and staining associated with the conveyance lines and transition sumps. During the tank closure, multiple soil samples were collected within the AST containment, beneath the conveyance lines, and beneath the dispensers. Samples collected at the time of the tank and conveyance line removal had detections of petroleum contaminants. Most of the contaminants were associated with the conveyance lines from the former AST vault and the dispensers.

To prepare for the RA activities, DBS&A completed an additional site investigation in December 2025 that included advancement of 50 soil borings. A total of 103 soil samples, including duplicates, were collected for laboratory analysis from the soil borings and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and for total petroleum hydrocarbons (TPH) gasoline range organics (GRO), motor oil range organics (MRO) and diesel range organics (DRO) using U.S. Environmental Protection Agency (EPA) methods 8021/8015M.

The DRO and minor GRO contamination in soil at the site is concentrated in three main areas as shown on Figure 2: (1) the former service station and convenience store located in the north-central portion of the site, (2) the tanker rollover area southeast of the large existing ASTs located in the south-central portion of the property, and (3) the former diesel truck stop located in the northwest portion of the site. There is also a smaller area of contamination behind the truck stop building where the lines were cut from the waste oil AST in 2023.

1.2 Geology and Hydrogeology

Tucumcari is located in a region known as the "Canadian Breaks," where the Canadian River broke through the Ogallala Formation during the Pliocene (Chronic, 1987). The subject property lies on the western edge of Tucumcari with bedrock of Cretaceous to Jurassic age (Chronic, 1987).

The U.S. Geological Survey (USGS) 7.5-minute quadrangle for Liberty Mesa, New Mexico and adjacent to the east, Tucumcari, New Mexico indicates that the subject property is located in a valley adjacent to the north of Conchas Canal. The slope direction through the subject property is to the north, and the gradient is gently sloping, increasing in gradient to the north. The surface elevation is approximately 4,100 feet above mean sea level (feet msl).

Based on the surface topography as interpreted from the USGS 7.5-minute quadrangle for Liberty Mesa, New Mexico, regional groundwater in the vicinity of the subject property is anticipated to flow to the north; however, Conchas Canal is adjacent to the subject property.

Actual groundwater flow direction can be locally influenced by many factors, including underground structures, seasonal fluctuations, local variations in soil and geology, and production wells, among others. The actual groundwater flow direction under the subject property can only be accurately determined by installing groundwater monitor wells, which was beyond the scope of this project. No documentation was found that directly indicated groundwater flow direction at the subject property.

1.3 Contaminants of Concern

The primary contaminants of concern (COCs) in soil are gasoline and diesel constituents, as identified during the Phase II investigation, including BTEX and naphthalenes.

The DRO and GRO contamination in soil at the site is concentrated in three main areas as shown on Figure 2: (1) the former service station and convenience store located in the north-central portion of the subject property, (2) the tanker rollover area southeast of the large existing ASTs located in the south-central portion of the property, and (3) the former diesel truck stop located in the northwest portion of the subject property. There is also a smaller area of contamination behind the truck stop building where the lines were cut from the waste oil AST in 2023.

Where present and above the screening level of 100 milligrams per kilogram (mg/kg), soil contamination was assumed to extend to the water table at approximately 16 feet below ground surface (bgs). The estimated volumes of contaminated soil above the 100 mg/kg screening level for DRO in each of the identified release areas are as follows:

- Former service station and convenience store: 2,884 cubic yards
- Truck rollover area: 5,107 cubic yards
- Former diesel truck stop: 8,439 cubic yards
- Former AST: 277 cubic yards

Vertical distribution of DRO contamination in soil at 4-foot intervals is shown in Figures 3 through 6 for the 0- to 4-foot interval, 4- to 8-foot interval, 8- to 12-foot interval, and 12- to 16-foot interval, respectively.

2. Contractor Qualifications

DBS&A is a licensed contractor in the state of New Mexico and holds a GS-29 license (License #89947). EnviroWorks of Edgewood, New Mexico has been selected to serve as the general contractor at the site, and will coordinate excavation work and utility relocation. All work will be performed under the supervision of a professional engineer licensed in New Mexico. EnviroWorks is a licensed General Contractor (License #81818) in the State of New Mexico and has extensive experience in contaminated soil excavation.

3. Purpose and Approach of the Remedial Action Plan

The goal of this project is to successfully implement the RA by excavating contaminated soil to the extent practicable. At the conclusion of work at the site, the project area will be restored as closely as possible to pre-entry conditions.

3.1 Project Description

This project encompasses plugging and abandonment of existing monitor and extraction wells, excavation and disposal of contaminated soil, and site restoration. Approximately 17,000 cubic yards of in-situ soil will be excavated, disposed of off-site, and replaced with clean backfill.

3.2 Project Purpose

The purpose of the project is to remediate the contaminated soil associated with the site. This will protect the public and make the site suitable for redevelopment.

3.3 Project Approach

To ensure that the project objectives are achieved, an authorized representative for DBS&A will have direct supervisory control over all aspects of the project. All excavation, backfill, and construction activities conducted during the project will be performed under the direction of John R. Bunch, P.G., with DBS&A, a New Mexico licensed GS-29 contractor. All activities proposed in this RAP will be conducted in accordance with the State of New Mexico Construction Industries Division (CID) Guidelines, DBS&A SOPs (Appendix B), and applicable federal and state regulations governing excavation, hauling and disposal, and backfill.

The following activities are proposed to accomplish the scope of work:

- Project planning
- Plugging and abandonment of up to 20 monitor wells
- Site control measures in excavation areas
- Excavation of contaminated soil
- Hauling and disposal
- Backfill
- Summary RA report

Details of each activity are provided in the following subsections.

3.3.1 Project Planning

The following activities will be performed by DBS&A prior to implementation of RA field activities:

- Develop a site-specific HASP (Appendix A)
- Obtain New Mexico Office of the State Engineer (OSE) permits
- Call for utility locates
- Conduct a site visit with the excavation contractor
- Develop a traffic control plan
- Negotiate subcontractor agreements and services, issue work orders
- Conduct a kickoff meeting

The excavation will be completed in accordance with applicable Occupational Safety and Health Administration (OSHA) regulations, including preparation and implementation of a site-specific HASP, conductance of daily health and safety meetings with all subcontractor and on-site personnel during field activities, monitoring of excavation sidewall stability, and monitoring ambient air quality. Personnel who may be in direct contact with contaminated soil will have a minimum of 24-hour OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) training. Ambient air monitoring using a properly calibrated photoionization detector (PID) and five-gas meter will be performed by DBS&A on-site staff on an ongoing basis during excavation activities. All project personnel will have the authority to stop work if they deem unsafe conditions to be present. Work will not continue until the conditions have been mitigated.

Standard safety operating procedures, emergency communication procedures, and route(s) to hospitals are included in the HASP (Appendix A). A copy of the signed access agreement with the landowner is provided in Appendix C.

New Mexico One Call will be contacted and the appropriate companies will mark underground utilities. The one call will be updated prior to implementation of field activities and as necessary during the field activities.

DBS&A will conduct a site visit with the excavation subcontractor and the landowner and NMED Ground Water Quality Bureau (GWQB) to finalize utility locations, verify excavation clearances

and placement of necessary equipment, identify truck routing, and finalize locations for staging of excavated and backfill soils.

The excavation area is accessed by West Tucumcari Boulevard. Transportation of all equipment related to the haul of waste shall remain exclusively on West Tucumcari Boulevard and Interstate 40 (I-40) to the Town of Mountainair and New Mexico Highway 55 (NM 55).

Subcontractor services will be negotiated and agreements will be obtained by DBS&A prior to implementation of field activities for excavation, hauling, disposal, backfill, and laboratory analysis.

3.3.2 Permitting and Public Notice

OSE-approved plugging plans of operation will be required for plugging and abandoning groundwater monitor wells.

DBS&A will obtain a discharge permit from the NMED GWQB prior to application of amendment materials at the site. DBS&A will submit a groundwater discharge permit application and provide maps, figures, logs, tables, and other data necessary to ensure that the application is administratively and technically complete. DBS&A will pay the application filing fee, and will pay for the initial public notice required by the NMED GWQB. To complete public notice, DBS&A will post a sign at the facility, post a flyer off-site at a location approved by GWQB, mail a public notice flyer to property owners within $\frac{1}{3}$ mile, and post notice in the *Albuquerque Journal* and on the Quay County newspaper's website.

DBS&A will complete public notice for the RAP in accordance with 20.5.119.1923.D.10 NMAC. Two legal notices of the submission of a RAP will be published in the *Albuquerque Journal* and on the Quay County newspaper's website. We will send certified letters to adjacent property owners and, to the extent possible, we will conduct in-person meetings with these owners regarding traffic flow, noise, and vapor control. Notices of submittal of the remediation plan will be posted in a prominent location at the site, where they can be easily seen by the public.

All public notices will be in both Spanish and English, with the Spanish translation provided by NMED GWQB in advance of publishing.

3.3.3 Monitor Well Plugging and Abandonment

DBS&A will subcontract with Rogers Drilling in Albuquerque, New Mexico to plug and abandon up to 20 monitor wells and extraction wells at the site. This work will be completed following receipt of the approved plugging plan of operations from OSE.

Prior to abandoning the wells, DBS&A will gauge fluid levels using an electronic interface probe. The concrete pads and vaults will then be removed from each well, the casing will either be completely removed or cut off at a depth of 1 to 2 feet bgs, and the remaining borehole will be tremie-grouted with a neat cement grout. Total depth of the wells is assumed to be approximately 20 to 25 feet bgs.

3.3.4 Site Control Measures in Removal Areas

Prior to the start of RA field activities, the following site control zones will be established, as needed, and will change as the working excavations are completed in accordance with the RAP and HASP (Appendix A):

- Exclusion zone (EZ)
- Contamination reduction zone (CRZ)
- Support zone (SZ)

Soil excavation areas will be designated as being within the EZ. The RA site size allows minimum clearance for heavy equipment; therefore, all unnecessary personnel will be prevented from entering the EZ unless authorized by the RA Site Supervisor. The EZ will be marked with hazard tape or other easily identifiable material. These markers should be placed to minimize limitations on heavy equipment movement between the excavation area and the loading area. Authorized entry to the EZ will be limited to personnel wearing the proper personal protective equipment (PPE) as required by the HASP. Adjustments may be made in the field to maintain the safety of site workers and any persons near the site.

CRZs will be established at the outer boundary of the exclusion zone. RA personnel will remove or decontaminate protective clothing and equipment that may have been in contact with affected soils or other materials containing elevated COC concentrations within the CRZs.

Areas of the site not marked as EZs or CRZs will be designated as support zones.

Excavations that need to be left unattended will be fenced off with construction fencing to minimize access to excavated areas during non-working hours. Heavy equipment will be

secured and stored at the site during non-working hours; equipment will be located to further deter access to the excavated area.

3.3.5 Excavation of Contaminated Soil

The estimated dimensions and area of excavation are shown on Figure 2. The total proposed excavation area is approximately 291,870 square feet. Excavation activities will be performed according to the RAP and OSHA Excavation Safety Regulations (29 CFR 1926.650 to 652).

The extent of excavation proposed by DBS&A is based on analyses of soil collected from Geoprobe borings installed by DBS&A (DBS&A, 2026).

Excavation activities will be performed using an excavator to a depth of approximately 16 feet, which is the approximate depth to water. Accompanying each load of contaminated soil will be a waste manifest filled out by on-site personnel. One copy of the manifest will be given to the disposal facility and one copy will be retained for inclusion in the final summary report to be submitted to the NMED. The excavation walls will be as near to vertical as the soils and safety will allow. Site personnel will only enter the excavation when it is determined to be absolutely necessary for the successful completion of the project.

Excavated soils will be temporarily staged on-site and then transferred to 18-cubic yard end dump trucks, in a manner to minimize dust, for transfer to a licensed disposal facility.

The RA activities will be conducted in a manner to minimize the creation and dispersion of dust related to soil excavation, loading, handling, backfilling, and transportation. Dust control measures will be achieved through misting in the work areas to suppress the dust. Using a misting approach for dust suppression will minimize dust and will not create runoff of water outside of the excavation area. EnviroWorks will supply water if it is not available on-site.

3.3.5.1 Soil Screening

As soils are being excavated, DBS&A will perform field screening using a flame-ionization detector (FID) and the heated headspace method. Results of field screening will be used to guide the extent of excavation. As soils are excavated, they will be segregated based on the field screening results into two piles that will be staged on-site. Soils containing organic vapor concentrations greater than 100 parts per million by volume (ppmv) will be designated contaminated and staged on visqueen for loading and transport to the disposal facility. Soils containing organic vapor concentrations less than 100 ppmv will be designated clean and placed in a clean soil pile for use as backfill. Excavation will continue until field screening results

indicate that the organic vapor concentrations in remaining soils are less than 100 ppmv and there is no obvious visual or olfactory evidence of contamination remaining, or until site constraints prevent further excavation. Results of field screening will assist in guiding the extent of excavation and confirm the presence of hydrocarbon-impacted soils.

3.3.5.2 Confirmation Sampling

Confirmation sampling will be conducted prior to backfilling to determine if additional removal of soils is required. Upon reaching the final excavation depth in the excavation above the water table (16 feet bgs), a string line will be stretched across the excavation on the ground surface. A tape measure or ruler will be used to measure the depth from the bottom of the excavation to the string line. Five measurements across the excavation will be recorded to document the final excavation depth. Five soil samples will be collected from the bottom of the excavation and analyzed for volatile organic compounds (VOCs) using EPA method 8260B. The soil samples will be collected using a disposable trowel pursuant to the SOPs (Appendix B). All samples will remain on ice until they are delivered to the analytical laboratory. Chain of custody documentation will accompany the samples at all times. Samples will be submitted to Eurofins Environment Testing (Eurofins) in Albuquerque, New Mexico for analysis.

Table 1 specifies the required sample volume, container type, preservation technique and holding time for each analysis that is to be conducted on the soil samples.

Table 1. Required Sample Volume, Containers, Preservatives, and Holding Times for Soil Samples

Parameter	Method	Volume and Container	Preservatives	Holding Time ^a
VOCs	EPA 8260B	One 125-mL/4-oz wide-mouth glass jar	Unpreserved, store at <6°C	Extract in 14 days

^a Holding time is measured from the time of sample collection to the time of sample extraction and analysis.

VOCs = Volatile organic compounds

EPA = U.S. Environmental Protection Agency

mL = Milliliter(s)

oz = Ounce(s)

3.3.5.3 Waste Characterization

A composite waste characterization sample will be collected approximately every 1,000 cubic yards during excavation. The samples will be labeled and preserved at 4°C on ice in an insulated cooler for delivery to Eurofins. The waste characterization samples will be analyzed for VOCs

using EPA method 8260B (short list), for GRO and DRO using EPA method 8015B, and for toxicity characteristic leaching procedure (TCLP) metals only using EPA method 6010.

3.3.5.4 Staging of Excavated Soils

Contaminated soils will be excavated and loaded for transport to a licensed disposal facility. Efforts will be made to minimize stockpiling of contaminated soils on-site. If contaminated soils are stockpiled, they will be completely enclosed with visqueen and secured to prevent erosion from wind and/or precipitation and to preclude unauthorized access. These soils will be staged on-site in the vicinity of the excavation where truck access is feasible.

3.3.6 Hauling and Disposal

Contaminated soils will be loaded into end-dump trucks with polyethylene lined beds and transported to the Special Waste Disposal Facility in Mountainair, New Mexico, operated by Keers Industries, Inc. Each load will be covered and hauled in accordance with applicable state and federal transportation guidelines. Accompanying each load of contaminated soil will be a waste manifest filled out by the on-site DBS&A field staff. One copy of the manifest will be given to the disposal facility and one copy will be retained by DBS&A for inclusion into the summary RA report to be submitted to the NMED.

The haul route for trucks transporting contaminated soil to the disposal facility is as follows:

- Departing trucks will leave the site onto West Tucumcari Boulevard and proceed west on I-40 to Santa Rosa, New Mexico. Proceed west on US Route 66 and south on US 54 to Vaughn, New Mexico. Proceed west on US 60 to Mountainair, New Mexico. Proceed south on NM 55 to the disposal facility.
- Inbound trucks will follow the reverse of the above route, with modification for pickup of clean fill material. The disposal route is shown on Figure 7. The one-way total mileage from the site to the disposal facility is approximately 173 miles.

The trucks will be no larger than the HS20 AASTHO rating (36 tons). All bridges on this route are functionally rated for these trucks.

3.3.7 Backfill

Site restoration will include backfill and compaction. In the excavation pits, a layer of gravel will be placed in the bottom of the excavation to approximately 1 foot above the static water table so that saturated soils can be appropriately compacted. Prior to compaction, ORC amendment

will be added to the gravel layer and will be mixed at the bottom of the excavation pit with the excavator bucket. Based on recommendations from Regenesys, DBS&A intends to amend the gravel backfill with approximately 4,480 pounds of ORC-Advanced™. Following confirmation sampling, the area will be backfilled with clean select fill material. The excavation will be backfilled using hand labor and decontaminated heavy equipment.

