

APPENDIX A

MACTEC Standard Operating Procedures

Summary of Applicable MACTEC SOPs

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Premobilization Activities

Method Title: HOW TO PREPARE FOR FIELD WORK – FIELD OPERATIONS LEADER

Prerequisites: Extensive Field Experience

Equipment:

Cautions: *Paying attention to detail ahead of time will help the field program run smoothly.*

Operations:	Yes	No	N/A	Notes:
1. Finalize the schedule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Include bottles from the laboratory. Bring extra batteries for all devices.
2. Confirm that equipment, associated manuals, and supplies are ordered and available for the required time period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Verify schedules with subcontractors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Make reservations and establish billing for:				
• Vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Lodging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Other transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Establish personnel roles and responsibilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Obtain copies of all MACTEC subcontractors' health and safety certifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Create exploration folders:				
• Boring log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Field sample data sheets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Monitoring well installation diagrams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Copies of sample rationale tables with crucial information (i.e. sample intervals) highlighted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Obtain copies of Site Maps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Obtain copies of Subcontracts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Obtain copies of Project Documents, including enough copies of health and safety plans for each sampling crew.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Assemble office supplies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. Obtain permits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Premobilization Activities

Method Title: **HOW TO PREPARE FOR FIELD WORK – FIELD OPERATIONS LEADER**

13. Obtain utility clearance contacts/schedule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Establish location of			
• field office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• field laboratory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Establish power supply (Pole?)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Establish phone hook-up capabilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Establish location of decontamination pad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Familiarize personnel with locations of sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Identify access issues			
• four-wheel drive requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• gates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• swamps/trees, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Establish location of businesses			
• Federal Express	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• hardware	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• motels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• equipment rental	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Conduct dry run of hospital emergency routes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Identify water source	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• flow capabilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• sample and analyze for compounds on the project analyte list	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Identify security issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• passes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• fire requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• escorts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Contact base and/or local fire departments and provide copies of Health and Safety Plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Establish contacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Non-Intrusive Testing and Observation

Method Title: MONITOR FOR HEAT STRESS

Prerequisites: Health and Safety Training, Understand the Project Health and Safety Plan, Understand Proper First Aid Procedures

Equipment:

Cautions: Keep plenty of water on hand. Use a work/rest schedule to prevent heat stress.

Operations:	Yes	No	N/A	Notes:
1. Establish a work/rest schedule in keeping with the H&S Plan. Modify work/rest schedule according to changing weather and site conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heat Stress can lead to Heat Stroke which can be life threatening. Monitor temperature and heart rate at start of a rest period. Heart rate should not exceed 110 beats per minute. Oral temperature should not exceed 99°F. Shorten work intervals as described in the Project Implementation Plan.
2. Provide workers with ample fluids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fluid intake should start prior to work.
3. Monitor the potential hazards from environmental conditions (heat, sunlight, humidity, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Document personnel you are monitoring and their condition at start of work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Document work periods, rest periods.
5. Note if crew member is exhibiting signs and symptoms of heat stress, and document condition(s):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Record in log book and H&S log.
• Hot, wet, or dry skin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Rapid pulse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Dizziness, headache	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Heavy sweating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lack of sweating in high temperature or humidity conditions can also be a sign.
• Cramping.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Perform first aid procedures if signs of heat stress are apparent. Refer to Health & Safety Plan or First Aid Manual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remove person exhibiting heat stress from work site to a cooler location (shade, etc.).
7. Call for emergency medical help, if necessary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Follow procedures in Site-Specific HASP.

Non-Intrusive Testing and Observation

Method Title: MONITOR FOR HEAT STRESS

Operations:	Yes	No	N/A	Notes:
8. Document incident in <i>site log book</i> and <i>Health & Safety Log</i> .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Notify company Health & Safety Manager of incident.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Notify Program/Project Manager of incident.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Conduct Intrusive Exploration

Method Title: HOW TO COMPLETE SOIL BORING LOG

Prerequisites: Proper Health and Safety Procedures, Understanding of Unified Soil Classification System (USCS)

Equipment:

Cautions: Follow prescribed Health & Safety Requirements when handling soil. Boring logs should be neat, legible, and complete. Ideally, they should be suitable for photocopying into a report.