Clean soils staged during the excavation and engineered fill imported to the site will be used as backfill. Engineered fill is expected to be predominantly sandy soil, but may vary based on availability of materials at the time excavation activities commence. A minimum of one Proctor test will be required for each of the engineered fill and clean soil reused as backfill. Grain size analysis will also be performed to assess suitability of proposed compaction equipment. Fill materials will be placed for backfill in 12- to 18-inch lifts by a front-end loader or similar equipment. The fill will be wetted prior to placement and will be compacted using a roller soil compactor, such as a sheepfoot roller, vibratory roller compactor, or other similar compaction equipment. The compaction equipment used for the work will be dependent on the engineered fill used during the RA, and will be described in more detail in the RA report. Dependent on material conditions and moisture content at the time of compaction, DBS&A anticipates using a minimum of three passes with the compaction equipment to achieve the specified relative compaction. The actual number of passes could be highly variable; however, engineering controls are in place to ensure relative compaction will be achieved for anticipated property uses.

Density testing will be performed on the backfilled soils to ensure proper compaction according to the specifications. Each lift will be tested for density and moisture content by DBS&A personnel with a Troxler nuclear moisture density gauge. During the RA, DBS&A will require the contractor to perform additional compaction effort for density tests that do not meet specifications.

After density testing across the site has been accepted by the DBS&A professional engineer as conforming to the specified relative compaction, the contractor will finish each excavated area with 6 inches of base course. The base course will be compacted using a vibratory roller compactor, plate compactor, or similar compaction equipment. The compacted base course surface will match the pre-construction grade, and will minimize the potential for producing ponded stormwater during a typical precipitation event. Following emplacement of the base course, a final grade survey will be conducted.

3.3.8 Summary RA Report

A summary RA report will be submitted to the NMED Project Manager after completion of on-site activities. The report will document the soil excavation and include all supporting field screening results, laboratory analytical results from the confirmation and waste characterization samples, details of soil disposal including copies of the waste manifests, a figure showing the areal extent of the soil excavation, and photographic documentation of field activities.

4. Implementation Schedule

After approval of the RAP, the 30-day public notices will be submitted. DBS&A anticipates that the field program can be initiated immediately after completion of the 30-day public notices and that a draft report can be completed within 10 working days after completion of field activities and receipt of all laboratory results associated with the RA. After receipt of NMED's one consolidated set of comments to the draft report, the final report will be submitted within 10 working days, in accordance with the NMED Environmental Assessment Remediation Consulting Services contract.

DBS&A anticipates that the field activities will take approximately 12 weeks to complete from mobilization to final grading and restoration of the site.

References

Chronic, H. 1987. *Roadside geology of New Mexico*. Mountain Press Publishing Company.

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New Mexico Environment Department (NMED). 2026. Letter from George Schuman to John R. Bunch, Daniel B. Stephens & Associates, regarding Notice to proceed - proposal for remedial action activities at Tucumcari Truck Terminal Site in Tucumcari, NM, Work order no: DBSA08-ROS-26, NMED Department code: ZJ5203 (FY 26 NCS), Subaccount code: ZGWQB, Contract #24-667-2030-27722. February 3, 2026.

Figures



Aerial image: Google Earth, 11/17/2024



0 2000 4000 ft



DBS&A

a Geo-Logic Company
DB24.1236

1/12/2026

**TUCUMCARI TRUCK TERMINAL
Area Map**



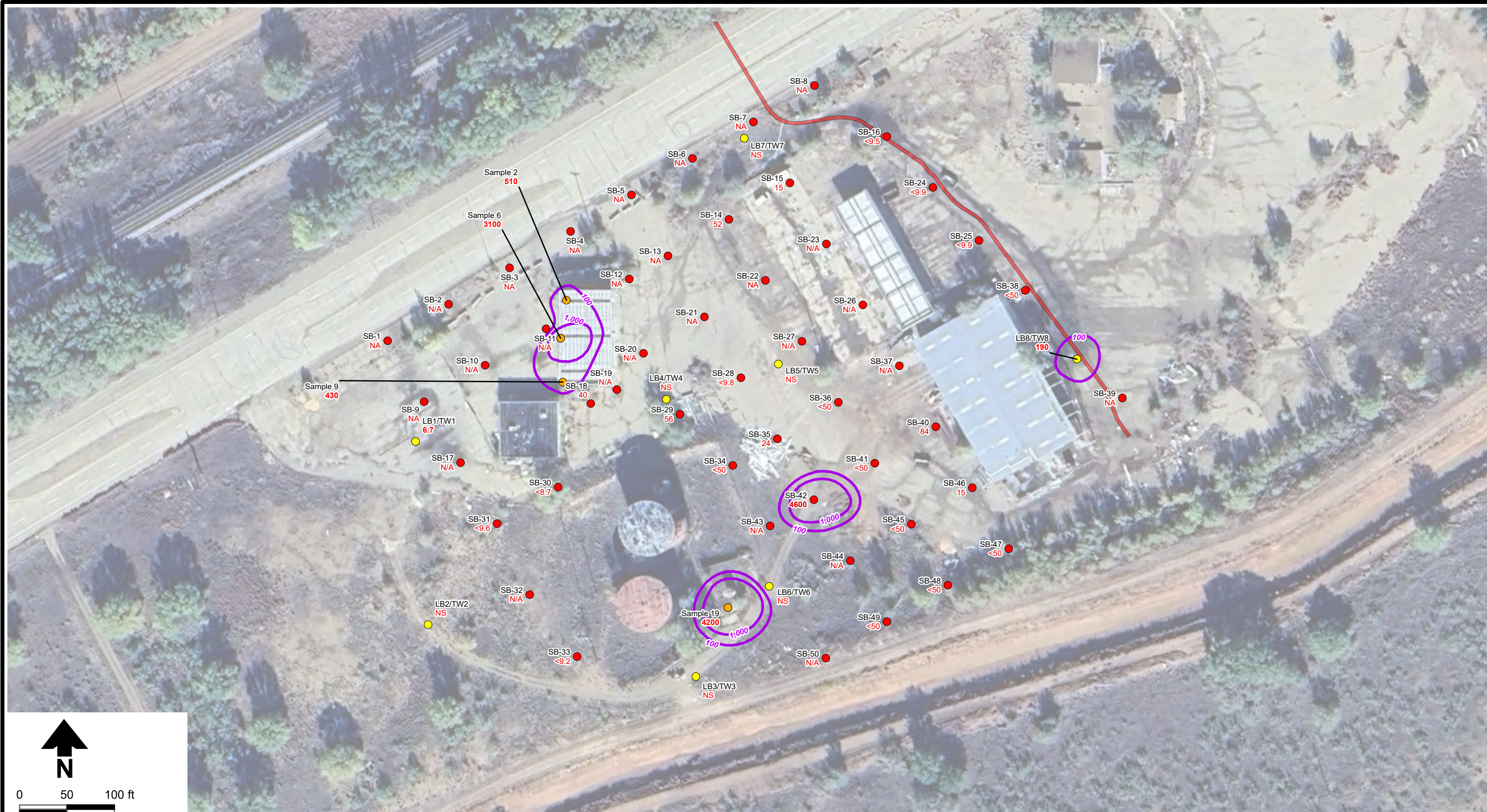
Aerial image: Google Earth, 11/17/2024

Explanation

— Waste oil spill

□ Approximate area of
soil above NMED SSC
for DRO/GRO in
cubic yards
Total: ~ 17,815 yd³

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Aerial image: Google Earth, 11/17/2024

Explanation

- August 2024 soil boring
- February 2025 soil sample
- October 2025 soil
- DRO isoconcentration line
- Waste oil spill
- <9.2 DRO Concentration (µg/kg)
- DRO soil isoconcentration line
- < non-detect above reporting limit
- NA = not analyzed
- NS = not sampled



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TUCUMCARI TRUCK TERMINAL DRO Contamination 0-4 feet bgs

Figure 3

NA = not analyzed
NS = not sampled

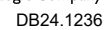
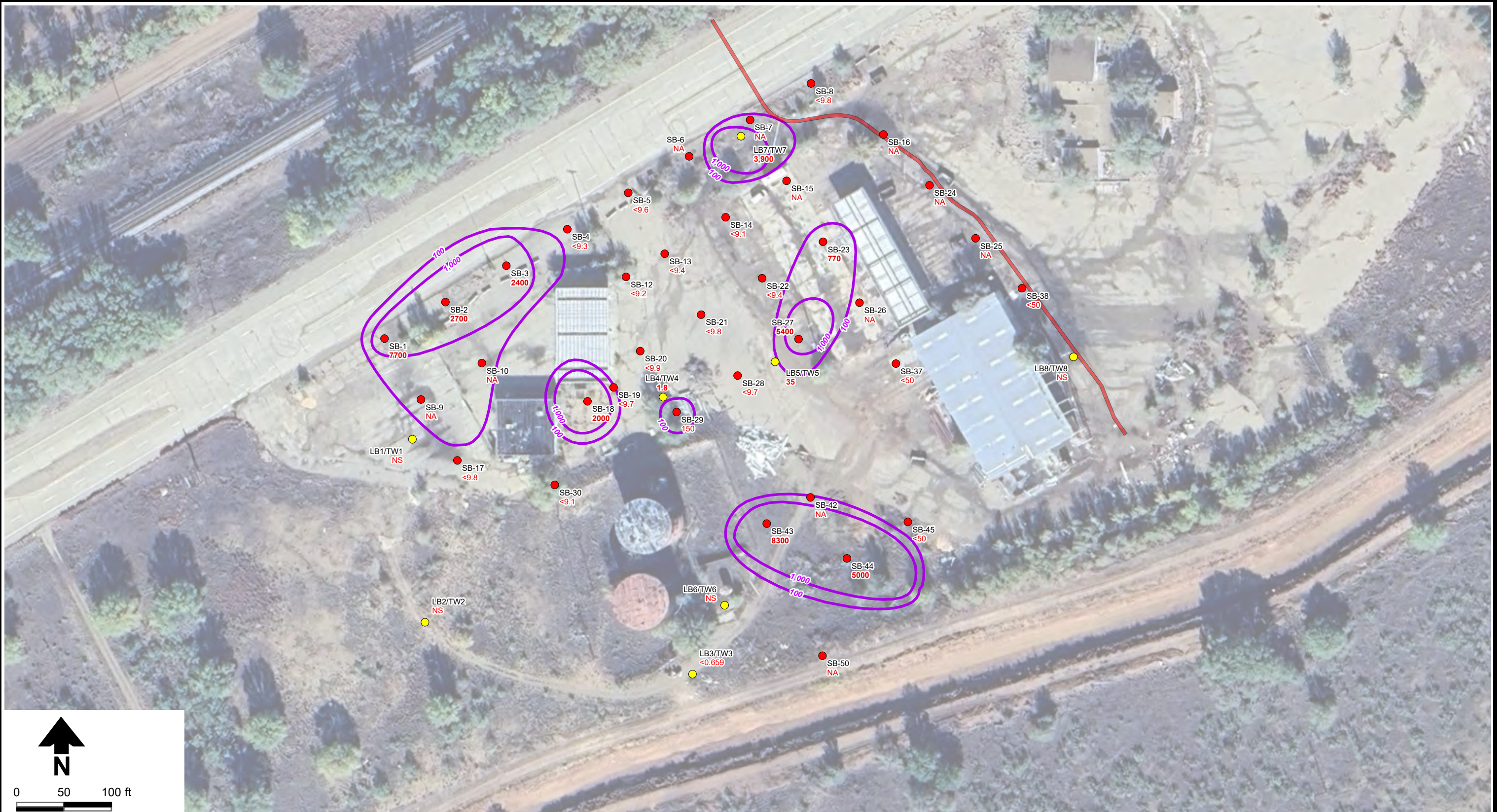


Figure 4

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Aerial image: Google Earth, 11/17/2024

Explanation

- August 2024 soil boring
- October 2025 soil
- DRO isoconcentration line
- Waste oil spill
- DRO soil isoconcentration line
- < non-detect above reporting limit
- NA = not analyzed
- NS = not sampled

<9.1 DRO Concentration (µg/kg)

S:\PROJECTS\B24.1236_TUCUMCARI_TRUCK_STOP_UPDATE_PHASE_1\ESA\GIS\ARC\GIS_PROT\TUCUMCARI_TRUCK_TERMINAL\TUCUMCARI_TRUCK_TERMINAL.APRX • FIG 6 CONTAMINANTS 16-FOOT INTERVAL



Aerial image: Google Earth, 11/17/2024

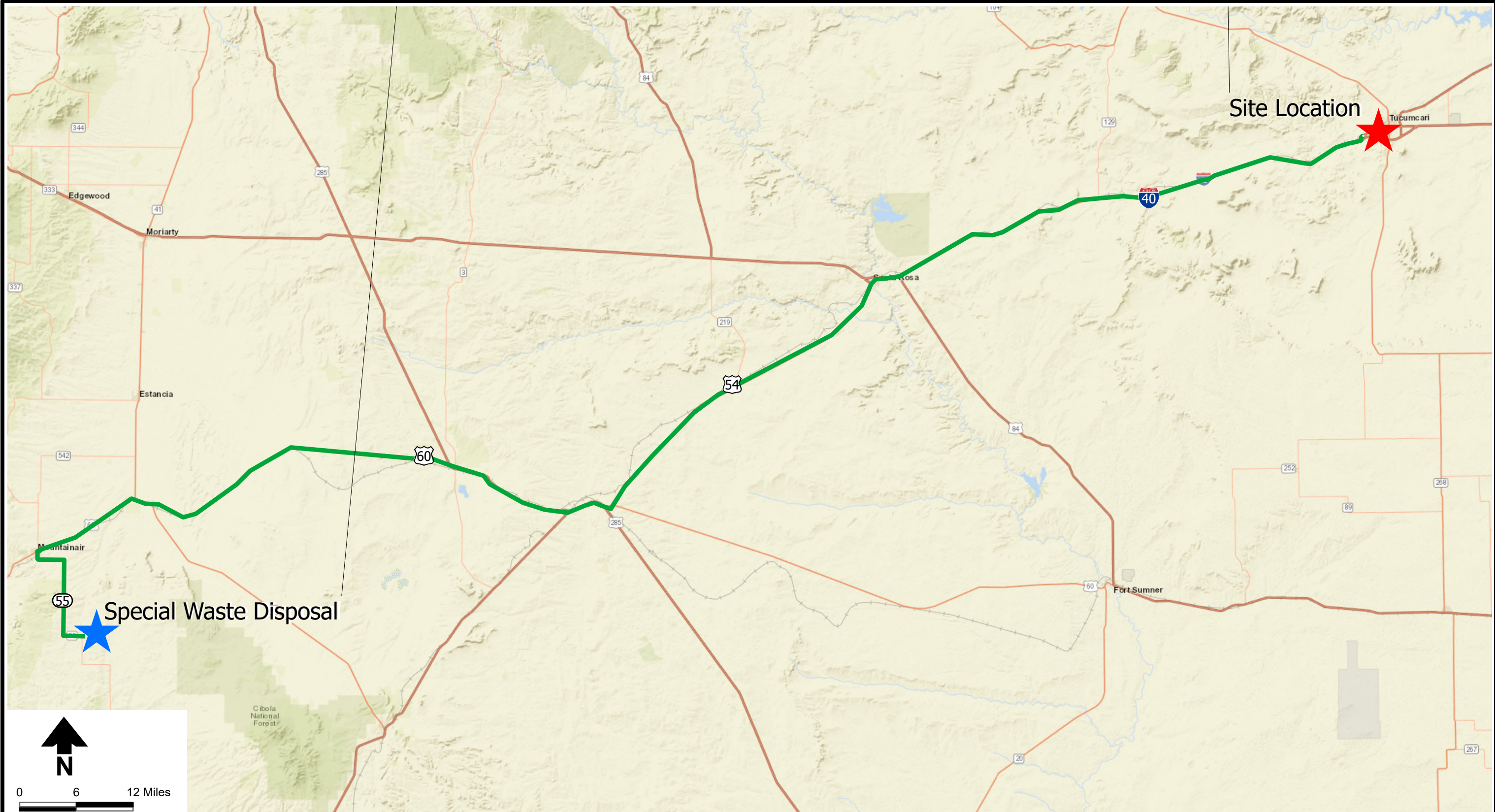
Explanation

- August 2024 soil boring
- October 2025 soil
- DRO isoconcentration line

Waste oil spill
DRO soil isoconcentration line
< non-detect above reporting limit
NA = not analyzed
NS = not sampled

<9.2 DRO Concentration (µg/kg)

S:\PROJECTS\DB24.1236_TUCUMCARI_TRUCK_STOP\GIS\ARCGIS_PRO\TUCUMCARI_TRUCK_TERMINAL\TUCUMCARI_TRUCK_TERMINAL_APRX_F07 DISPOSAL ROUTE MAP



Source: ArcGIS Map Service

Explanation

— Disposal route

Appendix A

Health and Safety Plan

Health and Safety Plan
Tucumcari Truck Terminal
3700 West Tucumcari Blvd
Tucumcari, Quay County, New Mexico

Prepared by



6501 Americas Parkway NE, Suite 200
Albuquerque, New Mexico 87110
www.dbstephens.com
DB24.1236

February 13, 2026

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1	Health and Safety Forms
2	Emergency Response Plan
3	Heat Illness Prevention Plan

Site Health and Safety Plan Summary

This summary is provided as a quick reference/overview only. The remainder of the site-specific health and safety plan (HASP) is integral to the safe conduct of site operations and must be applied in its entirety.

Emergency Numbers:

Location of Nearest Telephone: DBS&A Vehicles

Site Emergency Number:

Site Security: DBS&A personnel

Site HAZMAT Team: 911

Emergency Numbers:

Fire, Police, Ambulance: 911

Hospital: Dr Dan C. Trigg Memorial Hospital, 575-461-7000

Poison Control Center: 800-222-1222

CHEMTREC (24-hour): 800-424-9300

National Response Center, Oil & Toxic Chemical Spills: 800-424-8802

DBS&A and Other Contacts

DBS&A Project Manager: John Bunch, 505-918-4642

DBS&A H&S Committee Member: Chad Johannesen, 505-250-4630

GLA Corporate Program Administrator: Russell Granfors (cell) 602-659-7131

Human Resources Manager: Maria Robles, Ontario 909-626-2281

Client Contact: Anthony McGlown, 505-660-9662

Regulatory Contact: Anthony McGlown, 505-660-9662

Other Contacts: _____

Figure S-1. Hospital Route



Approval of the Site Safety and Health Plan

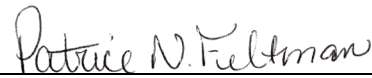
Plan Prepared By:

Patrice Feltman

Project Geologist

Name

Title



February 13, 2026

Signature

Date

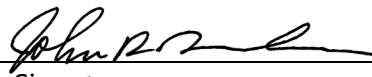
Plan Approved By:

John Bunch

Project Manager

Name

Title



February 13, 2026

Signature

Date

Name

Title

Signature

Date

Plan Revised By:

Name

Title

Signature

Date

Site-Specific Health and Safety Plan

Project Name: Tucumcari Truck Terminal

Project Location: Tucumcari, New Mexico

DBS&A Project Manager: John Bunch

1. Introduction

This health and safety plan (HASP) establishes the responsibilities, requirements, and procedures for personnel of Daniel B. Stephens & Associates, Inc. (DBS&A), a wholly owned subsidiary of Geo-Logic Associates (GLA), while performing work at the above-named site. The HASP summary is an integral part of this HASP and must be attached for the plan to be considered complete.

The objective of this HASP is to establish a safe work environment for all site personnel, provide a uniform and concise plan of action in an emergency, and furnish the necessary guidance to adhere to these policies. This HASP meets the requirements set forth by the Occupational Safety and Health Administration (OSHA) in Title 29 of the Code of Federal Regulations (CFR), Part 1910.120 (Hazardous Waste Operations and Emergency Response) and 29 CFR, Part 1926 (Safety and Health Regulations for Construction) and CAL/OSHA in 8 CCR 5192(b)(4) (Site Specific Safety Plan). This HASP is designed to augment the health and safety policies and procedures established in the GLA Injury and Illness Prevention Plan (IIPP).

Safety is considered a priority during all field activities. Field personnel will not perform any task for which they have not received adequate training, or that they personally feel is unsafe.

1.1 Scope of Work and General Site Description

DBS&A will conduct a dig to removed petroleum contaminated soil (PCS) from the subsurface of the site. The site is an abandoned truck stop with multiple abandoned buildings and fuel dispenser canopies.

1.1.1 Site Status

☐ Active/Open ☒ Inactive/Open ☐ Inactive/Closed ☐ Unknown

1.1.2 Surroundings

The site is a former gas station site in an industrial area of the City of Tucumcari.

1.1.3 Climate

Average Wind Speed and Direction: 10 miles per hour (mph) to west

Humidity: ☒ Arid ☐ Semiarid ☐ Humid ☐ Tropical

Expected High Temperature (°F): Unknown

Expected Low Temperature (°F): Unknown

1.1.4 Locations of Resources Available to On-Site Personnel

Nearest telephone:	DBS&A personnel
Nearest water:	Potable water will be supplied
Nearest bathroom facilities:	Gas station in Tucumcari, NM
Nearest fire extinguisher:	DBS&A vehicles
Nearest first aid kit:	DBS&A vehicles
Warning/method signal for site evacuation:	Verbal

1.2 Chemicals in On-Site Media

Chemicals of interest include petroleum hydrocarbons.

1.3 Site Work Zones

Contamination reduction zones (CRZs) will be established at the outer boundary of the exclusion zone (EZ). Remedial action (RA) personnel will remove or decontaminate protective clothing and equipment that may have been in contact with affected soils or other materials containing elevated COC concentrations within the CRZs.

Areas of the site not marked as EZs or CRZs will be designated as support zones.

2. Organization and Safety Responsibilities

Project Manager: *John Bunch*

Acquaint field personnel with potential hazards and procedures to minimize the negative impact of those hazards. Make available proper personal protective equipment (PPE), adequate time and budget, and trained personnel to perform site work in a safe manner. Arrange for preparation of a HASP. Investigate and report to the Designated Health and Safety Officer (DSHO) each work-related illness or injury, near-misses, accidents, and damage to physical property.

Designated Health and Safety Officer: *Onsite DBS&A Personnel*

Write or review and approve the HASP. Implement safety and health procedures that are stated in the HASP. Conduct periodic audits to confirm that the HASP is being followed.

Site Supervisor: *Onsite DBS&A Personnel*

Ensure that site personnel have read and signed the master copy of this document (Attachment 1). Coordinate with the Site Safety and Health Officer (SSHO) regarding accident investigations, as necessary (See Accident Investigation Form in Attachment 1).

Site Safety and Health Officer: *Onsite DBS&A Personnel*

Ensure that the guidelines, rules, and procedures in this document are followed for site work. Check that site personnel meet requirements regarding training, medical examinations, and fit testing. Be familiar with local emergency services. Conduct a tailgate safety and health meeting before work startup each day and when activities change. Additional meetings may be required for specific job tasks or site activities. Maintain and inspect PPE, monitor on-site hazards, and monitor the physical condition of site personnel. Perform daily inspections of work site activities. Maintain safety and health files, which will include training and medical certifications, tailgate meeting notes and rosters, inspection reports, or other safety and health documentation, as applicable. Shut down operations that pose a potential threat to site personnel.

Employees

Obey safety and health work practices issued by law and by GLA/DBS&A. Wear PPE as directed by this HASP. PPE requirements are found in Section 7. Use safety equipment as directed by this HASP.

Visitors

Follow the direction of the Site Supervisor or the SSHO. Read, understand, and sign the HASP. Do not enter the work zones unless the appropriate training has been obtained. Use PPE, as appropriate.

Subcontractors

Follow the guidelines, rules, and procedures in this document. Attend tailgate meetings and sign the meeting log included in Attachment 1 of this HASP following each meeting. Report recognized unsafe conditions and actions to the SSHO and/or the Project Manager. Provide SDSs for subcontractor-provided materials at the job site. Provide their own safety and health procedures addressing hazard recognition, evaluation and control practices/procedures for general and specific site hazards and activities unique to their operations.

3. General Hazard Review and Assessment

The hazard review for the site is based on DBS&A's experience conducting similar field operations at similar sites. Table 1 identifies the hazards associated with each task and provides a hazard ranking (from low to high) for each task. The controls (elimination, substitution, engineering, administrative, or PPE) that will be employed to protect worker safety are described in Table 2.

Table 1. Proposed Tasks and Hazard Assessment

Potential Hazards	Proposed Tasks				
	Soil sampling	Well P&A	Excavation		
Heavy equipment		X	X		
Excavation		X	X		
Hand tools	X	X	X		
Unstable ground			X		
Noise hazards		X	X		
Eye hazards	X	X	X		
Head hazards		X	X		
Dermal contact	X	X	X		
Slips, trips, and/or falls	X	X	X		
Heavy lifting		X	X		
Vehicle traffic			X		
Unauthorized site entry			X		
Buried utilities		X	X		
Overhead utilities		X	X		
Respiratory concerns	X	X	X		
Contaminated soil or liquids	X	X	X		
Explosive atmospheres					
Heat/cold stress	X	X	X		
Sunburn	X	X	X		
Electrical hazards		X	X		
Compressed air or gases			X		
Fire hazards (hot work)					
Chemical hazards (other than COCs)		X	X		
Insects and vermin	X	X	X		
Confined spaces					
Ionizing radiation					
Unexploded ordnance/munitions					
HAZARD RANKING (Low, Medium, High)	Low	Medium	Medium		

COCs = Contaminants of concern

Table 2. Controls for Potential Hazards

Potential Hazard	Controls to Eliminate or Manage Hazard
Heavy equipment	Wear reflective vest, keep eye contact with operator
Excavation	Stay back a safe distance, competent person should inspect excavation
Hand tools	Wear work gloves, use the tool for its intended purpose
Unstable ground	Be aware of your surroundings, wear slip resistant shoes
Noise hazards	Wear appropriate noise cancellation PPE
Eye hazards	Wear appropriate safety glasses, goggles, or face shield
Head hazards	Wear appropriate hard hat
Dermal contact	Wear long sleeve shirts, use caution handling contaminated liquids and soils
Slips, trips, and/or falls	Be aware of your surroundings, wear slip resistant shoes
Heavy lifting	Use proper lifting techniques, use dollies or other equipment to move heavy loads
Vehicle traffic	Wear reflective vests, be aware of traffic
Unauthorized site entry	Use barricades to restrict site access
Buried utilities	Call local commercial underground locating service, and/or private underground locating service
Overhead utilities	Use caution around overhead utilities, have utilities guarded if necessary
Respiratory concerns	Wear appropriate respiratory protection for the hazard, move upwind of dust creating work
Contaminated soil or liquids	Be cautious handling soils or liquids, wear appropriate gloves for the hazard
Explosive atmospheres	Do not smoke or use spark devices near locations, use gas monitoring equipment for testing
Heat/cold stress	Wear proper clothing, drink plenty of liquids, take breaks
Sunburn	Wear sunblock, wear large brim hats and proper clothing
Electrical hazards	Always inspect electrical equipment before use, never use electrical devices without training
Compressed air or gases	Stay clear of gas cylinders unless properly trained on their use and storage
Fire hazards (hot work)	Keep a fire extinguisher in work truck, obtain hot work permit if it is a site requirement
Chemical hazards (other than COCs)	Wear appropriate PPE, stay upwind of construction activities
Insects and vermin	Never approach a wild animal, be aware of insects when moving objects
Confined spaces	Never enter a confined space unless properly trained and with a trained person
Ionizing radiation	Use proper PPE and storage containers when contacting items that have radiation
Unexploded ordnance/ munitions	Be aware of your surroundings

3.1 Sunburn and Temperature Hazards

Sunburn is perhaps the most common hazard for field site workers. Sunburn is caused by overexposure to ultraviolet (UV) radiation from the sun. Chronic overexposure to sunlight, especially the UV-B component, accelerates skin aging and increases the risk of skin cancer. The following guidelines can be used to avoid overexposure to UV rays from the sun:

- Wear protective clothing (long sleeves, hats with protective brims, and long pants) that provides the most coverage and is consistent with the job to be performed.
- Protect eyes with UV-absorbing tinted safety glasses.
- Use a commercial sunscreen with a skin protection factor (SPF) of at least 30 and protection against both UV-A and UV-B rays. Sunscreen should be applied 15 to 30 minutes before exposure and reapplied at 60- to 90-minute intervals. If possible, avoid exposure to the sun between 10:00 a.m. and 2:00 p.m., as rays are the most powerful during this period.

Heat stress is often the most critical hazard for field site workers. The effects can range from transient heat fatigue to serious illness and even death. Heat stress is caused by a number of interacting factors including environmental conditions, clothing, workload, and the individual characteristics of the worker. Because heat stress is fairly common during the summer and fall, preventive measures and alertness are especially important during these seasons. A comprehensive Heat Illness Prevention Plan is included in Attachment 3, in accordance with CAL/OSHA.

During cold weather, DBS&A personnel should wear multilayer, wind-resistant outfits and drink warm fluids. Warm shelter will be available during breaks.

3.2 Weather Hazards

In addition to the hazards of UV radiation from the sun and extreme ambient temperatures, general weather conditions may present a hazard to field workers. Rain and snow may result in muddy, slippery conditions that make foot and vehicle travel hazardous. Lightning and tornadoes, common summertime phenomena, can be extremely hazardous. In the event of adverse weather (e.g., high wind and airborne dust, lightning, extreme cold or heat, or rain) that could compromise worker's health and safety during outdoor activities, the SSHO will shut down operations. Additional safety measures for weather-related hazards are described in the IIPP.

If lightning is visible and the sound of thunder is heard less than 60 seconds after lightning is observed (10 miles), stop field operations and move to a sturdy, completely enclosed building. There are many apps for cell phones that will show immediate radar and tell you how many miles away lightning is from your location (e.g., Weather Bug). If a sturdy shelter is not available, get inside a hardtop automobile and keep the windows up. Automobiles offer excellent lightning protection.

In the event of a tornado, move to a pre-designated shelter. If an underground shelter is not available, move to an interior room or hallway on the lowest floor and get under a sturdy piece of furniture. Stay away from windows. If caught outside or in a vehicle, do not try to outrun a tornado in your car; instead, lie flat in a nearby ditch or depression. Remember that flying debris from tornadoes causes most deaths and injuries.

3.3 Biological Hazards

Venomous snakes and arthropods (e.g., insects, spiders, ticks, scorpions, and centipedes) create a hazard when their habitats are disturbed. Awareness and avoidance are the best defenses. Fieldwork shall be performed in a manner that minimizes disturbances of these creatures. Should a bite or sting occur, first aid shall be immediately applied and medical treatment sought as soon as possible.

The feces and urine of some desert rodents may be carriers of the hantavirus, and fleas on living or dead animals may carry bubonic plague. Both hantavirus and bubonic plague occur in the southwestern United States. Field workers should avoid all contact with rodent nests, droppings, or bodies. Professional medical treatment should be sought immediately if a worker suffers an animal bite of any kind.

The most common adverse reactions to plants from occupational exposures are skin injuries. These can result from simple mechanical trauma, photochemical response to psoralens, or sensitization to plant allergens. In the western United States, there are many plants that contain thorns, spines, and/or needles capable of injury.

Secondary to needle pricks from thorns and cactus needles, the most common trauma results from contact with plants in the poison ivy family (Anacardiaceae), including poison oak and poison sumac. The sensitizers in these plants are various unsaturated, long-chained substituted catechols. In healthy undisturbed plants, the sensitizer is contained in special channels. Contact

with the intact plant does not produce sensitization or dermatitis. Even slight damage can release the sensitizer, however, and the best prevention is avoiding contact with the plants.

If skin contact occurs, the dermatitis may be avoided by prompt removal of the allergen. About 10 minutes are required for the cutaneous penetration of the allergen. Wash with running water, but avoid soap. Soap removes protective skin oils and may cause or hasten penetration of the allergen. Avoid nonpolar solvents, such as alcohol, which may spread the allergen over a wider area. Early application of topical steroids minimizes the severity of the dermatitis. If the face or genitalia are involved, seek professional medical assistance immediately.

Important Note: Any individual with a known allergy to wasps and bees must notify the SSHO and/or PM/task leader prior to working at the project site. If an individual has a history of allergic reactions to insect bites or is subject to attacks of hay fever or asthma, or if they are not promptly relieved of symptoms after first aid is administered, a physician will be called or immediate emergency medical treatment will be sought. In a highly sensitive person, do not wait for symptoms to appear, as delay can be fatal.

3.4 Emergency Response

The HASP summary lists the names and telephone numbers of people and agencies that might be contacted in the event of an emergency. The emergency response (ER) plan is provided as Attachment 2. The ER plan includes instructions and procedures for emergency vehicular access, evacuation procedures for personnel, methods of containing a fire, and instructions on how to handle a variety of specific medical emergencies.

4. Code of Safe Practices

GLA's code of safe practices advocates exercising every reasonable precaution when performing work to prevent injuries and accidents, and to protect the safety and health of employees, the public, and the environment.

Employees have certain responsibilities for their own safety, as follows:

- Report to work rested, and physically and mentally fit to perform the job assignment.
- Working while under the influence of intoxicants, narcotics, or controlled substances is prohibited.

- Wear suitable clothing for the weather and the work.
- Wear PPE and follow established procedures for a particular job. Do not wear jewelry or loose-fitting clothing when operating or near equipment.
- Call to the supervisor's attention any behavior or condition that may cause injury or illness to others or damage to property.
- Labels on tools, materials, and chemical containers must be read before use, and the instructions for proper use, handling, and required PPE must be followed.
- Discontinue any operation that could lead to injury, illness, or property damage.
- Keep horseplay and other disruptive behavior away from the job.
- Promptly report to the Site Supervisor or SSHO any occupational injury, illness, or exposure to toxic material. If injured, get first aid. Small injuries can become serious if neglected.
- Promptly inform the Site Supervisor or SSHO whenever new substances, processes, procedures, or equipment that could present new safety and health hazards are brought into work areas or onto projects.
- Do not eat, smoke, chew tobacco, or chew gum in the work area.
- Do not allow visitors without adequate safety training or PPE into the work area.
- Work upwind of invasive field activities when it is possible to do so.
- Perform work in a manner that will minimize dust from becoming airborne (i.e., use water spray or wet technique when feasible).
- Avoid contact with objects or water unless the contact is necessary to the field operation.
- Be alert to any abnormal behavior of other personnel that may indicate distress, disorientation, or other ill effects.
- Be aware of the potential for biological hazards at the field site (e.g., poison oak, loose dogs, snakes, rodent droppings).
- Verify that vehicles have an ABC-rated fire extinguisher, a first-aid kit, and 16 ounces of eyewash fluid.
- Employees must not attempt to cross the path of a truck or a piece of heavy equipment unless eye contact is made with the operator and the "go ahead" signal is given. Employees must stay alert and keep clear of moving equipment.