Operations:	Yes	No	N/A	Notes:
1. Record Title Block Information, including:				Required for all boreholes advanced with conventional rotary or drive-and-wash equipment. Not required for come penetrometer or TerraProbe systems. Use project-approved <i>soil boring log</i> forms. Complete <i>boring log</i> in field at time of drilling. Use permanent blue or black ink. May be shown using a graphic scale. Include necessary detail, consistent with the requirements of the Unified Soil Classification System.
a. Client	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Project/site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Project number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Boring number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Drilling contractor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Driller's name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Your name (logged by)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Drilling method (bit/sampler type and size)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. PI meter (manufacturer, model)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Personal protection level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Dates started/finished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Total depth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Observed water level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Geotechnical info	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Record <i>soil boring log</i> information, including:				
a. Page number (1 of <i>n</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Depth of sample (in feet below ground surface)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Sample number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Blows/6-inch interval on split spoon sampler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Penetration/recovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Soil description	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Conduct Intrusive Exploration

Method Title: **HOW TO COMPLETE SOIL BORING LOG**

Operations:	Yes	No	N/A	Notes:
2. Record organic vapor reading measured with an organic vapor meter (PID/FID), and method employed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Record required information in a soil boring log (reference boring in site logbook), using project-required soil classification procedures:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use the Unified Soil Classification System (USCS), which is the ABB-ES standard.
a. Soil name based on gradation characteristics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sand, silt, clay, etc.
b. Grain-size distribution.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gradation: conclude by grain size distribution (for coarse grained soils, not silt or clay). a. <u>Well graded</u> - wide range of particle size. b. <u>Poorly graded</u> - predominantly one grain size.
c. Moisture content.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note moisture content if possible (dry, damp, moist, wet, saturated, etc.).
d. Density (based on the standard penetration test if using split-spoon sampler).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Color (including mottling or staining).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use Soil Color Charts (e.g., Munsell), if possible.
f. Structure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note structures if observed (stratified, lensed, homogenous, lenticular, etc.)
g. Geological origin or formal or local name (if known).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
h. Organic matter content.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note presence of visible organic matter, if observed.
i. Other.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note any unusual odors associated with the soil, but avoid inhalation of related vapors if possible by remaining upwind of sample. Note staining or other unusual conditions observed.
4. Determine the appropriate Unified Soil Classification symbol (or Group symbol).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Refer to Classification of Soil for Environmental Investigations SOP.

Comments:

Conduct Intrusive Explorations

Method Title: HOW TO MANAGE INVESTIGATION DERIVED WASTE

Prerequisites: Understand Project Health and Safety Procedures , Oversee/ Document Subcontractor Activities, Decontaminate Drilling and Sampling Equipment

Equipment:

Cautions: *Understand the range of site safety hazards. Know project-specific scope of investigation. Management of IDW from field programs is very specific to state regulatory requirements, program requirements, or client requirements. Be sure to consult the project work plan and senior staff before making decisions. This Work Instruction applies to onsite collection and documentation of investigation derived waste (IDW) at sites where hazardous materials could be encountered; it does not apply to specific disposal options or to the specific analytical requirements for waste characterization.*

Operations:

1. Manage soil cuttings IDW from drill program:
 - a. If appropriate, spread plastic sheeting on ground for collection of soil cuttings.
 - a. Screen the soil cutting (auger cuttings or soil from drive and wash or mud tub) with field instrumentation (i.e., flannel/photoionization detector, radiation meter, field gas chromatograph) as stated in the project work plan.
 - a. If soil cuttings do not pass the screening procedures mentioned above, collect and containerize soil cuttings (auger cuttings or soil from a drive and wash or mud tub) in 55-gallon drums.
 - a. Label and transport drums or roll offs to a central temporary storage area. For large piles of soil cutting, collect appropriate composite samples and cover with plastic sheeting to avoid erosion.

Yes No N/A

- | | | |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Notes:

Management of investigation derived waste (IDW) can fall into five categories: (1) soil cuttings (solids); (2) liquids from drilling (drilling water/mud); (3) liquids from monitoring well development and purging; (4) decontamination fluids; and (5) solid waste consisting of personal protective equipment and trash.

Soil cuttings, drilling water/mud, or development water treated as IDW should be segregated by "area of contamination" (AOC), which is typically the well or boring location, or location of a specific well cluster