- Monitor weather conditions, particularly wind direction, as they could affect potential exposure.
- Excavations and trenches have additional hazards that require special precautions prior to entering. Supervisors shall be competent in the identification of hazards and determination in protective systems.
- Operate a vehicle only if you are a licensed driver. Seatbelts must be worn when operating a company vehicle or when driving a private vehicle on company business.
- Drive company vehicles safely and professionally and care for them as you would other company property. Drive only vehicles that are safe and within maintenance specifications. Obey traffic regulations.
- Do not exceed speed limits for conditions.
- Practice defensive driving.
- Park in legal spaces; do not obstruct traffic.
- Lock vehicle when unattended.
- Contact the SSHO if contact with human blood occurs during the administration of first aid.

These general safety responsibilities also apply to subcontractors and visitors.

5. Air and Noise Monitoring

This section describes the measures that will be taken to protect workers from exposures to hazardous atmospheres and noise during the site activities.

5.1 Air Monitoring

Respiratory protection will be used in accordance with OSHA regulations in 29 CFR 1910.134 and the GLA Respiratory Protection Program Plan. All persons using respiratory protection must be medically cleared to do so and should be aware of the following important definitions:

- Assigned protection factor (APF) is the level of protection that a respirator or class of respirators is expected to provide to employees and is used to select the appropriate class of respirators. Level C PPE includes an air-purifying respirator (APR). A half-face APR has an APF of 10; a full-facepiece APR has an APF of 50.

- Maximum use concentration (MUC) is the maximum atmospheric concentration of a hazardous substance from which an employee can expect to be protected when wearing a respirator. The MUC is calculated by multiplying the occupational exposure limit by the APF. For example, in the case of benzene, OSHA has established a permissible exposure level (PEL) of 1 part per million (ppm) (for an 8-hour time-weighted average [TWA]), and a short-term exposure limit (STEL) of 5 ppm. Therefore, the MUC for benzene is 10 ppm for a half-face APR and 50 ppm for a full-facepiece APR. The half-face and full-facepiece APRs may be used for short periods of time (up to 15 minutes) in benzene concentrations up to 50 and 250 ppm, respectively (STEL x APF).

Table 1 identifies each of the tasks to be performed at the site. These tasks may include monitoring of organic vapors, particulates, combustible gases, and oxygen. Section 1.2 lists each of the contaminants of concern for the site. Table 3 lists the types of hazardous atmospheres that could be present at a site, the air monitoring equipment used for each, and the action levels to be used at this site. When in use, all meters will be calibrated daily in accordance with manufacturer's instructions.

Table 3. Air Monitoring Equipment, Action Levels, and Protective Measures

Hazard	Equipment	Action Levels in BZ	Action Response
Organic vapors	PID, FID	Background	Level D PPE
		OEL of most toxic contaminant sustained for 5 minutes	Use Level C respiratory protection; evaluate specific compounds.
		MUC for respiratory protection in use.	Stop work; upgrade to Level B
	Colorimetric (Drager) Tubes	Chemical specific:	Use Level C respiratory protection if compounds exceed OELs.
Particulates	Dust Monitor	Visible dust	Suppress with water
		<5 mg/m ³	Level D PPE
		>5 mg/m ³	Use Level C respiratory protection
Flammable/explosive atmosphere	Explosimeter	<10% scale reading	Proceed with work
		10 – 15% scale reading	Stop work
		>15% scale reading	Evacuate site
Oxygen-deficient atmosphere	Oxygen Meter	19.5 – 23.5%	Normal - continue work
		<19.5%	Evacuate - oxygen deficient
		>23.5%	Evacuate - fire hazard
Ionizing radiation	Gamma radiation meter	>0.1 millirem/hr	Radiation sources may be present
		>1 millirem/hr	Evacuate - radiation hazard

BZ = Breathing zone

PID = Photoionization detector

FID = Flame ionization detector

PPE = Personal protective equipment

OEL = Occupational exposure limit

MUC = Maximum use concentration

ppm = Parts per million

 mg/m³ = Milligrams per cubic meter

5.1.1 Organic Vapors

The need for respiratory protection from toxic vapors is based on the most hazardous constituent that is likely to be present or known to be present, based on soil, soil gas, and/or groundwater sampling. Section 1.2 lists each of the volatile contaminants of concern for the site.

All personnel should be aware that the detection capabilities of photoionization detectors (PIDs) may be enhanced or dampened by high humidity or by the presence of certain gases, such as methane. Direct evidence of contamination, such as visible staining of soils or strong odors, should be used to further evaluate these quantitative instrument readings.

5.1.2 Combustible and Oxygen-Deficient Atmospheres

An instrument or instruments capable of detecting combustible gases and oxygen levels will be used during activities where these atmospheres may be encountered. The instrument(s) shall be placed as close to work activity as possible. The lower explosive limit (LEL) and the upper explosive limit (UEL) for chemicals are published in the NIOSH Pocket Guide. Work activities will be suspended when combustible gas measurements are at or between the LEL and the UEL.

Normal atmosphere contains between 20.8 and 21 percent oxygen. The atmosphere is oxygen-deficient if it contains less than 19.5 percent oxygen and oxygen-enriched if it contains more than 22 percent oxygen. Oxygen-deficient atmospheres may be created when oxygen is displaced by other gases or consumed by bacterial activities. Oxygen-enriched atmospheres can be created by certain chemical reactions and present a significant fire and explosion risk. Work activities will be suspended when readings indicate oxygen levels at or below 19.5 percent and at or above 22 percent.

5.1.3 Particulates

When respirable dust is considered a potential hazard (e.g., drilling or excavating operations), direct-reading personal dust monitors (e.g., Thermo Scientific pDR-1500 personal DataRAM) should be used to identify and quantify airborne dust concentrations that a worker is exposed to while working. NIOSH has established a recommended exposure limit (REL) for crystalline silica as respirable dust of 0.05 milligrams per cubic meter (mg/m^3). This value is 10-hour TWA concentration for a 40-hour workweek. NIOSH recommends the use of N95 or more efficient filters for protection against respirable dust. The MUC for crystalline silica as respirable dust is 0.5 mg/m^3 for a half-face APR and 2.5 mg/m^3 for a full-face APR. Supplied air respirators must be used if airborne concentrations of crystalline silica exceed 2.5 mg/m^3 (NIOSH Pocket Guide, 2013). Respirator cartridges and filters will be changed each day.

5.2 Noise Monitoring

All site personnel who are exposed to average noise levels of 85 A-weighted decibels (dBA) or greater during an 8-hour workday must participate in their company's Hearing Protection

Program. Workers must use appropriate hearing protection whenever noise levels exceed 90 dBA. The GLA H&S Program Coordinator has used a noise meter to survey a variety of equipment that may be used during the site activities and found that work around heavy equipment is most likely to require hearing protection. Noise levels are highest near the engines and compressors, but generally do not exceed 85 dBA in the typical operator locations (e.g., behind the drill rig). However, impact noise, such as the tripping of a pneumatic or hydraulic hammer on a direct-push rig or driving casing on a dual-tube drill rig, can be considerably higher. When a noise meter is not available, the following rule of thumb should be used: if it seems loud or you cannot carry on a normal conversation, hearing protection should be worn.

6. Training and Medical Surveillance Requirements

This section refers to field personnel who work on or may work on hazardous waste sites regulated by OSHA. All field personnel must have successfully completed training and field experience requirements for hazardous waste site operations in accordance with the requirements of 29 CFR section 1910.120(e) and 8 CCR 5192(e).

6.1 Regular Site Personnel Exposed to Hazardous Substances

Site personnel whose job responsibilities cause them to be exposed to or to have the potential to be exposed to hazardous substances or health hazards are required to comply with 29 CFR 1910.120(e)(3)(I) or applicable state regulations. This regulation requires site personnel exposed to hazardous substances to complete 40 hours of off-site instruction and three days of field experience supervised by a trained supervisor.

6.2 Regular Site Personnel Potentially Exposed to Hazardous Substances Below Permissible Exposure Limits

Regular site personnel whose job responsibilities cause them to be potentially exposed to hazardous substances below permissible exposure limits (PELs) or health hazards are required to comply with 29 CFR 1910.120(e)(3)(iii) or applicable state regulations. This regulation requires that these personnel receive a minimum of 40 hours of off-site instruction and one day of field experience supervised by a trained supervisor. The project SSHO or designated representative must ensure that these personnel will not be exposed above PELs. This decision will be made on the basis of review of previous monitoring in these work areas and possibly historical site background information.

6.3 Occasional Site Personnel Potentially Exposed to Hazardous Substances Below Permissible Exposure Limits

Occasional site personnel who visit the site for a specific limited task and whose exposure is designated by the SSHO to be under PELs are required to comply with 29 CFR 1910.120(e)(3)(ii) or applicable state regulations. This regulation requires that these personnel receive a minimum of 40 hours of off-site instruction and one day of field experience supervised by a trained supervisor.

In accordance with 29 CFR 1910.120(e)(3)(iv) or applicable state regulations, regular (as defined in Section 4.1.2) and occasional site personnel having completed an initial 24-hour classroom instruction must complete an additional 16 hours of off-site instruction and two days of field experience supervised by a trained supervisor before they are qualified to engage in activities that may expose them to hazardous substances above PELs.

6.4 Management and Supervisory Training

In accordance with 29 CFR 1910.120(e)(4) or applicable state regulations, individuals who manage or supervise personnel engaged in hazardous waste operations at the site must receive 40 hours of off-site instruction and three days of field experience supervised by a trained supervisor. In addition, management and supervisory personnel shall receive an additional 8 hours of specialized training that addresses the safety and health program, training requirements, personal protective and respiratory equipment program, health hazard monitoring procedures.

6.5 Refresher Training

Annual refresher training in accordance with 29CFR Section 1910.120(e)(8) or applicable state regulations shall be completed at least annually following the completion of the individual's 40-hour or 24-hour training course. Personnel will be required to attend the annual refresher training to maintain their qualifications for hazardous waste operation.

6.6 Documentation

Training must be properly documented and filed on-site for reference by the DSHO or designated representative. Personnel required to meet the training requirements must present evidence of this training for applicable projects. The Site Supervisor is responsible for checking before each activity to verify complete and current documentation. A copy of the training

records documentation will be kept for a duration of no less than 3 years, and will be readily available on-site, as applicable.

6.7 Site-Specific Training

In addition to the training requirements specified above, field personnel must participate in site-specific training. The training, conducted by the PM or SSHO, will include a review of the health and safety procedures specific to each individual's job responsibilities and tasks. The field team should review the HASP to ensure that each individual is familiar with the site and fully understands the health and safety procedures and guidelines they are required to implement for each assigned task. Specific attention should be given to the following items:

- Facility/site description and characterization
- Chemical and physical hazards
- Safety rules
- Emergency response/contingency plan and emergency contacts
- Protective measures and controls, including PPE, safety equipment, restrictions, and site communication
- Decontamination procedures
- Site control, work zones, security, access and exit points, and site communication plan

Project personnel will be required to adhere to safe work practices as defined by the SSHO.

6.8 Medical Surveillance Requirements

Field personnel are required to participate in the Medical Surveillance Program. All field personnel must have completed either a baseline or annual medical monitoring examination within 12 months of their assignment to the site. Only medically qualified personnel will be permitted to conduct field activities.

As part of the medical surveillance program, all personnel working at hazardous waste sites are required to undergo an annual physical examination. The content of the annual surveillance physical includes most of the baseline physical, laboratory, and diagnostic tests, but may also include additional tests in instances of actual or potential chemical exposure. It will be up to the attending physician to determine the need for additional tests. The physician shall summarize pertinent findings and submit copies of the summary to the employee.

6.9 Site-Specific Medical Monitoring

The risk of exposure to the types of chemical and physical hazards anticipated during field activities at the work site will not require field personnel to undergo specific tests prior to beginning field activities. Physical, diagnostic, and laboratory tests conducted as part of the baseline or periodic medical monitoring are expected to be adequate for the types and levels of potential chemical exposure. Follow-up testing will be conducted in the event of any exposures to airborne contaminants exceeding PELs.

Field personnel will be informed of the results of any personal monitoring/sampling conducted during field activities and any other information related to possible exposure. Any data or other documentation indicating possible employee exposure to chemical hazards exceeding PELs will be forwarded to the employee and, upon the employee's request, to his/her personal physician.

6.10 Exposure/Injury/Medical Support

Any employee who suffers an illness, injury, or chemical exposure during the course of field activities is required to see a physician. Depending upon the extent and type of exposure, illness, or injury, it may be critical to perform follow-up testing within 24 to 48 hours of initial medical examination. The physician responsible for conducting the employee medical surveillance examinations shall be notified and consulted to determine the type(s) of tests required to accurately monitor the employee. Workers may return to work only with the written approval of the attending physician.

6.11 Record Keeping

In addition to OSHA and Cal/OSHA record keeping requirements, the SSHO will maintain a file of any health and safety related events occurring at a site. Any exposure or potential exposure episodes are to be recorded, as well as those accidents or incidents that require the filing of an Illness, Injury and Unusual Occurrence Report (e.g., injuries, illnesses, accidental damage to property, or "near miss" occurrences that could have resulted in personal injury). A copy of the Illness, Injury and Unusual Occurrence Report form is included as Appendix 1-4 of the Injury and Illness Prevention Plan (IIPP).

7. Protective Equipment

At a minimum, the following PPE shall be used by personnel while working at the site:

- Safety shoes with sturdy soles that meet the requirements of ANSI Standard Z41 or ASTM F2412/F2413
- Shirts that cover the shoulders, with sleeves at least T-shirt length
- Full-length trousers, slacks, or jeans in good condition
- Protective eyewear stamped with the ANSI/International Safety Equipment Association certification
- Hard hat (when needed)
- Chemical-resistant gloves (when needed)
- Hearing protection (when needed)

Level C PPE will include Level D equipment plus a full- or half-face APR with appropriate cartridges and pre-filters. Workers using respiratory protection should be familiar with guidelines to determine that the equipment being used for respiratory protection is providing adequate protection, as discussed in Section 6.1. Chemical-resistant coveralls and/or gloves will be worn whenever conditions require DBS&A field personnel to come in direct contact with potentially contaminated materials.

DBS&A will supply employees with PPE that meets requirements established by NIOSH or the American National Standards Institute (ANSI), and that meet current OSHA criteria. Employees will be trained in the selection, care, and use of PPE, as described in the IIPP.

7.1 Disposal of Contaminated Clothing or Equipment

All potentially contaminated clothing, Tyvek coveralls, gloves, paper towels, and other expendable items will be placed in garbage bags for disposal. Fresh Tyvek coveralls and work gloves should be donned at the start of each workday or when otherwise required.

7.2 Decontamination Procedures

Specific personnel decontamination procedures are based on the personal level of protection. When using Level D protection, a personnel decontamination system (PDS) is not required. However, because project personnel wearing Level D protection may need to upgrade to Level C if site conditions change, a PDS may be established based on specific site characteristics.

The decontamination stations for Level C decontamination may include (1) a segregated equipment drop for hand tools and monitoring equipment, (2) a wash and rinse for gloves and disposable booties (if worn), (3) a removal station for gloves and disposable booties (if worn),

(4) a removal station for respiratory protection, hard hat, safety glasses, and Tyvek suits, and
(5) a station to wash and rinse hands and face. Specific procedures and the sequence of events will be determined based on the potential hazards identified at the site. The stations listed are a guide to the selection of adequate decontamination procedures.

When a PDS is set up, the SSHO or his/her designee has the responsibility for operating the decontamination station. This person will make sure that all personnel enter and leave active work areas through the PDS, that all personnel decontaminate properly, and that disposable items are bagged. The SSHO will assist on-site workers in changing cartridges, masks, gloves, or other pieces of safety equipment, and monitor the length of work periods. Disposable items will be placed in plastic bags and properly disposed of. Non-disposable items will be properly cleaned and dried according to manufacturer's specifications and stored for future use.

8. Site Control

Barricades, caution tape, or other necessary means shall be used when necessary to prevent unauthorized access into the work area. The SSHO will establish the physical limits of the work areas at the site and instruct all personnel and visitors concerning the boundaries of the exclusion zones.

Traffic control plans may be required for all sites where work activities may impact traffic flow on adjacent roadways. These plans must be submitted to and approved by the local traffic control authority. The PM or their designee will be responsible for ensuring that the necessary site control measures and plans are prepared and implemented.

9. Confined Space Entry

Any confined spaces identified as the work progresses shall be properly marked and managed accordingly. GLA has developed and implemented a Confined Space Entry Program Plan that provides policies and procedures to be followed for confined space entries, including air monitoring, participant training and duties, and authorizing and permitting confined space entries.

If confined space entries become necessary, the SSHO will contact the PM and this site-specific HASP will be amended accordingly. The SSHO will ensure that entries are performed in

accordance with the GLA Confined Space Entry Program Plan. If necessary, the SSHO will contact the local fire department to coordinate the entry and rescue requirements.

10. Spill Prevention

Minor spills of potentially contaminated soil, residual free product, or groundwater may occur during site work. The area beneath drill rig may be lined with plastic sheeting to control fluid leaks from the equipment. If a spill occurs, site personnel will use best judgment and available materials to contain and prevent it from spreading. All contained soil and liquids will be disposed of in compliance with federal, state, and local requirements.

11. Safety Meetings

A site safety or “tailgate” safety meeting will be held every day before the start of work for the project and before the start of each new activity. All personnel directly involved in the work are required to attend. This HASP and all pertinent health and safety issues will be discussed during the initial briefing or meetings. The tailgate meeting will also address specific issues regarding on-site health and safety, such as the proposed work and associated hazards, recent problems, and any accidents or incidents. All personnel will acknowledge their attendance by signing the safety meeting form (Attachment 1).

Attachment 1

Health and Safety Forms



Health and Safety Plan Acceptance Form

Instructions: This form is to be completed by each person prior to beginning work at the subject hazardous waste site. THIS FORM IS TO BE MAINTAINED IN THE PROJECT FILES.

Project _____

Job No. _____

Location _____

By my signature below, I acknowledge that I have read and understand the contents of the Health & Safety Plan for this project. I agree to perform my work in accordance with the plan.

[illegible]



Tailgate Safety Meeting

Project ID: _____ Day: _____

Location: _____ Date: _____

Project Manager: _____ Team Leader: _____

Health & Safety Officer: _____ No. of Personnel Present: _____

Check Topics Discussed

Scheduled Activities: _____

Chemical/Physical Hazards

- ☐ Contaminants of Concern
- ☐ Safety Data Sheets
- ☐ Overhead & Underground Utilities
- ☐ Extraordinary Site Conditions
- ☐ Lifting/Slips/Trips/Falls
- ☐ Heat/Cold Stress (Inc. Sunburn)
- ☐ Other: _____

First Aid

- ☐ Facilities/Kits/Eyewashes

Personal Protective Equipment - Level D

- ☐ Hard Hats/Hearing Protection
- ☐ Steel-Toed Boots
- ☐ Glasses/Goggles/Shields
- ☐ Gloves
- ☐ Contingency: Level C
- ☐ Respirators & Tyvek/Saranex

Emergency Procedures/Site Safety

- ☐ "Buddy System"
- ☐ Communication
- ☐ Facility-Specific Regulations
- ☐ Rally Point

Emergency Facilities

Name: _____

Address: _____

Tel. No.: _____

Vehicle/Heavy Equipment

- ☐ Drill Rig "KILL" Switches
- ☐ Operation & Inspection
- ☐ Preventive Maintenance
- ☐ Rotating Augers/Moving Parts

Sanitation & Hygiene

- ☐ Drinking Water/Fluids
- ☐ Restrooms
- ☐ Personal Cleanliness

Housekeeping

- ☐ Waste Containers
- ☐ Waste Materials
- ☐ Waste Water/Decon Water

Fire Prevention

- ☐ Locations of Extinguishers
- ☐ Smoking
- ☐ Hot Work
- ☐ Explosive & Flammable Liquids
- ☐ Other: _____

Safety Meeting Attendees:

Name	Signature	Name	Signature
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____



Illnesses, Injury, and Unusual Occurrence Report

Date of Event: _____ Report Number: _____

1. Name of the Site: _____

2. Name of individual(s) injured, ill, or exposed:

3. Provide a brief, but concise description of the event:

4. Damaged Property:

5. Damage to equipment and the type of equipment:

6. Did this accident involve a motor vehicle? ☐ Yes ☐ No

Any motor vehicle accident, regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle, while the employee is acting in the course of employment must be accompanied by a police report, unless the police refuse to respond to the scene of the accident. In addition, draw a simple illustration of the scene on the reverse side of this form.

7. Action taken/additional employee training:

8. Name and Signature: _____ Name (print)

_____ Signature

_____ Date completed

Diagram 1:

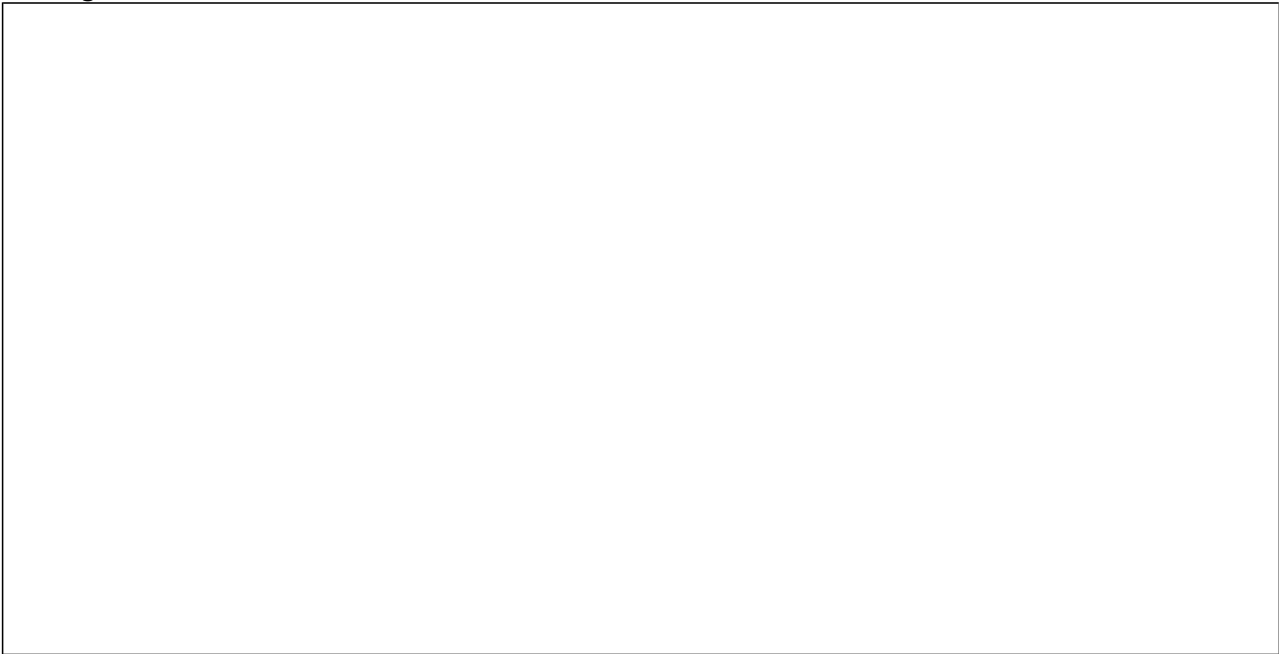


Diagram 2:



Health and Safety Inspection Checklist - Field Environment

SAFE WORK CONDITION/PRACTICE	CHECKED BY	COMMENTS
1. GLA field activities:		☐ No field work being performed at this
If yes, please describe briefly or attach scope:		☐ Yes/Approximate days per month: ____
		☐ Yes/Hazardous field work (Attach Scope)
2. Does GLA have sub-contractors on site?		☐ No ☐ Yes
If you answered "No" to questions 1 and 2, do not complete the rest of this form. Submit only this form.		
3. Does GLA Corporate IIPP address field		☐ Yes ☐ No ☐ Don't Know?
4. GLA Site Safety Plan (SSP) developed and on		☐ Yes ☐ No ☐ Don't Know?
5. Client SSP on site.		☐ Yes ☐ No
6. Are GLA activities addressed in the Client's SSP?		☐ Yes ☐ No
7. Sub-Contractor SSP on site.		☐ Yes ☐ No
8. Have all GLA team personnel reviewed the site IIPP/SSP and signed the acknowledgement		☐ Yes ☐ No ☐ Don't Know?
9. GLA safety training records on site?		☐ Yes ☐ No
10. GLA sub-contractor safety training records on		☐ Yes ☐ No
11. Records of Tailgate Safety Meetings on site?		☐ Yes ☐ No
12. Minimum PPE requirements met.		☐ Yes ☐ No
13. PPE provided, properly stored and used.		☐ Yes ☐ No
14. Cal/OSHA, Fed/OSHA posters posted?		☐ Yes ☐ No Location: _____
15. Emergency medical information displayed.		☐ Yes ☐ No Location: _____
16. Evacuation routes clearly marked.		☐ Yes ☐ No Location: _____
17. Evacuation route maps posted.		☐ Yes ☐ No Location: _____
18. Adequate employee CPR/First Aid Training.		☐ Yes ☐ No
19. MSDS available?		☐ Yes ☐ No Location: _____
20. Sanitation adequate.		☐ Yes ☐ No
21. Are any special hazard procedures being used?		☐ Yes ☐ No Describe: _____
22. Eyewash stations identified/tested.		☐ Yes ☐ No Location: _____
23. Fire extinguishers charged, identified, inspected.		☐ Yes ☐ No Last Inspection Date: ____

Person responsible for correction: _____ Copy provided: _____

Corrective action (specify in detail): _____

Signature of person responsible for correction: _____ Date: _____

Copy reviewed by management official: _____ Date: _____

Attachment 2

Emergency Response Plan

Emergency Response Plan

Purpose and Scope

The following emergency response plan (ER plan) has been developed to include instruction and procedures for emergency vehicular access, evacuation procedures for personnel, methods of containing a fire, and medical emergencies. All extraordinary conditions that require concise and timely action must be dealt with in a manner that minimizes the health and safety risks to the immediate site personnel and the general public.

General Response Considerations

All on-site personnel shall be familiar with the ER plan described herein. This section will be maintained in the field office.

Due to the nature of the site, the emergencies or extraordinary conditions that may arise are more than likely limited to personnel accidents requiring first aid, exposure to contaminated sediments, and potential fire near mechanical equipment. The following procedures shall be implemented in the event of an emergency:

- First aid or other appropriate initial action will be administered by those closest to the accident/event. This assistance will be coordinated by the Site Safety and Health Officer (SSHO) and will be conducted in a manner so that those rendering assistance are not placed in a situation of unacceptable risk. The primary concern is to avoid placing a greater number of workers in jeopardy.
- Personnel shall report all accidents and unusual events to the SSHO, the subcontractor health and safety representative, and the Project Manager (PM).

The SSHO and other on-site personnel are responsible for conducting the emergency response in an efficient, rapid, and safe manner. The SSHO will decide if off-site assistance and/or medical treatment is required and shall be responsible for alerting off-site authorities and arranging for their assistance. The SSHO, in coordination with the contractor health and safety representative, will provide an accident/incident report to the PM that includes the following:

- A description of the emergency (including date, time and duration)

- Date, time and names of all persons/agencies notified and their response
- A description of corrective actions implemented or other resolution of the incident

All workers at the site are responsible for conducting themselves in a mature, calm manner in the event of an accident/unusual event. All personnel must conduct themselves in a manner to avoid spreading the danger to themselves and to surrounding workers.

Responsibilities

The SSHO shall have responsibility for directing response activities in the event of an emergency. He/she will:

- Assess the situation
- Determine required response measures
- Notify appropriate response teams
- Determine and direct on-site personnel during the emergency

The SSHO shall coordinate the response activities of on-site personnel with those of public agencies.

Public Response Agencies

The site-specific HASP includes a list of public response agencies to be contacted and who may, depending on the nature of the situation, assume authority for emergency response. The HASP presents local emergency numbers, including local hospitals (which include the poison control center), ambulance service, fire and police departments, and others. In addition, nationwide hotline numbers for emergency assistance are listed. These phone lists should be retained by all field personnel and posted by the phone in all field trailers.

The hospital location is outlined in the HASP. The SSHO will provide directions and/or maps to these facilities to all field personnel.

Prior to the initiation of all on-site work, the local police and fire department will be notified, if deemed necessary. This notification will take the form of a letter describing both on-site and off-site activities. If requested, a briefing will be held to further explain the type of activities and equipment that are associated with each project. Emergency procedures also will be discussed.

Accidents and Non-Routine Events

Several types of emergencies are outlined in the following subsections. These are not intended to cover all potential situations, and the corresponding response procedures should be followed using common sense. Every accident is a unique event that must be dealt with by trained personnel working in a calm, controlled manner. In the event of an accident/unusual event, the prime consideration is to provide the appropriate initial response to assist those in jeopardy without placing additional personnel at an unnecessary risk. Employees shall be instructed to report all injuries and illnesses to the SSHO.

Worker Injury

If a person working on the site is physically injured, appropriate first aid procedures shall be followed. Depending on the severity of the injury, emergency medical response may be sought. If the employee can be moved, he/she will be taken to the edge of the work area where contaminated clothing (if any) will be removed, and emergency first aid administered. If necessary, transportation to local emergency medical facility will be provided as soon as possible.

If a worker can only be moved by emergency medical personnel, the SSHO will decide what protective equipment, if any, is required to be worn by emergency personnel. Each work area will have extra equipment available for emergencies.

- *Eye Exposure:* If contaminated solid or liquid gets into the eyes, wash eyes immediately at the emergency eyewash station using water and lifting the lower and upper lids occasionally. Obtain medical attention immediately if symptoms warrant.
- *Skin Exposure:* If contaminated solid or liquid gets on the skin, wash skin immediately at the decontamination station using soap and water. Obtain medical attention immediately if symptoms warrant.
- *Inhalation:* If a person inhales large amounts of organic vapor, move him/her to fresh air at once. If breathing has stopped, perform cardiopulmonary resuscitation (CPR) per American Red Cross standard first aid instruction. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.
- *Ingestion:* If contaminated solid or liquid is swallowed, medical attention shall be obtained immediately by consulting the Poison Control Center as outlined in the site-specific HASP.

Temperature-Related Problems

Adverse weather conditions are important considerations in planning and conducting site operations. Hot or cold weather can cause physical discomfort, loss of efficiency, and personal injury. One or more of the following control measures shall be employed to help control heat stress:

- Provide adequate non-alcoholic liquids to replace lost body fluids. Employees must replace water and salt lost through perspiration. Employees will be encouraged to drink more than the amount required to satisfy thirst, as thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.
- Replacement fluids can be a 0.1 percent salt solution, commercial mixes such as Gatorade™ or Quick Kick™, or a combination of these with fresh water.
- Establish a work regimen that will provide adequate rest periods for cooling down.
- Take rest breaks in a cool, shaded area during hot periods.
- Employees shall not be assigned other tasks during rest periods.
- Inform all employees of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

Adverse Weather

In addition to the hazards of UV radiation from the sun and extreme ambient temperatures, general weather conditions may present a hazard to field workers. Rain may result in muddy, slippery conditions that make foot and vehicle travel hazardous. Lightning and tornadoes, common summertime phenomena, can be extremely hazardous. In the event of adverse weather (e.g., high wind and airborne dust, lightning, extreme cold or heat, or rain) that could compromise worker's health and safety during outdoor activities, the SSHO will shut down operations. Safety precautions for lightning and tornadoes can be found in the health and safety manual.

Fires

The potential for fires involving hazardous chemicals must be addressed during the preliminary site-specific evaluation of all hazards. Personnel in each work group will be knowledgeable in fire extinguishing techniques. They shall be instructed in proper use and maintenance of the appropriate fire extinguishers supplied at the work site.

Vehicle Accidents

Posted speed limits will be observed. All vehicles will be required to meet applicable state inspection standards. All drivers will be required to have a good driving record and must have all necessary licenses to operate their vehicle.

The phone numbers of the SSHO, the field office, and subcontractor health and safety representative will be carried in each vehicle at the site. These numbers may also be provided to all police, fire, rescue, and emergency agencies in the area.

Upon notification of an accident, the PM will make available any personnel and equipment at his or her disposal to aid in the cleanup. For example, the following equipment may be supplied:

- Sorbent materials to contain/control liquids
- Front-end loaders to pick up solids
- Dust-suppression materials to control dust
- Trucks to haul collected material
- Appropriate protective gear for cleanup workers

The supervision and operation of all emergency response personnel and equipment will be coordinated through the authorities at the scene of the accident.

Attachment 3

Heat Illness
Prevention Plan

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Module 6. Heat Illness Prevention Program

This procedure has been created to assist in the avoidance and reduction of the risk of work related heat illnesses. Geo-Logic Associates (GLA) employees are commonly required to work outdoors in areas that often reach temperatures greater than 85 degrees Fahrenheit (°F). Prolonged exposure to elevated temperatures can increase the risk of developing a heat illness if preventive measures to seek shade, increase rest periods, and maintain adequate hydration are not followed.

This module of the GLA IIPP is intended to promote awareness of conditions that can lead to heat-related illnesses, provide a list of signs and symptoms associated with heat illness, provide guidelines for preventing heat illness, and outline heat illness training requirements for supervisory and non-supervisory employees.

6.1 Purpose

Heat-related illness is a common work-related risk that GLA employees may encounter. Heat-related illness may be brought on by performing moderate to heavy work in elevated temperatures, or when performing relatively low-intensity work in a hot environment. GLA is required to provide its employees with sufficient shade, water, and rest periods to minimize the risk of heat-related illness.