Conduct Intrusive Explorations

Method Title: **HOW TO MANAGE INVESTIGATION DERIVED WASTE**

Operations:	Yes	No	N/A	Notes:
a. Document the collection of soil cuttings in field notes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Record all pertinent data including location, physical characteristics of material (texture, water content, odor, field instrumentation readings associated with material, etc.). Record the number of drums or estimated volume of IDW in field notes.
b. Oversee physical transfer of the cuttings to drums by drilling subcontractor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Label individual drums with site name, location identification, description of contents, field instrument readings, and any appropriate labeling required for transport include the following.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If more than one drum is needed per AOC, label drums sequentially (i.e. 1 of 3, 2 of 3, etc.).
• Type of waste (i.e. soil, water, decontamination fluids)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Point of origin (i.e. boring or well number)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Site name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Job number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Screening results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Assure and document that drums are sealed and that material is transported to a safe staging area (identified by regulatory agency and/or client) that is restricted by fencing from all unauthorized access upon completion of the IDW containment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Drums are to be segregated by AOC as much as is practical.
e. Screen ground surface under former soil cuttings to confirm that no residual contamination remains. If residual contamination is observed, remove and place in IDW soil drums generated from this AOC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Conduct Intrusive Explorations

Method Title: **HOW TO MANAGE INVESTIGATION DERIVED WASTE**

Operations:	Yes	No	N/A	Notes:
f. Document proposed final disposition of IDW.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g. Document client contact who has been informed of IDW disposal procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Manage drilling water/mud and development water IDW.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Drilling water/mud consisting of water/bentonite and suspended solids from drilling, at a specific AOC, can be containerized in drums or pumped into a tank for transfer to a larger tank or treatment system.
a. Containerize development water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Development water that is collected as wells are pumped or surged can be collected in the same manner mentioned above. Normally drilling fluids and development water from a specific AOC do not have to be segregated from one another.
b. Document in <i>field log book</i> all pertinent data related to volume, physical characteristics of material, odors, field instrumentation readings, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Label drums according to procedure described in 1g above.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Development water should be pumped directly into 55-gallon drum or tank and a screening sample should be collected once the container is full.
3. Manage decontamination fluids IDW.				
a. Collect and contain all fluids and solids from the decon operations at a central area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All liquid from drilling equipment and decontamination should flow to a sump from where it can be pumped out and containerized in the appropriate manner. Solid should be shoveled from the equipment pad into 55-gallon drums for screening prior to disposal. Decontamination fluids from sampling activities should also be collected and containerized at a central location for sampling and/or disposal.
				Normally decontamination fluids are not segregated by AOC, except in cases where specific AOCs are known to be highly contaminated.
b. Document handling of decontamination fluids.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Documentation and containerization of the decontamination fluids should proceed in the same manner as described

Conduct Intrusive Explorations

Method Title: **HOW TO MANAGE INVESTIGATION DERIVED WASTE**

Operations:	Yes No N/A	Notes:
c. Label drums of decon fluids as in section 1g above.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	in preceding discussions.

References:

Appropriate document review to include:

- ASTM D 5092-90; Standard Practice For Design and Installation of Groundwater Monitoring Wells in Aquifers
- MACTEC SOP WEINS-006: Drilling and Well Installation
- Navy CLEAN SOP for Drilling and Well Installation (if applicable)
- USEPA Guidance on Monitoring Well Installation (appropriate region)
- State Specific Guidance on Monitoring Well Installation and Permit Requirements
- Site Specific Health and Safety Plan
- USEPA, 1991. Management of Investigation-Derived Wastes During Site Inspections. EPA/540/G-91/009.

Comments:

Collect Environmental Samples and Information

Method Title: HOW TO DECONTAMINATE SAMPLING EQUIPMENT
Prerequisites: Health and Safety Training, Understanding of Project Health and Safety Plan
Equipment: Potable Water Supply, Liquinox or other specified cleaning agent, DI water, other decontamination liquids/solvents specified by Project Implementation Plan (PIP), aluminum foil, field logbook.

Cautions: *Wear rubber gloves and face splash protection.*

Operations:	Yes	No	N/A	Notes:
1. Establish decontamination station in accordance with the PIP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Number of stations.
2. Spray/rinse off excess dirt, mud, or other residue with potable water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Scrub sampling equipment in potable water and Liquinox or other cleaning agent.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Record DI water lot number.
4. Rinse with potable water.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Rinse with methanol, hexane, isopropanol, nitric acid, or other cleaning agents as required in the PIP.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Rinse thoroughly with DI water or other approved source water. Repeat as required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Containerize rinse wastes as required by Project Implementation Plan. Prepare rinse concentration in accordance with the PIP. Record lot number of chemicals used.
7. Air dry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Wrap neatly in aluminum foil.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shiny side out.
9. Upon completion of decontamination procedure record that the decontamination activities have occurred in field logbook and/or sample data record sheet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Collect Environmental Samples and Information

Method Title: HOW TO IDENTIFY SITE CONDITIONS AND SETTING AND SKETCH A SITE MAP

Prerequisites: Maintain/Complete Logbook Method Sheet, Training in First Phase Investigations.

Equipment:

Cautions:

Operations:

	Yes	No	N/A	
1. Document the purpose of the visit, personnel on-site, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Reason for site reconnaissance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Purpose of site visit, facility or site type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Property contacts, names & phone numbers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Document general site conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dry, wet, snow cover, site size, fences, fence condition, posting, etc.
3. Document terrain conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indicate terrain conditions on a site map (wooded, scrub, vegetation, open fields, level, streams or river (note general flow direction), swampy or poorly drained areas (wetlands delineation recommended), etc.)
4. Document surface water flow patterns, impoundments, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note general direction(s) of surface drainage, drainage characteristics and dimensions.
5. Document roads to property interior.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indicate the following: a. improved/unimproved roads/trails b. road access is blocked/unblocked Note evidence of vehicle trespass (heavy trucks, autos, ATVs, etc.)
6. Document evidence of dumping, spillage, or stressed vegetation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note drum condition, new/old/rusted, and description, upright/on side/partially buried/unmarked. If the drum has markings, please reproduce them.
7. Document any significant trash or litter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Check for signs of onground discharge of wastes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Example: used parts, batteries, oil and fluid containers.

Collect Environmental Samples and Information

Method Title: **HOW TO IDENTIFY SITE CONDITIONS AND SETTING AND SKETCH A SITE MAP**

Operations:	Yes No N/A	Notes:
9. Document the presence of the following items:		
a. evidence of resource process materials, products, and by-products	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. construction debris	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. potential asbestos material	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
b. bulk resource materials, evidence of moved earth	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
c. leachate seeps	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
d. holes/pits	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
e. discolored soils or fill	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
f. unnaturally (i.e. due to chemicals) stressed vegetation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
g. odors	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
2. Describe rights-of-way.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Examples: railroad (company), powerlines (company), transformers (number) and pipelines (type and company). Estimate apparent width of rights of way.
3. Document on-site buildings and utilities.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Indicate if buildings are in current use or abandoned. If buildings are abandoned, see confined entry SOP. Document building, size, type, orientation, any postings or signs indicating building purpose or use.
4. Document neighboring property use.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	North, South, East, and West.
5. Indicate any information that you feel is relevant, areas of concern, and maintain field logbook.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
6. Photographs: Record who took photo, purpose of the photo, orientation of the object in the photo, and orientation of photographer. Photos should be numbered in the log book with a description of the photo and the date and time of day the photo was taken.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Label photo on back using a fine felt-tipped permanent marker with date, site, and object of concern.

Collect Environmental Samples and Information

Method Title: **HOW TO IDENTIFY SITE CONDITIONS AND SETTING AND SKETCH A SITE MAP**

Comments:

Collect Environmental Samples and Information

Method Title: HOW TO SCREEN SAMPLE HEADSPACE FOR VOCs

Prerequisites: Health and Safety Training; Understanding of Project Health and Safety Plan; Calibrate/Maintain pH Meter; Collect Surface, Shallow, and Deep Sub-Surface Soil Sample; Decontaminate Soil Sample Equipment; Decontaminate General Equipment

Equipment: PID or OVA.

Cautions: Reference proper health and safety procedures.

Operations:	Yes No N/A	Notes:
1. Wear the level of personal protection as identified in the Health and Safety Plan.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	In accordance with Project Implementation Plan (PIP) and Project Health and Safety Plan.
2. Collect soil sample for VOC screening.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Use a clean jar, plastic baggie, or other sampling receptacle. Do not fill receptacle to capacity. (Allow room for headspace.)
3. Seal and store container.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	In accordance with PIP.
4. Open container.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	In accordance with PIP.
5. Insert calibrated VOC measuring device probe through aluminum foil, or into receptacle.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Make sure probe does not touch soil. If so, clean prior to next use.
6. Record VOC measurement.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
7. Discard sample.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	In accordance with PIP.
8. Decontaminate or dispose of container.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Comments:

Collect Environmental Samples and Information

Method Title: HOW TO COLLECT/DOCUMENT AN EQUIPMENT BLANK SAMPLE

Prerequisites: Health and Safety Training, Understanding Project Health and Safety Plan, Decontaminate Equipment, Fill Water Sample Bottles

Equipment: Analyte Free Water, Labels, Sample Bottles, Clear Tape, Packing Tape, Bubble Wrap, Cooler, Appropriate Sample Equipment

Cautions: *Always wear clean gloves and avoid glove contact with water while filling bottles.*