Employers with outdoor places of employment must consider the effects of elevated ambient temperatures and direct exposure to the sun as a workplace hazard. The procedures laid out in this module of the IIPP are intended to reduce the risk of work-related heat illnesses among GLA employees. These procedures provide the minimal steps applicable to most outdoor work settings and are essential to reducing the incidence of heat related illnesses. In working environments with a higher risk for heat illness (e.g., during a heat wave, or other severe working or environmental conditions), GLA may need to exercise greater caution and take additional protective measures, beyond those listed in this document, as needed to protect their employees.

The elements reflected within this module that should be incorporated into a site-specific Health and Safety Plan (HASP), include the following:

- Preventing heat illness
- Identification of heat illness

- Communication procedures
- Response to heat illness
- Training

6.2 Preventing Heat Illness

6.2.1 Provision of Water

Water is a key preventive measure to minimize the risk of heat related illnesses. GLA shall provide its employees with access to potable and suitably cool drinking water. Where the supply of water is not plumbed or otherwise continuously supplied, water shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink 1 quart or more per hour. GLA encourages its employees to drink water frequently throughout the day.

For all field projects, the following water supply procedures shall be adhered to by all GLA employees:

- Field employees will check their daily water supply at the daily tailgate safety meeting or at the start of the work day. If an employee's water supply is less than 2 gallons at the start of the day, water will be exchanged among field employees or will be purchased from local vendors before commencing field work, so that each employee has a minimum of 2 gallons of water at the start of the day. Work shifts that extend beyond 8 hours require the availability of an additional quart per hour.
- At the start of each working day, field employees will determine their work areas and identify the nearest drinking water source. If potable water is not available the employee shall purchase or otherwise obtain a full day supply of water before commencing field work.
- The Project Manager will routinely remind field employees of the importance of maintaining their drinking water supply.
- GLA will provide field employees with funding to purchase bottled water as needed throughout the project.
- The Project Manager will routinely remind field employees to keep cool water in their field vehicles at all times during the project.

- The Project Manager will periodically remind field employees to check their water supply, and to replenish it whenever an individual's supply is less than 2 gallons.

To encourage frequent drinking of potable water, the following steps will be taken:

- The Project Manager will periodically contact the field employees to discuss water consumption and remind them to take breaks.
- Water consumption will be discussed at tailgate safety meetings.

6.2.2 Access to Shade and Rest Periods

Access to rest and shade or other cooling measures are important preventive steps to minimize the risk of heat-related illnesses. Employees feeling the effects of heat illness or believing a preventive recovery period is needed, shall be provided access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than 5 minutes. Such access to shade shall be permitted at all times.

To ensure access to shade at all times, the following steps will be taken:

- When working in the field, GLA encourages its employees to take a 5-minute rest break in an area sheltered from the sun as often as needed or at least once every 2 hours. A 10-minute rest break will be necessary when the temperature equals or exceeds 95°F.
- Employees are encouraged to use their local field offices or trailers, or shade trees to provide shade. Air-conditioned buildings, trailers, or vehicles are also acceptable locations for a cool-down break.
- In periods of extreme heat and sun exposure, employees are encouraged to limit their field time and exertion and increase the frequency and duration of break periods.

To ensure that employees have access to a preventative recovery period, the following steps will be taken:

- Project Managers will be aware of daily weather conditions within the project work area, and will advise site workers of standard work-break procedures, and whether or not additional breaks are warranted.
- Tailgate safety meetings will discuss weather, work conditions, and cool-down rest.

- Employees will be instructed to take a minimum 5-minute break for every 2 hours of work. Employees are encouraged to park their vehicles near live shade trees or use the vehicle ventilation system to achieve a comfortable temperature.
- While driving between work properties, employees will be encouraged to use their vehicle air conditioning or ventilation systems to create a comfortable recovery temperature.

6.2.3 High-Heat Procedures

When the temperature equals or exceeds 95°F, high-heat procedures must be implemented:

- Effective communication between supervisors and workers must be present either by voice, observation, radio or cell phone. This communication is to be used to check on the well-being of workers or for workers to report signs or symptoms of heat illness.
- Supervisors must frequently observe workers with special attention to their alertness or presentation of signs or symptoms of heat illness.
- Supervisors must remind employees throughout the work shift to drink plenty of water and not to wait until they are thirsty.
- Supervisors must ensure that employees actually take 10-minute preventive cool-down rest period every 2 hours.
- Close supervision of new workers is required for the first 14 days of their assignment working under high heat conditions. This requirement may be waived if, at the time of hire, the worker indicates that he or she has been doing similar outdoor work for at least 10 of the past 30 days for 4 or more hours per day.

6.3 Types and Symptoms of Heat Illness

Heat illness and/or heat stress may result from the use of personal protective equipment, over-exertion, high ambient temperatures, or a combination of all three. Heat-related illness usually comes in stages: heat cramps, heat exhaustion, and heat stroke.

- *Heat cramps:* Heat cramps are muscular pains and spasms due to heavy exertion. They usually involve the abdominal muscles or the legs. It is generally thought that the loss of water and salt from heavy sweating causes the cramps. Signs of heat cramps include muscle cramping, spasms, or muscular pain.
- *Heat exhaustion:* Heat exhaustion typically occurs when people exercise heavily or work in a warm, humid place where body fluids are lost through heavy sweating. Fluid loss causes

blood flow to decrease in the vital organs, resulting in a form of shock. With heat exhaustion, sweat does not evaporate as it should, possibly because of high humidity or too many layers of clothing. As a result, the body is not cooled properly. Signs of heat exhaustion include the following:

- ◇ Cool, moist, pale skin (the skin may be red right after physical activity).
 - ◇ Heavy sweating.
 - ◇ Headache.
 - ◇ Dizziness and weakness or exhaustion.
 - ◇ Nausea or vomiting.
 - ◇ The skin may or may not feel hot.
- *Heat stroke:* Also known as sunstroke, heat stroke is life-threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly. This late stage of a heat-related illness is life threatening. Call 9-1-1 or the local emergency number. The signals of the late stage of a heat-related illness (often called heat stroke) include the following:
 - ◇ Skin may still be moist or the victim may stop sweating and the skin may be red, hot and dry.
 - ◇ Rapid, weak pulse.
 - ◇ Vomiting.
 - ◇ Decreased alertness level or complete loss of consciousness.
 - ◇ High body temperature (sometimes as high as 105°F).

6.4 Response to Heat Illness

Response to heat illness includes three steps:

1. Contact emergency services
2. Provide general care
3. Contact GLA Project Manager or Corporate Program Administrator

Contact emergency services: GLA provides its employees with cellular telephones that are to be used to contact emergency services in the event of accident, illness, or injury on the job site, including heat illness. The site-specific HASP is required to contain a map to the nearest hospital and directions from the project site to the nearest hospital. When contacting emergency services, the employee shall use this information to provide the directions to the site.

Provide general care: When working at remote locations, the response time of emergency responders may be lengthy, and as a result, employees should be prepared to provide general care for heat illness.

The American Red Cross provides the following general care for heat illness:

- Cool the body.
- Give fluids but not to an unconscious victim.
- Minimize shock by placing individual in a line position, in the shade with the legs slightly elevated.

In addition, the following American Red Cross care guidelines are provided for specific heat illnesses:

- *For heat cramps or heat exhaustion:* Move the person to a cooler place and have them rest in a comfortable position. If the person is fully awake and alert, give a half glass of cool water every 15 minutes. Do not let them drink too quickly. Do not give liquids with alcohol or caffeine in them, as they can make conditions worse. Remove or loosen tight clothing and apply cool, wet cloths such as towels or wet sheets. Call 911 or the local emergency number if the person refuses water, vomits or loses consciousness.
- *For heat stroke:* Heat stroke is a life-threatening situation! Help is needed fast. Call 911 or your local EMS number. Move the person to a cooler place. Quickly cool the body. Wrap wet sheets around the body and fan it. If you have ice packs or cold packs, wrap them in a cloth and place them on each of the victim's wrists and ankles, in the armpits and on the neck to cool the large blood vessels. (Do not use rubbing alcohol because it closes the skin's pores and prevents heat loss.) Watch for signals of breathing problems and make sure the airway is clear. Keep the person lying down.

Contact GLA managers: After emergency services are contacted and general care is administered, the employee shall contact his or her Project Manager or the Corporate Program Administrator to notify him or her of the situation.

6.5 Training

Training is critical to help reduce the risk of heat-related illnesses and to assist with obtaining emergency assistance without delay.

6.5.1 General Training

Training in the following topics shall be provided to all supervisors (Project Managers) and non-supervisory employees:

- The personal risk factors for heat illness
 - ◇ Age
 - ◇ Degree of acclimatization
 - ◇ General health
 - ◇ Lack of water consumption
 - ◇ Alcohol consumption
 - ◇ Caffeine consumption
 - ◇ Use of prescription medications that affect the body's water retention
 - ◇ Other medical conditions that can affect physiological responses to heat
- The environmental risk factors for heat illness
 - ◇ Air temperature
 - ◇ Relative humidity
 - ◇ Radiant heat from the sun and other sources
 - ◇ Conductive heat sources such as the ground
 - ◇ Air movement
 - ◇ Workload severity and duration
 - ◇ Protective clothing and personal protective equipment worn by employees
- GLA procedures for working in hot and high heat conditions
- The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties

- The importance of acclimatization, especially during heat waves or with new employees
- The different types of heat illness and the common signs and symptoms of heat illness
- The importance to employees of immediately reporting to the employer, directly or through the employee's Project Manager, symptoms or signs of heat illness in themselves, or in co-workers
- GLA procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary
- GLA procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider
- GLA procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

6.5.2 Supervisor/Project Manager Training

Prior to assignment to supervision of employees working in the heat, training on the following topics shall be provided:

- The information contained in this procedure
- Their responsibility to follow and implement the applicable provisions in this procedure
- The procedures the Project Manager is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures
- Initial and annual first-aid training by the American Red Cross or other accredited organization
- How to monitor weather reports and how to respond to hot weather advisories
- How to prepare a site-specific HASP to tailor this Heat Illness Prevention Plan to the specific concerns at a project site.
- How to review and sign the site-specific HASP to acknowledge understanding of its contents
- How to brief the field employees on the contents of this document and site-specific HASP requirements for heat illness identification, prevention, and response
- How to maintain records of the training

6.5.3 Employee Training

To ensure employees are trained to understand heat-related illness and injuries and the appropriate response, the following steps will be taken:

- All employees will receive heat illness prevention training prior to working outdoors, especially all newly hired employees or employees who are new to the project.
- On hot days ($\geq 80^{\circ}\text{F}$), and during a heat wave, the Project Manager or designee will hold short tailgate meetings to review this important information with all workers.
- All newly hired workers will be assigned a buddy or experienced coworker to ensure that they understood the training and follow the company procedures.
- The Project Manager or Site Supervisor will be trained prior to being assigned to supervise outdoor workers.
- Primary and secondary employers will ensure that all employee's (including temporary) working outdoors are trained in heat illness prevention and will keep records of the training.

Appendix B

Standard Operating Procedures

1.2 Documentation

This SOP provides standard procedures for documenting field activities.

The SOPs and SOGs included in this section are applicable to all DBS&A employees for the conduct of all activities listed in this section. All SOPs and SOGs described in this section are proprietary in nature and shall not be copied or reproduced, or distributed to any person or organization not employed by DBS&A, without the expressed written approval of the President or the DBS&A Quality Assurance Manager. All or parts of the SOPs and SOGs described in this section may be reproduced and used in DBS&A reports, proposals, and work plans with the verbal consent of the President or the DBS&A Quality Assurance Manager.

These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high quality data in the field.

Complete project documentation is crucial in the success of any project. Documentation may include field books, soil boring logs, field sampling forms, and chain of custody forms. These forms must be completed in the field. In the event that additional information is collected throughout the day, the forms may be amended at the end of the day.

1.2.1 Field Log Books

Completion of the field log book is detailed in SOP 1.3.

1.2.2 Soil Boring Log

Completion of the soil boring log is detailed in SOP 1.4.

1.2.3 Field Forms

Completion of field forms is detailed in SOP 1.5

1.2.4 Chain of Custody

Completion of chain of custody forms is detailed in SOP 1.6.

1.2.5 Equipment

Waterproof pens must be used (blue is sometimes preferred to differentiate originals from copies).

1.2.6 General Guidelines

Make all entries using a waterproof pen.

Write legibly. If you abbreviate and the abbreviation is not common, be sure to define your abbreviation somewhere in the notes.

Be accurate. If you have to guess, identify your entry as a guess.

Do not scribble through entries you want to change. To make a correction, draw a single line through the entry and date the correction.

All field documentation should be scanned upon returning to the office.

1.3 Field Log Book

The following SOG describes the appropriate guidelines for note taking during field activities.

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These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high quality data in the field. Requests for revisions shall be made in writing to the President or his/her quality assurance designee.

The field log book is an integral part of the sampling program and forms the basis of the sampling record. A complete field log book is required on most projects. Items documented in the log book are highly relevant to interpreting the subsequent collected data. The objective of taking field notes is to make an accurate written record of the field activities. The field log book serves as a method to record additional site information and observations not easily included on field forms. Field notes often serve as the basis for writing a report after the work is complete. Field notes should be sufficiently accurate and complete that the events that took place can be recreated by someone who was not involved in the activities.

1.3.1 Equipment

- Field log book: water-resistant paper, permanently bound, with sequentially-numbered pages
- Waterproof pens (blue is sometimes preferred to differentiate originals from copies)

1.3.2 General Guidelines

- Make all entries using waterproof pen
- Write legibly. If you abbreviate, and if an abbreviation is not common, be sure to define your abbreviation somewhere in the notes.

- Be as brief as clarity will allow. However, it is better to record too much data than to try and recreate activities from memory.
- Be accurate. If you have to guess, identify your entry as a guess.
- Be detailed and quantify your data as much as possible. When in doubt, measure.
- Sketches and drawings add depth and detail to your notes.
- Do not scribble through entries you want to change. To make a correction, draw a single line through the entry and date the correction.
- Do not remove pages from the log book. Remember that the field log book can become a legal document.

1.3.3 Requirements

- If using a dedicated field log book, it should clearly identify the project number, phase and task, project name, and location
- Each day's log should begin at the top of a page
- At the top of each page, include the following:
 - ◇ A header that identifies the project name and location, if a dedicated field log book is not being used
 - ◇ The date
 - ◇ The name and initials of the person taking notes
- The first entry of the day should identify the location, names of DBS&A personnel, visitors, contractors, etc., and the purpose of the activities (e.g., well installation, development, sampling, etc.).
- Each important observation should start with the time (i.e., when)
- The person taking notes should sign and date each page.
- A diagonal line should be drawn across the bottom of each day's entry, then signed and dated.
- For litigation projects, each person should have their own field log book and keep notes as necessary. If only one log book is used, try to have one person do all the note-taking. If the log book is used by more than one person, each person taking notes should sign at the end of their entry before transferring the log book to another person.

- The log book should stay in the custody of the note taker.
- Do not recopy your field notes. Field notes are notes taken in the field. Remember, a few days (or weeks) later, what you think you saw may not actually be what you did see. Field notes can become a legal document so think of them that way from the start.
- Review your notes at least daily for cryptic entries that need additional explanation.

Examples of Noteworthy Items

- Time of arrival and departure
- Completion of tailgate safety meetings
- Arrival and departure of visitors
- Contents and conclusions of key phone calls and meetings
- Important instructions to staff and contractors (especially if it leads to standby time charges)
- Weather and changes in weather
- Name, type, and condition of equipment being used
- Procedures and results of instrument calibrations
- Changes in activities (e.g., move to decon pad to clean drill rig)
- Downtime and cause (e.g., repair drive line on rig)
- Document and explain field decisions (e.g., why you decide not to tremie grout)
- Important results
 - ◇ Field parameters collected during well development or sampling
 - ◇ Sample IDs and time of collection
 - ◇ Sample containers, volumes, and preservation
- Observations
 - ◇ General soil type
 - ◇ Hard drilling conditions
 - ◇ Soil staining or odor
 - ◇ Condition of tanks and associated piping
- Health and safety
 - ◇ Document tailgate meetings

- ◇ Document results of utility clearances
- ◇ Site inspections (e.g., condition of excavation)
- ◇ Health and/or safety violations and warnings
- ◇ Results of air or other monitoring (e.g., PID readings)

1.6 Chain of Custody

This SOP provides standard procedures for documenting field activities.

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These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high quality data in the field.

The chain of custody form is used to document sample collection activities and provide the analytical laboratory with a request for analyses. The chain of custody form must be kept with the field personnel at all times during sampling activities and should be completed in the field at the time of sample collection.

1.6.1 Equipment

- Chain of custody form. This is provided by the analytical laboratory; each laboratory uses a slightly different form with the same key elements.
- Waterproof pens (blue is sometimes preferred to differentiate originals from copies).

1.6.2 General Guidelines

Make all entries using waterproof pen.

Write legibly. If you abbreviate, be sure to define your abbreviation somewhere in the notes.

Do not scribble through entries you want to change. To make a correction, draw a single line through the entry and date the correction.

1.6.3 Completing the Chain of Custody Form

- Give the site name and project name/number.

- Enter the sample identification code.
- Indicate the sampling dates for all samples.
- List the sampling times (military format) for all samples.
- Specify the sample location.
- List the analyses/container volume. Include the analytical method (e.g., 8260).
- Obtain the signature of sample team leader.
- State the carrier service, airbill number, and analytical laboratory.
- Sign, date, and time the "relinquished by" section.
- Upon completion of the form, retain the shipper copy, and affix the other copies to the inside of the sample cooler, in a zip-seal bag to protect from moisture, to be sent to the designated laboratory.