Operations:	Yes	No	N/A	Notes:
1. Thoroughly decontaminate sampling device from which blank is to be collected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See associated Work Instruction No. 4.C.5.34.
2. Assign sample ID for rinsate sample and attach bottle labels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Pour ASTM DI, organic free water, or other approved water source, over the equipment surfaces that will contact the sample or have contacted the sample.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Use identical sampling order and container handling protocol as groundwater sampling.
4. Run DI water through the entire pump or sampling apparatus being used to collect samples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Collect or "catch" rinsate water directly into the appropriate sample bottles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Record collection time and sample ID in logbook.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Store, pack, and ship samples.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Document information in Field Logbook and on the Sample Data Record Sheet.
8. Document sampling activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
a. Document general identifying information in data record, including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Client	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Project/Site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Project number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iv) Sample location/site ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
v) Sample number/sample ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vi) Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vii) Start time/end time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Collect Environmental Samples and Information

Method Title: **HOW TO COLLECT/DOCUMENT AN EQUIPMENT BLANK SAMPLE**

Operations:	Yes	No	N/A	Notes:
viii) Name/signature of sampler(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Document sample collection requirements for each analytical fraction including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Container type/volume	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Time collected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Sample bottle IDs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iv) Analyses to be performed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Record Investigation Derived Waste (IDW) information, including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Disposition of spent decon fluids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Disposition of used personal protection equipment (PPE)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Collect Environmental Samples and Information

Method Title: HOW TO COLLECT/DOCUMENT SEDIMENT SAMPLE

Prerequisites: Proper Decontamination Procedures, Health and Safety Training, Understanding of Project Health and Safety Plan

Equipment: Stainless Steel Bucket Auger, Gravity Cover, Ponar Dredge or Pyrex or Stainless Steel Sampling Bowl, Stainless Steel Spoon, Sample Bottles or Containers.

Cautions: *When wading into stream, avoid deep water.*

Operations:	Yes No N/A	Notes:
1. Prepare for sampling activities.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Assemble necessary equipment and supplies.
a. Confirm that equipment has been properly decontaminated	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. Confirm that sample bottles are labelled.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. Complete documentation.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. Record all information on "Surface Water and Sediment Sample Data Record" and reference in field logbook.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
2. Proceed to sample location by wading or in boat, as appropriate.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Always approach the sample locations from downstream, beginning with the location farthest downstream and working upstream.
3. Sketch sample location in field logbook.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4. Place sampling device in proper location and advance to desired depth in the sediment. Then follow steps 9 through 14.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Focus on depositional areas (i.e., bends in streams). Use steady hand pressure. Drain excess water.
When sampling in deep water:		
a. Secure free end of sampling device line to prevent loss of sampling device.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. Allow sampling device to fall freely through the water to the bottom.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
a. Activate sampler with messenger/trip line.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Collect Environmental Samples and Information

Method Title:

HOW TO COLLECT/DOCUMENT SEDIMENT SAMPLE

Operations:

	Yes	No	N/A	
a. Pull sampling device from water using smooth continuous motion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Collect VOC sample directly from sampling device.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Teflon™ sleeves are used, carefully remove sleeve from tapered end of corer to minimize sample loss. Cap both ends of the corer sleeve with Teflon™ plugs or sheets with a rubber stopper. Label the tube with the proper sample ID, site, percent recovery, date, time, and initials of samplers. Place the tube in the cooler at 4°C for packing and shipping.
3. Deposit the remainder of the sample into a decontaminated stainless steel or Pyrex glass sampling bowl.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Repeat steps 5 and 7 until a sufficient volume of sediment is collected to fill sample containers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Note odors, grain size of sediment (e.g., sands, silt, clay), color, presence of vegetation or animal life, and any other distinguishing features.
5. Homogenize sediment sample by thoroughly mixing with a stainless steel spoon until mixture is uniform and transfer to the analytical sample containers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Avoid overfilling as containers will not properly close. VOCs must not have any headspace. Avoid contact with the inside of the container and lid. Screw lid tightly onto sample container, ensuring that Teflon liner is intact.
6. Wipe any excess sediment from the outside of the container and dry with a paper towel as the containers are filled and closed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Place samples in a cooler supplied with ice for packing and shipping.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Document sampling activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Document information in field logbook and the sediment sample data record sheet.
a. Document general identifying information including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Client	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Project/site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Project number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sample location/site ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Collect Environmental Samples and Information