1.7 Decontamination of Field Equipment

The following standard operating procedure (SOP) defines activities required to decontaminate field equipment used in the sampling of soils, sludges, surface water, and groundwater in order to prevent cross-contamination of samples from different sampling locations.

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These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high quality data in the field. Requests for revisions shall be made in writing to the President or his/her quality assurance designee.

All non-disposable field equipment that may potentially come in contact with any soil, sludge, or water sample shall be decontaminated in order to minimize the potential for cross-contamination between sampling locations. Thorough decontamination of all sampling equipment shall be conducted in the warehouse before each sampling event. The equipment will be cleaned and decontaminated by the equipment manager following return to the warehouse. In addition, the field representative shall decontaminate all equipment in the field as required to prevent cross-contamination of samples collected in the field. The procedures described in this section are specifically for field decontamination of sampling equipment.

A decontamination station should be established using plastic sheeting to contain splashes. At a minimum, field sampling equipment should be decontaminated using the following procedure:

1. Wash the equipment in a solution of non-phosphate detergent (e.g., Liquinox™) and potable or distilled/deionized water. All surfaces that may come in direct contact with the samples (such as equipment cases and covers, water level meters, interface probes, sampling pumps and tubing, and scoops, augers, and sleeves for soil sampling) shall be washed. Use a clean

Decontamination of Field Equipment

Nalgene and/or plastic tub to contain the wash solution and a scrub brush to mechanically remove loose particles. Wear clean latex or plastic gloves during all washing and rinsing operations.

2. Rinse twice: once with potable water and a second time with distilled/deionized water. Use clean Nalgene and/or plastic tubs or buckets to contain the rinse solutions.
3. Dry the equipment before use, to the extent practicable, and take measures to keep the equipment clean before use.

For specific projects requiring more rigorous decontamination of field sampling equipment, the following procedures may be used:

1. Wash the equipment in a solution of non-phosphate detergent (e.g., Liquinox™) and potable or distilled/deionized water. All surfaces that may come in direct contact with the samples (such as equipment cases and covers, water level meters, interface probes, sampling pumps and tubing, and scoops, augers, sleeves for soil sampling) shall be washed. Use a clean Nalgene and/or plastic tub to contain the wash solution and a scrub brush to mechanically remove loose particles. Wear clean latex or plastic gloves during all decontamination procedures.
2. For field equipment used in the collection of samples for inorganic analyses, an acid rinse may be employed, using either a 10% reagent-grade nitric or a hydrochloric acid solution in deionized water. A 1% acid solution may be used on low-carbon steel equipment in order to avoid damaging such equipment. The project manager will determine if an acid rinse is required for specific equipment and projects.
3. Rinse equipment with potable or distilled/deionized water.
4. If field equipment is to be used in the collection of samples for organic analyses, a solvent rinse may be used. Organic solvents may include reagent grade isopropanol, acetone, or methanol. Project managers will determine if a solvent rinse is required for specific equipment used on their projects.
5. Rinse equipment with reagent grade organic-free distilled/deionized water.
6. Allow equipment to air dry before use, to the extent practicable.
7. Wrap equipment for transport with inert material (aluminum foil or plastic wrap) to prevent direct contact with potentially contaminated material.

Decontamination of Field Equipment

All liquid and solid material generated from the decontamination process should be contained and disposed of in accordance with project-specific disposal guidelines.

3.4 Trenching Operations

The following SOG describes the appropriate guidelines for trenching excavations and soil sampling from within trenched excavations. Of paramount importance in any trenching operation is the potential danger posed by trench wall failure. Therefore, the primary emphasis in any trenching investigation will be placed upon strict adherence to safety regulations cited in 29 CFR Part 1926 Subpart P entitled Excavations. Safety guidelines for trenches and excavations are also summarized in the DBS&A Health and Safety Program Manual.

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This guideline is applicable to DBS&A employees and subcontractors engaged in trenching operations. The electronic version of 29 CFR 1926 Subpart P is available at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title29/29cfr1926_main_02.tpl (see §1926.606). This SOG is applicable to simple trenching for exploration, characterization, or construction of simple, shallow remediation features. This SOG is not generally applicable to more complex trenching operations for construction of deep cutoff walls, slurry trenches, or other more complex features. Design and construction of such features shall be done under the direct supervision of a Registered Professional Engineer.

These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high-quality data in the field.

3.4.1 Trench Excavation

Trenching excavations shall be supervised by a “competent person”, who knows applicable safety standards and guidelines and whose training or level of experience enables him/her to characterize the competency characteristics of the soil in the excavation. That person shall be able to identify existing or predictable hazards, or conditions that are hazardous, dangerous, or unsanitary, and the proper safety protection devices or procedures needed for each particular

situation. The competent person has authorization to take prompt corrective measures to eliminate or control these hazards and conditions. The competent person shall have supervisory authority on the site with any contractor or staff performing excavation.

On sites that include visible contamination, the contaminated soil should be stockpiled separate from the non-contaminated soil so as not to spread contamination. This activity must be approved by a competent individual 24 hours prior to implementation.

3.4.2 Wall Stabilization and Maintenance of the Trench

When workers are required to enter trenches, the following conditions require wall stabilization by sloping or shoring:

- Trench faces 5 feet or more in height
- Trench faces less than 5 feet in height, but excavated in soft or unstable materials or showing signs of soil distress

If the excavation cannot be sloped adequately (usually at 1.5 to 1), trench boxes, shoring, sheeting, bracing, or other equivalent methods are required to keep the trench wall from collapsing. All shoring will be installed in accordance with 29 CFR 1926.652(c).

If shoring or sloping is required, no person shall enter a section of the trench which has not been properly shored or sloped. If the trench walls have been sloped and benched, no person shall be allowed on the trench slope wall if somebody is in the trench.

Trenches exceeding 8 feet in depth and their cave-in prevention measures will be designed by a Registered Professional Engineer.

Excavations will be inspected daily by the competent person for signs of failure. The inspection will be documented in the field logbook. Common evidences of distress include the following:

- Cracks in the soil parallel to or in the face of the excavation.
- Subsidence of the edge or bulging of the side of the excavation. This condition may be hard to detect, but is extremely dangerous.
- Heaving or "boiling" of the bottom of the excavation, an indication of imminent failure.
- Spalling or raveling of the face of the excavation. This probably indicates the failure to properly classify the soil and lack of proper support.

- Water running into the excavation from the surface or face. Workers are not allowed to enter excavations with standing or running water.
- Bending, buckling, or groaning of any shoring support member. If any movement of a support member can be seen or heard, an extremely dangerous condition exists.

A particularly dangerous situation relates to work in “previously disturbed soil.” During the excavation process, soil is disturbed a distance back from the face of the excavation equal to one to two times the depth of the excavation. This explains the severity of problems that can be encountered when excavating in the vicinity of old trenches or excavations, both of which occur in previously disturbed soil.

Other dangerous situations include broken or leaking water or sewer lines, sudden changes in the condition of the soil, and excavations in fissured soils. The competent person at the jobsite must be able to recognize these and other dangerous situations and take prompt corrective measures. For additional information, refer to the OSHA Technical Manual, Section V, Chapter 2, Hazard Recognition in Trenching and Shoring (OSHA, 1999).

3.4.3 Soil Sampling from Excavations

3.4.3.1 Entrance and Egress

When workers are required to enter trenches that are 4 feet or greater in depth, an adequate means of exit, such as ladders or steps, shall be provided. Entrance into and egress from trenches will be by aluminum ladder of length sufficient to extend at least 3 feet above the trench wall. The number of ladders provided for egress will be sufficient so that no individual is ever more than 25 feet from a ladder.

If the trench is 4 feet or more in depth and hazardous atmospheres exist or could reasonably be expected to exist, the trench shall be considered a confined space. Workers entering the trench shall be properly trained in confined space entries, and atmospheric testing for oxygen content, flammability, and organic or other vapors shall be performed before entering the trench. For additional information on the DBS&A Confined Space Program, refer to Section 2.8 of the DBS&A H&S Manual (DBS&A, 2013) or contact the H&S Program Coordinator.

3.4.3.2 Health and Safety

Strict adherence to the site Health and Safety Plan is critical when entering any trench, particularly if trenching in contaminated soil. Keep in mind that trenches can pose similar health and safety risks as experienced in confined spaces. These risks include development of

hazardous atmospheres which may be oxygen-deficient, explosive, or toxic. Air monitoring must always be a part of the project health and safety protocol if trench entry is required.

3.4.3.3 *Describing the Soil Column*

Trenches provide an excellent means of observing soil horizons, geologic contacts and structure, and the extent of visible contamination. The thicknesses of differing soil units should be measured with a steel tape or a meter stick. Soil shall be described in the same manner as for soil borings (SOP 3.4) following the Unified Soil Classification System. Photographing the trench walls can provide invaluable information and is encouraged. When photographing a trench wall, a flash should be used to enhance soil features.

3.4.3.4 *Soil Sampling*

Collection of samples can be accomplished with a trowel, hand auger, or other type of manual sampling device. Soil samples will be collected and prepared as specified in the site Field Sampling Plan (FSP) in accordance with accepted sampling procedures.

3.4.4 **Backfilling the Trench**

Backfilling of trenches may be adequately accomplished with the backhoe or trackhoe that was used to excavate the trenches. Wheel rolling with the backhoe should be performed to compact the fill and return the site to its original slope. The work plan should specify any special backfilling and compaction requirements that may be warranted or required.

Attachments

Table 3.4-1 Trenching Operations Equipment Checklist

Table 3.4-2 Trench Inspection Checklist

Reference

Code of Federal Regulations, Title 29, Part 1926, Subpart P, Excavations. Available at §1926.606 of http://ecfr.gpoaccess.gov/cgi/t/text/textidx?c=ecfr&tpl=/ecfrbrowse/Title29/29cfr1926_main_02.tpl.

Table 3.4-1. Trenching Operations Equipment Checklist

Item	Specific Equipment
Shoring_____	Jacks and hydraulic pump
Aluminum ladders_____	To extend 3 feet above top of trench
Clip board_____	Graph paper_____
Camera_____	Film, flash _____
Field book_____	Waterproof pens_____
	Assortment of waterproof color pens_____
Meters_____	Photoionization detector, O ₂ /LEL explosivity meter, water level meter, dust monitor
Measuring tape or wheel_____	
Health and safety kit_____	Hard hat, steel-toed boots, safety glasses, earplugs, respirator, Tyvek coveralls
Latex gloves_____	
Decontamination equipment_____	Minimum of three plastic tubs or buckets, plastic bottle brushes, Liquinox, D.I. water (minimum of 10 gallons), paper towels, garbage bags, plastic sheeting
Soil sampling tool kit_____	Hand lens, grain size chart, USCS soil classification guide, Munsel soil color chart, spatulas, dilute hydrochloric acid, engineers tape (marked in tenths of feet), geologic hammer, trowels/shovel
Soil sample containers_____	Hand auger system, brass or stainless steel rings End caps and Teflon liners, sealing tape Aluminum foil, glass headspace jars Glass soil jars, methanol extraction kits Quart and gallon ziplock baggies, strapping and packing tape Chain of custody, custody seals
Backfilling	Compaction equipment
Coolers_____	One for food only, as needed for samples
Health and safety	Site-specific Health & Safety Plan or Excavation Plan, SDS book, Trench Inspection Checklist

Table 3.4-2. Daily Inspection of Trenches and Excavations

Completed form to be maintained in Project Health and Safety file			
Project: _____ Date: _____			
Weather: _____			
Soil Type: _____			
Trench Depth: _____ Length: _____ Width: _____			
Type of Protective System: _____			
Excavation			
Yes	No	NA	Excavations and Protective Systems inspected by Competent Person daily, before start of work.
Yes	No	NA	Surface encumbrances supported or removed.
Yes	No	NA	Employees protected from loose rock or soil.
Yes	No	NA	Hard hats worn by all employees.
Yes	No	NA	Spoils, materials, and equipment set back a minimum of 2 feet from edge of excavation.
Yes	No	NA	Barriers provided at all remote excavations, wells, pits, shafts, etc.
Yes	No	NA	Walkways and bridges over excavations 6 feet or more in depth equipped with guardrails.
Yes	No	NA	Warning vests or other highly visible PPE provided and worn by all employees exposed to vehicular traffic.
Yes	No	NA	Employees prohibited from working or walking under suspended loads.
Yes	No	NA	Employees prohibited from working on faces of sloped or benched excavations above other employees.
Yes	No	NA	Warning system established and used when mobile equipment is operating near edge of excavation.

Table 3.4-2. Daily Inspection of Trenches and Excavations (cont.)

Utilities			
Yes	No	NA	Utility companies contacted and/or utilities located.
Yes	No	NA	Exact location of utilities marked when near excavation.
Yes	No	NA	Underground installations protected, supported, or removed when excavation is open.
Wet Conditions			
Yes	No	NA	Precautions taken to protect employees from accumulation of water.
Yes	No	NA	Water removal equipment monitored by Competent Person.
Yes	No	NA	Surface water controlled or diverted.
Yes	No	NA	Inspection made after each rainstorm.
Hazardous Atmosphere			
Yes	No	NA	Atmosphere tested when there is a possibility of oxygen deficiency or build-up of hazardous gases.
Yes	No	NA	Oxygen content is between 19.5 percent and 21 percent.
Yes	No	NA	Ventilation provided to prevent flammable gas build-up to 20 percent of lower explosive limit of the gas.
Yes	No	NA	Testing conducted to ensure that atmosphere remains safe.
Yes	No	NA	Emergency response equipment readily available if a hazardous atmosphere could or does exist.
Yes	No	NA	Employees trained in the use of Personal Protective and Emergency Response Equipment.
Yes	No	NA	Safety harness and lifeline individually attended when employees enter deep confined excavation.
Signature of Competent Person: _____ Date: _____			

3.5 Sediment and Sludge Sampling

The following SOP describes the appropriate procedures for the sampling of sediments and sludges under varying conditions as described in this SOP.

The SOPs and SOGs included in this section are applicable to all DBS&A employees for the conduct of all activities listed in this section. All SOPs and SOGs described in this section are proprietary in nature and shall not be copied or reproduced, or distributed to any person or organization not employed by DBS&A, without the expressed written approval of the President or his/her designee for quality assurance. All or parts of the SOPs and SOGs described in this section may be reproduced and used in DBS&A reports, proposals, and work plans with the verbal consent of the President, his/her quality assurance designee, or a DBS&A Division Director.

These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high quality data in the field. Requests for revisions shall be made in writing to the President or his/her quality assurance designee.

The procedures described below for collecting sediment and sludge samples are applicable to all types of investigations. These procedures are in accordance with EPA 600/4-84-076, Characterization of Hazardous Waste Sites - A Methods Manual, Volume II, Available Sampling Methods, and ASTM D 887 (11.02), Standard Practice for Field/Laboratory Sampling (for Water-Formed Deposits). Additional references which may be helpful in planning and implementing sediment and sludge sampling programs include ASTM D 4687-95, Standard Guide for General Planning of Waste Sampling, and the following field technical SOPs: SOP 1.1: Equipment, SOP 3.2: Soils Logging, Sampling, Handling, and Shipping for Geotechnical and Chemical Analyses, and SOP 5.2: Decontamination of Field Equipment.

3.5.1 Sample Collection

Sediment and sludge samples may be collected by a variety of methods including a spade or shovel, hand auger, hand corer, split-barrel sampler, gravity corer, or ponar grab sampler. The equipment listed above is most commonly used for sediment and sludge sampling; however, other methods which are not listed may also be appropriate depending on the specific investigation. The hand corer, gravity corer, and split-barrel sampler are the only methods which allow for the collection of samples directly into sample rings. The remaining methods

require that the soil be transferred from the sampling device to sample containers (typically glass jars). In the case of the hand corer, gravity corer, and split-barrel sampler, the liner rings should be sealed as quickly as possible with Teflon membranes and covered with plastic caps. The rings are labeled, secured with solvent-free tape (for organics analysis), and submitted directly for analysis. Exact sample methods, volumes, containers, preservation, and chain of custody procedures will be outlined in the site-specific field sampling plan (FSP). A list of suggested equipment for sediment and sludge sampling is included as Attachment 3.5-1.