Method Title: **HOW TO COLLECT/DOCUMENT SEDIMENT SAMPLE**

Operations:	Yes	No	N/A	Notes:
• Sample number/sample ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Start time/end time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Name/signature of sampler(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Document sediment sample information including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Depth of sample	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sampling method/equipment (e.g., trowel, split spoon, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sample type (e.g., composite, grab)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sample observations (e.g., odors, staining)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sediment description	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Decontamination procedure and fluids used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Document sample collection requirements including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Container type/volume	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Time collected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sample bottle IDs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Analyses to be performed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Document notes/sketches including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Field sketch of sampling location (optional)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Record Investigation Derived Waste (IDW) information including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Disposition of soil cuttings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Collect Environmental Samples and Information

Method Title:

HOW TO COLLECT/DOCUMENT SEDIMENT SAMPLE

Operations:

- Disposition of spent decon fluids
- f. Disposition of soiled personal protection equipment (PPE)
- 2. Secure all containers in coolers with adequate bubble rap and ice.
- 3. Decontaminate sampling equipment.

Yes No N/A

Notes:

Decontaminate equipment in compliance with the procedures identified in the Project Implementation Plan.

Comments:

Collect Environmental Samples and Information

Method Title: HOW TO COLLECT/DOCUMENT SUBSURFACE SOIL SAMPLES

Prerequisites: Proper Decontamination Procedures, Proper Health and Safety Training, Understanding Project Health and Safety Plan

Equipment: Stainless Steel (S/S) or Pyrex Bowl(s), Stainless Steel Spoon(s), Sample Jars, Clear Tape, Sample Labels, Permanent Ink Pen, Field Log Book.

Cautions: *Be sure to follow prescribed Health & Safety requirements/guidelines. Clean protective gloves must be worn.*

Operations:	Yes No N/A	Notes:
1. Prepare for sampling.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Don gloves, clear area of surface vegetation. Unwrap or decontaminate sampling equipment.
a. Label sample jar(s).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
b. Sketch boring location on data record and in field logbook.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
c. Don chemical-resistant gloves.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
2. Advance borehole to target sampling depth using a shovel, a hand auger, and/or a drill rig.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
3. Decontaminate sampling device or acquire another clean tool.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4. Remove an aliquot of soil with a stainless steel (S/S) spoon or spatula from the filled sampling device.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
5. Place soil in jar for VOA, packing with back of S/S spoon or spatula to minimize head space.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
6. Wipe threads of jars and recap. Place on ice in a cooler.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
7. Fill a decontaminated S/S or Pyrex bowl with enough soil to fill remaining sample jars.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
8. Thoroughly homogenize soil with S/S spoon.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
9. Fill sample jar(s).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Use clean fill if necessary. Be sure to completely refill the boring to the surface and pack material down to minimize settling.
10. Wipe threads of jars and recap. Place on ice in a cooler.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
11. Backfill boring (i.e., bentonite, slurry, grout, soil cutting) to the ground surface.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

Collect Environmental Samples and Information

Method Title: **HOW TO COLLECT/DOCUMENT SUBSURFACE SOIL SAMPLES**

Operations:	Yes	No	N/A	Notes:
12. Document sampling activities.				Document information in field logbook and/or boring log.
a. Document general identifying information including:				
i) Client	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Project/site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Project number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iv) Sample location/site ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
v) Sample number/sample ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vi) Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vii) Start time/end time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
viii) Name/signature of sampler(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Document soil sample information including:				
i) Depth of sample	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Sampling method/equipment (e.g., trowel, split spoon, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Sample type (e.g., composite, grab)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iv) Sample observations (e.g., odors, staining)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
v) Soil description	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
vi) Decontamination procedure and fluids used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Document sample collection requirements including:				
i) Container type/volume	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
ii) Time collected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Sample bottle IDs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iv) Analyses to be performed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Record field sketch of sampling location.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Record Investigation Derived Waste (IDW) information including:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Disposition of soil cuttings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Collect Environmental Samples and Information

Method Title:

HOW TO COLLECT/DOCUMENT SUBSURFACE SOIL SAMPLES

Operations:

	Yes	No	N/A	Notes:
ii) Disposition of spent decon fluids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
iii) Disposition of soiled personal protection equipment (PPE)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. Decontaminate sampling equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Decontaminate equipment in accordance with the procedures identified in the Project Implementation Plan.

Comments:

Sample/Data Management

Method Title: FIELD LOG BOOK ENTRIES

Prerequisites:

Equipment: A bound field logbook.

Cautions: Write so that an average person can understand what happened. Write so that another person can read the book and continue the scope of project without interruption.

Operations:

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 1. Write legibly, printing preferred over script. Use permanent black ink. Do not remove pages from the book. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The cover should illustrate: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Project name | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Client's name | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Job number | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Dates covered | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Field activities (i.e., soil borings, test pits, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Book number (1 of ___) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The inside cover should contain the address and telephone number of ABB-ES. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The top of each page should clearly illustrate the following: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Job number. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Site name | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Exploration identification (i.e., MW-101, TP-3, TB-18B) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Day and date | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Page number | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Notes:

If you make an error, strike through it and date and initial it. Do not erase or use white-out.

The book should contain a list of common contacts, their position, and their phone number.

List all abbreviations and acronyms. Define specific terms somewhere in the book.

A separate field logbook should be used for each job, rig, and/or site except under unusual circumstances (i.e., several small site assessments for the same client).

Explain the naming conventions. State in contract or SOP required.

Sample/Data Management

Method Title:

FIELD LOG BOOK ENTRIES

Operations:

- | | Yes | No | N/A |
|---|--------------------------|--------------------------|--------------------------|
| 2. Record daily weather, including: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Temperature | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Wind direction and relative speed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Sun/cloudy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Precipitation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. List (daily) records of the personnel on-site, including: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Full names | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Company and position (i.e., John Smith, ABB-ES, geologist). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Times of arrival and departures of any other personnel that may visit the exploration site throughout the day (i.e., Jane Doe, EPA, arrives 0900). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Level of Personnel Protection (e.g., modified Level D) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Health and Safety | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. List (daily) of Health and Safety equipment on-site (e.g., four oxygen tanks, 200 ft of airline). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Record H&S briefings. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Identify the H&S officer on-site. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Notes:

Note when conditions may affect personnel (H&S issues) – extreme heat, cold, etc.
Weather conditions should be recorded at the beginning of each day and updated as required to document changing conditions and their effect on progress.

In most cases and particularly with large projects a project-specific record book will be kept in the office to document personnel working on-site. However, it is important that personnel working on particular investigation tasks also keep track of people working on the particular task as well as subcontractor personnel.

List site contact and/or contact procedures, as necessary.
List the purpose for being onsite (daily).

List the purpose of those personnel being onsite.

List reasons for having H&S equipment on-site.

Sample/Data Management

Method Title:

FIELD LOG BOOK ENTRIES

Operations:

- | | Yes | No | N/A |
|--|--------------------------|--------------------------|--------------------------|
| 2. When work begins in a new area or on a new exploration use the following to locate the exploration: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Describe location (i.e., JTB-101 is 235 ft. north of MW-113 and 52 ft. east of the north corner of Building 276) by triangulating to a recoverable position using a compass bearing and distance. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Draw a sketch of the location including scale and north arrows. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Record manufacturers' specifications and address for appropriate materials: | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a. Types and models of the subcontractor's equipment. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Well screen and riser | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Filter pack | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Bentonite pellets and bentonite powder | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Cement | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Decon materials (i.e., nitric acid, DI, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g. Other | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Record daily summaries of the quantities of materials used. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Summarize daily highlights (i.e., new explorations installed, developed, and/or sampled), outstanding issues. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Notes:

Consider photos or videos.

This is particularly useful if no maps are available for the site which you are working on.

In most cases the material specifications can be recorded once in the Site Log Book. It is important to note any significant changes.

Record stock numbers, name, date.

Sample/Data Management

Method Title:

FIELD LOG BOOK ENTRIES

Operations:

6. Prior to leaving the site, summarize and outline the next day's activities to the best of your knowledge.

Yes No N/A

Notes:

Summaries of the next days' activities are good reminders for the AM. The summaries should be more extensive at the end of the work shift to aid someone else who may be taking your place next work shift.

7. Other items to record:

The field personnel must be aware of what the subcontractor is charging for and how ABB-ES is going to be billed. Our relationship with the client and subcontractor should be understood by the field personnel, as well as the field personnel's responsibilities.

a. Equipment calibration

b. Equipment model number

8. Well installation diagrams

Comments:

Sample/Data Management

Method Title: HOW TO COMPLETE A CHAIN OF CUSTODY RECORD

Prerequisites:

Equipment: Black ball point pen, a Chain of Custody Record (COC) Form

Cautions: *If mistake is made on form, cross out with a single line and initial and date cross out. Many labs issue their own COC forms; make sure to use the right COC.*

Operations:	Yes	No	N/A	Notes:
1. Using standard COC form, fill out headings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. As sample is collected, add information to COC record, including date, time, composite, or grab, Sample ID number of containers collected, and number of each size bottle. Indicate the type of sample in the appropriate place (i.e., soil, groundwater, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. At completion of sampling, cross out remaining blank lines with a single diagonal line. Sign and date last line.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Sign, date, and time when samples are relinquished to carrier or laboratory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. If samples are being packed for shipment by common carrier (FedEx, UPS, DHL) record air bill packing slip number on the COC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Send at least two copies of COC in cooler with samples or hand to laboratory personnel. Keep one copy for field file and send one copy to Project Coordinator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Retain the copies of the COC in accordance with the Project Implementation Plan, Work Plan, or equivalent project document.
7. Record any special sample information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• PID Reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Preservatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Color/Odor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

Sample/Data Management

Method Title: HOW TO GENERATE AND LABEL SAMPLES

Prerequisites: Project Implementation Plan (PIP), Work Plan, or equivalent project document.