3.5.1.1 Sampling with a Spade and Scoop

The spade and scoop is among the simplest methods of collecting sediment and sludge samples. This method is limited to near surface sediments and sludges and can be disruptive to the water/sediment interface if care is not taken during sample collection. A stainless steel spade and scoop is recommended due to its noncorrosive nature. Sediment and sludge sampling with the spade and scoop is accomplished by the following procedures:

1. Carefully remove the top 1 to 2 inches of sludge or sediment with the clean spade. This step is not necessary if the material is covered with water, or is not required as part of the project.
2. Insert the scoop into the material and remove a sample. Transfer the sample into the appropriate clean sample container. Note the general characteristics of the material in the field book, and take photographs.
3. If samples are to be collected for chemical analysis, volatile organic and semivolatile organic samples will be collected first. Be sure that headspace is minimized in the volatile organic analysis samples. Material should be filled and/or packed within the sample container so that it is completely full. If required by the FSP, collect field duplicates and specify that the laboratory perform matrix spike/matrix spike duplicates (MS/MSDs) from the same sample. Place the samples in certified-clean glass jars with Teflon-lined caps.
4. Following collection of all samples for organics analysis, collect samples for any other required analyses. If the FSP specifies mixing (compositing) the sample prior to filling additional sample containers, do so in a stainless-steel bowl or Teflon mixing tray. Samples collected for analysis of volatile constituents should not be composited, because of the potential for loss of volatiles during mixing. Sample volumes and containers will be specified in the FSP.
5. Label the samples in accordance with the FSP. At a minimum, this will include (1) the sample number, (2) sampling location (if different from the sample number), (3) time and date,

- (4) required analysis, and (5) sampler initials. If chain of custody seals are required, secure them across the container lid.
6. Place the sample containers in zip-lock bags and place on ice. Prior to shipment, the sample containers should be wrapped in bubble-pack or other suitable packing material.
 7. Log all information observed during sampling in the field log book and record the sample on the chain of custody form (usually supplied by the laboratory performing the chemical analysis).

3.5.1.2 *Sampling with a Hand Auger*

The hand auger is simple to use and is useful in cases where samples need to be collected at depth. The hand auger is not recommended in cases where water or cobbles are present, and discrete samples are required at depth. Sediment and sludge sampling with the hand auger can be disruptive to the water/sediment interface if care is not taken during sample collection. Sediment and sludge sampling with the hand auger is accomplished using the following procedures:

1. Place the pre-cleaned auger tip at the desired sample location (see SOP 1.7 for decontamination procedure). Rotate the auger clockwise until the auger barrel is full of material. Pull the auger from the borehole and remove the material from within the auger barrel using a clean spatula, if necessary.
2. Repeat this procedure until the desired sample depth is reached.
3. Once the desired sample depth is reached, rotate the auger until the auger barrel is full. Ensure that sloughed material has not fallen into the borehole prior to sample collection.
4. Remove the auger from the borehole and quickly transfer the material to the appropriate sample containers using a stainless-steel scoop or spatula. Note the general characteristics of the material in the field book.
5. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.3 *Sampling with a Hand Corer*

The hand corer is operated in a similar manner as the hand auger. It can be fitted with a check valve, which will allow for the collection of soft sediment samples underlying a shallow layer of liquid. The hand corer can also be lined with sample rings which allows for the collection of relatively undisturbed samples. Under certain circumstances it may be difficult or impossible to push the corer to the desired depth. If this is the case, a hand auger may be required to auger

to the desired sampling depth. Sediment and sludge sampling with the hand corer is accomplished by the following procedures:

1. Place the pre-cleaned hand corer at the desired sample location. Rotate and push the corer clockwise until the core barrel is full of material. Pull the corer from the borehole and remove the material from within the core barrel using a clean spatula or other metal tool, if necessary.
2. Repeat this procedure until the desired sample depth is reached.
3. Once the desired sample depth is reached, rotate and push the auger until the core barrel is full. Ensure that sloughed material has not fallen into the borehole prior to sample collection.
4. Remove the corer from the borehole and quickly transfer the material to the appropriate sample containers using a stainless steel scoop or spatula. If sample liners are used, carefully remove the core bit and the sample liner rings. Trim excess soil from the ends of the rings with a clean stainless-steel knife or spatula. Cap the rings with Teflon membranes and plastic caps and seal with solvent-free tape (organic analyses only). Note the general characteristics of the material in the field book.
5. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.4 *Sampling with a Split-Barrel Sampler*

The split-barrel sampler is driven by pounding a slide hammer onto the top of the sampler barrel. Typically the sample barrels are 6 inches in length and between 2 and 3 inches in diameter. If samples are to be collected at depth, a hand auger will be needed to auger to the desired sampling depth. The split-barrel sampler can also be fitted with brass or stainless steel liner rings, which allows for the collection of relatively undisturbed samples. Sediment and sludge sampling with the hand driven split-barrel sampler is accomplished by the following procedures:

1. If samples are to be collected at depth, use a hand auger to reach the proper depth, as described in Section 3.5.1.2 of this SOP.
2. Assemble the split-barrel, including liner rings, if appropriate. Ring requirements will be specified in the FSP.
3. Attach the split-barrel sampler to the drive bar and carefully lower it to the bottom of the borehole. Ensure that soil material has not caved into the borehole prior to sampling.

4. Drive the sampler into the soil by repeatedly pounding the slide hammer onto the top of the sample barrel. Remove the split-barrel sampler from the borehole. Care should be taken not drive the sampler greater than the length of the sample barrel.
5. Carefully disassemble the sampler to minimize soil disturbance. Trim excess soil from the individual rings flush with a clean stainless steel knife or spatula, and place Teflon membranes and plastic caps over the ring ends. Secure the caps with solvent-free tape, and label the rings, including the vertical orientation.
6. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.5 *Sampling with a Gravity Corer*

Gravity corers are used to collect samples in very loose sediments and sludges, and work best in cases where liquid overlies the sediment. The gravity corer consists of a metal core barrel with a tapered bit on the bottom and a check ball on the top. The check ball allows water to pass upward through the corer during insertion, but prevents loss of the sample during recovery. The gravity corer can also be equipped with liner rings which allow for the collection of relatively undisturbed samples. Sediment and sludge sampling with the gravity corer is accomplished by the following procedures:

1. Attach a pre-cleaned core barrel to the sample line. Make sure that the sample line is properly secured to the corer and to an object at the surface to prevent accidental loss of the corer.
2. Allow the gravity core barrel to free fall through the liquid to the bottom.
3. Carefully pull the corer up and remove the bit.
4. Remove the sediment sample with a stainless steel spoon or spatula and immediately transfer it to an appropriate container. If sample liner rings are used, carefully remove the liner rings and trim excess soil from the ends of the rings with a clean stainless-steel knife or spatula. Cap the rings with Teflon membranes and plastic caps, and seal them with solvent-free tape (organics analyses only). If the material is non-cohesive, samples may need to be directly transferred from the gravity corer to the appropriate sample containers.
5. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

3.5.1.6 *Sampling with a Ponar Grab Sampler*

Ponar grab samplers are used to collect samples in very loose sediments and sludges, and work best in cases where liquid overlies the sediment. The ponar grab sampler consists of a clamshell

type scoop activated by a counter lever system. The sampler is not designed to collect undisturbed samples. Sediment and sludge sampling with the ponar grab sampler is accomplished by the following procedures:

1. Attach a pre-cleaned sampler to the sample line. Make sure that the sample line is properly secured to the sampler and to an object at the surface to prevent accidental loss of the sampler.
2. Open the sample latch and slowly lower the ponar grab sampler to the bottom. This will reduce the amount of agitation of the bottom sediments.
3. As the sampler reaches the bottom, tension is released on the lowering cable which causes the latch to release. The lifting action on the lever system then closes the sampler.
4. Carefully pull the sampler up and place into a stainless steel or Teflon tray.
5. Collect sample with a stainless steel spoon and immediately transfer to an appropriate container.
6. Follow the steps described in Section 3.5.1.1 of this SOP (3 through 7).

Attachments

Attachment 3.5-1 Sediment and Sludge Sampling Equipment Checklist

References

ASTM D 887-87. *Standard practice for field/laboratory sampling (for water-formed deposits).*

ASTM D 1586-84. *Standard method for penetration test and split-barrel sampling of soils.*

ASTM D 1587-83. *Standard practice for thin-walled tube sampling of soils.*

ASTM D 3350-84. *Standard practice for ring-lined barrel sampling of soils.*

ASTM D 4687-95. *Standard guide for general planning of waste sampling.*

U.S. Environmental Protection Agency (EPA). 1984. *Characterization of hazardous waste sites - a methods manual: Volume II available sampling methods, 2nd Edition.* EPA-600/4-84-076.

Attachment 3.5-1. Sediment and Sludge Sampling Equipment Checklist

Item	Specific Equipment
Soil sampling tool kit_____	Hand lens, grain size chart, USCS soil classification guide, Munsel soil color chart, spatulas, dilute hydrochloric acid, engineers tape (marked in tenths of feet), geologic hammer
Field book_____	Waterproof pens_____
	Waterproof colored pens_____
Meters_____	Photoionization detector, O ₂ /LEL explosivity meter, Geiger-Mueller radiation meter, water level meter
Tagline_____	Fiberglass with weighted tape_____
	Steel with stainless steel weight (no tape)_____
Measuring tape or wheel_____	
Health and safety kit_____	Hard hat, steel-toed boots, safety glasses, earplugs respirator, Tyvek
Latex gloves_____	
Decontamination equipment_____	Minimum of three plastic tubs or buckets, plastic bottle brushes, Liquinox, D.I. water (minimum of 10 gallons), paper towels, garbage bags, plastic sheeting
Sampling equipment_____	Hand auger system, hand corer, split-barrel sampler, Gravity corer, Ponar grab sampler, stainless-steel spade and scoop, stainless-steel bowl, Teflon tray, Stainless-steel spoon
Soil sample containers_____	Brass rings (physical properties and petroleum hydrocarbons), stainless steel rings, Teflon liners, (organic chem. analyses), plastic endcaps, sealing tape (electrical or solvent free), aluminum foil, glass headspace jars, glass soil jars, methanol extraction kits, 40ml VOA's (water), quart and gallon ziplock baggies, strapping and packing tape, chain of custody, custody seals
Coolers_____	One for food only, as needed for samples

3.8 PID Measurement and Heated Headspace Methodology

The following guidance provides procedures for measurement of ionizable volatile organic compounds (VOCs) and analysis of soil samples in the field using heated headspace methodology. The basis for this guidance is standard New Mexico Environment Department (NMED) Petroleum Storage Tank Regulations. The process entails mildly heating a sealed soil sample until it releases the VOCs, which are subsequently measured with a photoionization detector (PID). With the recent improvements and changes in PIDs, DBS&A typically rents this equipment from one of several vendors. The PID will be calibrated and operated in accordance with the manufacturer's instructions.

3.8.1 Equipment

Soil sampling equipment is available from the DBS&A warehouse. Coordinate with the DBS&A warehouse for rental of PID equipment. Recommended equipment includes the following:

- PID
- Nitrile gloves
- Glass jar with lid
- Aluminum foil

3.8.2 Procedure for Measurement of VOCs

VOCs are measured in the field using a PID or equivalent portable meter capable of measuring ionizable VOCs. The PID should be calibrated in the field each day prior to use in accordance with manufacturer's instructions. The unit should also be operated in accordance with manufacturer's instructions. An external filter should be used at all times to mitigate moisture, dust, or other particles from being sucked into the sensor manifold. When short sections of flexible tubing are used to connect the filter to the PID's inlet tube, replace tubing as needed to ensure accurate measurement of low concentration VOCs.

3.8.3 Heated Headspace Methodology

This SOP summarizes the process for analysis of soil samples in the field using heated headspace methodology.

1. Fill a 0.5-liter/16-ounce/1-pint or larger glass jar (e.g., Mason jar) half full of soil sample. Plastic bags or other non-glass containers are not acceptable.

PID Measurement and Heated Headspace Methodology

2. Seal top of jar with clean aluminum foil by threading the lid band onto the jar. If necessary, a rubber band can be used to secure the aluminum foil to the glass container.
3. Ensure that sample is at a temperature of 15 to 25°C or approximately 60 to 80°F. Place the sample on the dashboard of a work vehicle and expose the sample to some combination of sunlight or the front windshield defroster. A warm water bath can also be used if necessary to raise sample temperature to the acceptable range.
4. Aromatic hydrocarbon vapor concentrations must be allowed to develop in the headspace of the sample jar for a minimum of 5 to 10 minutes. Following this headspace development, the sample should be shaken vigorously for 1 minute. Take care not to damage the glass jar or the aluminum foil seal.
5. Immediately pierce the foil seal with the probe of a PID or equivalent meter, and read the highest (peak) measurement. At a minimum, the instrument must be able to accurately detect total aromatic hydrocarbons (TAH) between 0 and 1,000 parts per million (ppm). Detection of TAH contaminant levels of 100 ppm or greater indicates that the soils tested exceed soil cleanup standards of the UST Regulations (NMAC 20.5.12.17).
6. Immediately record PID values in a field book and/or on a DBS&A Soil Boring Log (Attachments 3.2-1, 3.3-1, or 3.7-1).

References

New Mexico Administrative Code (NMAC). 2012. Petroleum storage tank regulations. March 17, 2012.

10. Waste Management and Disposal of Non-Regulated Waste

This section provides standard operating guidelines (SOGs) for the management of both investigation-derived waste (IDW) and waste derived during remedial actions at petroleum-contaminated sites in the State of New Mexico. For the purpose of this SOG, IDW includes both liquid wastes and solid wastes.

The SOPs and SOGs included in this section are applicable to all DBS&A employees for the conduct of all activities listed in this section. All SOPs and SOGs described in this section are proprietary in nature and shall not be copied or reproduced, or distributed to any person or organization not employed by DBS&A, without the expressed written approval of the President or his/her designee for quality assurance. All or parts of the SOPs and SOGs described in this section may be reproduced and used in DBS&A reports, proposals, and work plans with the verbal consent of the President, his/her quality assurance designee, or a DBS&A Division Director.

The scope of the guidelines described in this section includes the following topics:

- 10.1 Objectives of Waste Management
- 10.2 Waste Management Considerations
- 10.3 Waste Types
- 10.4 Waste Disposal

These SOPs and SOGs shall be reviewed periodically, and revisions and additions to these SOPs and SOGs shall be made as needed to assure consistency with industry standards and the collection of high-quality data in the field. Requests for revisions shall be made in writing to the President or his/her quality assurance designee.

10.1 Objectives of Waste Management

This SOG has been prepared for the management of contaminated media at petroleum storage tank (PST) sites pursuant to 20 NMAC 5.12.1208. The primary objective of waste management activities is to ensure that all materials are handled, packaged, transported, and disposed of in a manner that minimizes the potential for unintentional release or exposure to contaminated materials.

10.2 Well Management Considerations

Waste management activities vary depending upon the volume of materials to be managed. For example, soil cuttings generated during well construction may be managed in Department of Transportation (DOT)-approved drums, while soils generated during excavation activities during remediation may require the use of roll-off bins or trucks. Purge water generated during sampling may be disposed of on the ground surface in New Mexico.

10.3 Waste Types

10.3.1 Liquid IDW

1. All water from initial development of new wells will be containerized in DOT-approved 55-gallon drums. Decontamination fluids may be bulk-containerized until completion of field tasks.
2. Label all containers as to well number, type of media, the date the container was sealed, the point of generation, and the points of contact. Each container should be assigned a number that will also be identified on the container.
3. DBS&A personnel will log all media generated on-site into the bound field logbook. Media information should include the following: the well number the media is associated with, container number, the date of generation, contents of containers, the number of containers with the same contents (if applicable), location of containers, personnel sampling the media, sampling dates, and sampling results.
4. Containers of well development water may be stored at the well site pending analytical results.
5. Purge water generated during subsequent activities may be disposed of at the wellhead provided that the water does not migrate off-site.
6. In Texas and California, all purge water must be contained in drums and managed as described in this section.

*Waste Management and Disposal of Non-Regulated Waste***10.3.2 Small Volumes of Soil (less than 5 cubic yards)**

1. Soil will be containerized in DOT-approved 55-gallon drums.
2. Label all containers as to type of media, the date the container was sealed, the point of generation, and the points of contact. The well number and container number will be identified on the container.
3. DBS&A personnel will log all media generated on-site into the bound field logbook. Media information should include the following: the well number the media is associated with, the container number, the date of generation, contents of containers, the number of containers with the same contents (if applicable), location of containers, personnel sampling the media, sampling dates, and sampling results.
4. Containers of soil may be stored at the well site pending first round analytical results.

10.3.3 Large Volumes of Soil (more than 5 cubic yards)

At PST sites in New Mexico, soils with total volatile organic compounds (VOCs) measured at concentrations less than 100 parts per million by volume (ppm-v) with a photoionization detector (PID) may be used as backfill material. Field screening should be performed prior to all disposal activities.

1. Prepare areas for stockpiling clean and impacted soils. Clean soils may be placed directly on the ground surface. Contaminated soils must be placed either in approved roll-off containers provided by the waste hauler or waste disposal facility or on Visqueen or other low-permeability material if trucks are to be used.
2. Stockpile areas should be selected such that surface runoff will not affect the stockpile and that potential runoff from the stockpile will not leave the site.
3. All stockpiled materials must be covered at the end of each day.

10.4 Waste Disposal

1. All wastes disposed of off-site shall be transported to a solid waste disposal facility licensed in the State of New Mexico
2. Prior to disposal, coordinate with the facility to ensure that all analytical testing necessary for disposal has been performed prior to transport.

Waste Management and Disposal of Non-Regulated Waste

3. All wastes must be transported under a manifest signed by the generator, transporter, and the owner or operator of the solid waste facility.

References

New Mexico Environment Department (NMED). 2000. *New Mexico Underground Storage Tank Bureau Guidelines for Corrective Action*. March 13, 2000

NMED. 2003. New Mexico Petroleum Storage Tank Regulations, Chapter 5, Title 20 New Mexico Administrative Code.

Appendix C

Site Access Agreement

The access agreement will be provided when received.