Equipment:

Cautions: *It is better to label bottles before sample collection if possible.*

Operations:

	Yes	No	N/A		
1. Prepare labels to include the following:					
• Job name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Job number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Sample ID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Requested analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Method of preservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Time sample collected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Date sample collected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Initials of sampler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Type of container	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Sample type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
• Field screening results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2. Clean and/or dry container exterior and threads.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Affix label.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4. Wrap label and bottle with clear tape such that tape adheres to itself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5. Record sample label information accurately on the Chain of Custody form and the Field Logbook.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Notes:

Use computer-generated labels, or complete manually in permanent black ink and complete in accordance with the PIP.

Include method number (e.g., VOCs EPA Method 8240)

Time, date, and initials are completed in the field when the sample is actually collected.

e.g., composite, grab, sludge, ash.

Be sure to wrap tape completely around the sample label (360 degrees) and also provide for some overlap. This prevents the label from snapping or falling off.

Comments:

Sample/Data Management

Method Title: HOW TO PACK AND SHIP SAMPLES TO LAB

Prerequisites: Complete Chain of Custody (COC), Track Samples, Complete Analytical Request Form (ARF)

Equipment: Coolers, Gloves, Clear Tape, Paper Towels, Ziplock Baggies, Trash-Size Plastic Bags, Ice, Pen, COC, ARF, Overnight Shipping Forms (Laboratory Address and Phone Number), Custody Seals, and Packing Material (Bubble Pack, Vermiculite, or Foam Peanuts)

Cautions: Use proper lifting procedures; filled coolers can be heavy. Two people should lift coolers when possible.

Operations:	Yes	No	N/A	Notes:
1. Organize sample containers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Check each sample container making certain proper labels have been applied and are secured with clear tape.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Wipe sample containers clean with a paper towel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Keep samples on ice. Avoid exposure to sunlight.
4. Line cooler with a bedding of packing material like bubble wrap.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If shipping liquid samples, place a large plastic bag in the cooler (optional).
5. Check chain of custody against samples for accuracy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Wrap VOC vials in bubble wrap in groups of two or three. Place in single layer within a ziplock bag.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Wrap larger bottles individually in bubble wrap.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Place samples in cooler(s) in an upright position.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Confirm that the number and type of sample containers and the data recorded on the container labels correlate with the information recorded on the COC and ARF.
9. Add packing material between sample containers and between the containers and the cooler sidewalls and lid.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cooler should be packed tightly so that motion is limited, but not so tight that bottle breakage is promoted. Custom prefabricated shipping forms (made of foam, styrofoam, or other shock-absorbing material) may be used in lieu of bubblewrap.

Sample/Data Management

Method Title:

HOW TO PACK AND SHIP SAMPLES TO LAB

Operations:

Yes No N/A

Notes:

- 10. Pack ice in double plastic bags minimizing air space and place ice on top of sample containers.

- 11. Pack COC and ARF in a separate ziplock baggie and tape to the inside top of the cooler.

- 12. Seal cooler(s) with strapping or shipping tape.

- 13. Apply signed custody seals to front and back seams of cooler.

- 14. Place clear tape over seals.

- 15. Fill out form for overnight shipment and place it on top of the cooler

- 16. Fill out a MACTEC label with shipping address and attach to each cooler.

- 17. Ship samples to laboratory.

- 18. Provide copies of COC, ARF, and shipping documents to designated project file.

- | | | |
|--------------------------|--------------------------|--------------------------|
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Do not rely on bagged ice for packing material. Use copious amounts of bagged ice, especially during hot weather. Also, if client approved, "blue ice" may also be used, alone or in combination with ice cubes. Remember, sample coolers must maintain a 4 degrees Celsius ambient temperature during shipment.

Retain sampler's copy of COC and ARF. Record shipping number from air bill on COC form.

Must have Laboratory's address for shipment.

Field Operation Leader's responsibility.

Comments: