QUALITY ASSURANCE PROJECT PLAN ADDENDUM
FOR
FORMER GONG BELL PROPERTY
103 MAIN STREET
TOWN OF EAST HAMPTON, CONNECTICUT
SOIL REMEDIAL ACTION PLAN

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1.0 QAPP TITLE PAGE AND APPROVAL SHEET (FORM A)

Quality Assurance Project Plan Addendum for former Gong Bell property, 103 Main Street, Town of East Hampton, Connecticut, Soil Remedial Action Plan

Project Title

John Bondos, LEP, Project Manager, AECOM Environment

Prepared by

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Address and Telephone Number

September 28, 2010

Month/Day/Year

AECOM Environment Project Manager: _____

Signature/Date

John Bondos, L.E.P.

AECOM Environment QA Officer: _____

Signature/Date

Michael Doherty, P.E.

EPA Project Officer: _____

Signature/Date

Christine Lombard

EPA QA Chemist: _____

Signature/Date

Nora Conlon, PhD

2.0 PROJECT ORGANIZATION AND RESPONSIBILITY (Form B)

This Quality Assurance Project Plan (QAPP) Addendum has been prepared to provide a description of field sampling activities to support a Soil Remedial Action Plan (RAP) to be conducted at the former Gong Bell property (the "Site"), located at 103 Main Street in East Hampton, Connecticut.

AECOM Environment's project manager, John Bondos, will coordinate the project and maintain communication with the EPA's project officer. Execution of this QAPP Addendum will be conducted by AECOM technical staff and its subcontractors Con-Test Analytical Laboratory (Con-Test), of East Longmeadow, MA (analytical laboratory services for soil) Hygenix, Inc. of Stamford, CT (asbestos sampling of building materials) and AmeriSci affiliates (asbestos analysis of building materials). The field team will communicate directly with AECOM Environment's project manager.

AECOM Environment's project manager will develop and implement this QAPP Addendum and assistance will be provided, if necessary, by the AECOM Environment QA Officer, Michael Doherty. This QAPP Addendum and other deliverables will be submitted to the EPA for review and approval. Communication will be maintained throughout the process. A project organization chart is presented as Figure 1.

3.0 PROBLEM DEFINITION (Form C)

AECOM Environment (AECOM) has prepared this QAPP Addendum on behalf of the Town of East Hampton, for the former Gong Bell property, located at 103 Main Street, East Hampton, Middlesex County, Connecticut (Figure 2). The primary focus of this QAPP Addendum includes sampling and analytical procedures to: 1) assess quantities of hazardous substances present in building materials in a small utility building currently existing on the site; 2) and verify the quality of clean soil fill to be placed over a subsurface impermeable barrier (engineered control).

The primary purpose of this QAPP Addendum is to provide sampling and analysis procedures associated with the Soil Remedial Action Plan (RAP) by AECOM, dated August 2010, as presented herein. The RAP consists of the following:

- Site preparation, including clearing vegetation, demolition of small existing building, and demolition of any existing buried building foundation;
- Grading and re-use of on-site contaminate soil;
- Installation of an impermeable barrier approximately 2-3 feet below the proposed final grade; and
- Covering the barrier with a clean sand drainage layer, clean fill, and additional materials as needed, including base course and pavement or topsoil and landscaping, depending on location.

4.0 PROJECT DESCRIPTION (Form D)

The Town of East Hampton intends to install a subsurface impermeable barrier (engineered control) at the Site. The final use will be a town parking lot surrounded by landscaping.

4.1 Site Description and Historical Use

The site, referenced by the East Hampton Tax Assessor's Office as Map 06A Block 57, Lot 2B, is comprised of approximately 0.45-acres, located at 103 Main Street in East Hampton, Connecticut (Figure 1). The site is zoned commercial, and is located in a mixed residential and commercial area. The site has been owned by the Town of East Hampton since October 2003. At least a portion of the site is located within the 100 year flood plain.

The site was occupied by the Gong Bell Manufacturing Company between approximately the late 1800s through the 1960s. The Gong Bell Manufacturing Company manufactured cast-iron and wooden toys. Previous investigations have suggested that painting and merchandise storage may also have occurred at the site, although this has not been confirmed. A sheet metal manufacturing company (BSR Sheet Metal Manufacturing) also occupied the site during the 1970s. The former building had been vacant since approximately 1980, and was used by the East Hampton Fire Department for controlled fire burning exercises during the 1990s. The former building was demolished in approximately 1998, and with the exception of a small, one room brick structure, the site is currently vacant.

4.2 Previous Investigations

Previous environmental investigations conducted at the site have included a Phase I Environmental Site Assessment (ESA) conducted in 2003 and a Phase I ESA Update conducted in 2005, a Phase II ESA conducted in 2005, and a Remedial Investigation conducted in 2010. References for these investigations are included in Section 16.0. A summary of each of the previous site investigations is provided below.

Based on these previous investigations, a layer of historic fill to a depth of approximately six feet bgs containing ash, cinders, glass, brick, and wood fragments, has been identified across most of the site, with the exception of the northeastern corner of the site, and the southeastern corner of the site adjacent to the Pocotopaug Creek. Both recent and historic data indicate that various constituents of concern (COCs) are present above their respective Remediation Standard Regulations (RSR) criteria in this fill layer. Specifically, select PAHs and metals (antimony, arsenic, copper, and lead) have exceeded their respective Residential Direct Exposure Criteria (Res DEC) and/or I/C DEC, and leachable concentrations of copper

and lead have been identified above the GA PMC in the unsaturated soils. Historic data also indicate an exceedance of mercury at one location.

A new area of concern (AOC) was also identified and investigated during the most recent site investigation. A layer of imported fill material from an unconfirmed origin was identified covering most of the open area of the southwestern-central portion of the site. ETPH and PAHs were identified in this material above their respective (DEC), and ETPH and metals were identified above their respective GA Pollutant Mobility Criteria (PMC). The vertical extent of this material appears to consist of the upper (approximate) two feet of fill in the open areas of the site; however, the exact vertical and horizontal limits have not been delineated.

During previous investigations, several metals were detected in groundwater at the site at concentrations that exceeded certain RSR criteria. In 2005, antimony, lead, and zinc were detected in groundwater at concentrations that exceeded their respective GWPC and/or SWPC. In 2009, arsenic and copper were detected in groundwater at concentrations that exceeded their respective Surface Water Protection Criteria (SWPC).

The results of these previous investigations are the basis for the proposed remedial activities.

4.3 Schedule

The scope of work described herein is planned to be completed during 2010. This assumes that no significant delays for regulatory and permit approvals associated with this project are encountered.

5.0 SAMPLING DESIGN (Form E)

The previous investigations are considered to have adequately characterized the environmental media at the Site. The sampling to be performed as part of the RAP includes: 1) a pre-demolition assessment of hazardous materials in the small brick building currently existing on the Site; and 2) verification of soil quality for the clean fill used to cover the impermeable barrier.

5.1 Site Preparation

As part of the site preparation activities, the small existing brick building in the southeast corner of the site will be demolished. To prepare for demolition, a screening survey will be conducted by a licensed professional to examine (and test if necessary) for the presence of ACM, lead-based paint (LBP) and/or PCB-containing building materials. If any such materials are present, affected materials will be separated from the demolition debris as necessary and transported for off-site disposal. All ACM, LBP, and PCB removal /disposal activities will be performed by a contractor licensed for such work and these activities will be inspected by a licensed consultant. These activities will follow all applicable local, state and federal laws and regulations including but not limited to proper notification, handling, and disposal requirements. Demolition debris not affected by ACM, LBP or PCBs will be classified as construction and demolition (C&D) waste and will be transported for off-site disposal. AECOM anticipates the collection of up to 5 asbestos samples and no LBP or PCB samples from the building, subject to modification by the contractor.

5.2 Clean Fill Sampling

Construction of the impermeable cap will include backfill with clean sand and site restoration will include placement of topsoil in landscaped areas. Prior to delivery of off-site materials to the site, representative samples of each will be collected and analyzed. The sampling frequency for clean fill materials to be brought on site will be one sample per every 2000 cubic yards of material. Based on the anticipated volumes of material to be imported, one sample of the sand and one sample of the topsoil will be submitted under chain of custody for laboratory analysis. All data will be reviewed prior to delivery of off-site materials to the site. Project Operating Procedures (POPs) for soil sampling procedures associated with this project are located in Appendix A.

For clean fill sampling, each sample will consist of soil collected from 5 different locations within the source of material. For VOC analysis, soil at the 5 different locations will be screened with a PID in the field and one grab sample will be collected from the location that exhibits the highest PID reading. For other analyses, equal portions of soil will be collected from the 5 different locations and combined and thoroughly homogenized in the field in a stainless steel container. One soil sample will be collected from the homogenized material. The stainless steel container will be decontaminated after each individual sample collection in accordance with the applicable POP (Appendix C).

Table 1: Summary of Analytical and QA/QC Samples for Soil and Building Material Sampling

	Clean Soil Drainage	Clean Topsoil Backfill	Building Demolition	Trip Blanks	Field Duplicates	Total
Soil Analysis						
VOCss (EPA 8260)	1	1	--	1	0	3
SVOCs (EPA 8270)	1	1	--	0	0	2
ETPH (CT DOHS Method)	1	1	--	0	0	2
Pesticides (EPA 8082)	1	1	--	0	0	2
Herbicides (EPA 8150)	1	1	--	0	0	2
RSR 15 Metals (EPA 6000/7000 series)	1	1	--	0	0	2
*Metals – SPLP	1*	1*	--	0	0	2
PCBs (EPA 8082)	1	1	--	0	0	2
*PCBs - SPLP (EPA 1312)	1*	1*	--	0	0	2
Building Materials						
Asbestos (PLM)	--	--	5	0	1	6

Notes:
ETPH – Extractable Total Petroleum Hydrocarbons
RSR – Remediation Regulation Standards
SVOCs – Semi-volatile organic compounds
PCBs - Polychlorinated biphenyls
PLM – Polarized Light Microscopy
SPLP- Synthetic Precipitation Leaching Procedure
* Sufficient sample will be collected for SPLP analysis, but the SPLP analysis will be performed only if the result of the mass analysis is more than 20 times the PMC for the analyte.

TABLE 2. ANALYTICAL METHODS, CONTAINERS, PRESERVATION and HOLDING TIME REQUIREMENTS

PARAMETER	METHOD	CONTAINER	PRESERVATIVE	MAX HOLDING TIME (1)
Soil Evaluation				
VOCs – high level	EPA Method 8260	40 ml glass vial	methanol	14 days
SVOCs	EPA Method 8270	250 ml amber glass jar	Cool to 4°C	14 days to leach solid, 7 days aqueous extraction (for SPLP)/40 days to analysis
ETPH	CT Method 3-99 (CT DOHS)	250 ml amber glass jar	Cool to 4°C	7 days for extraction; 40 days extract analysis
Pesticides	EPA Method 8082	250 ml amber glass jar	Cool to 4°C	7 days for aqueous extraction/14 days solid extraction/40 days to analysis
Herbicides	EPA Method 8150	250 ml amber glass jar	Cool to 4°C	7 days for aqueous extraction/14 days solid extraction/40 days to analysis
RSR 15 Metals	EPA 6000/7000 series	250 ml amber glass jar	Cool to 4°C	6 months extraction and analysis (Hg 28 days)
Metals - SPLP				6 months extraction and analysis (Hg 28 days)
Polychlorinated Biphenyls (PCBs)	EPA Method 8082: soxhlet extraction by EPA Method 3540C.	30g/4oz. Glass(Teflon lined cap)	Cool to 4°C	14 days to extraction/7 aqueous extraction/40 days to analysis
PCB – SPLP	EPA Method 8082 plus EPA Method 1312	30g/4oz. Glass(Teflon lined cap)	Cool to 4°C	14 days to extraction/7 aqueous extraction/40 days to analysis
Building Material Evaluation				
Asbestos – PLM	EPA Method 600R – 93/116	Plastic bag	None	None

Notes:

1. Samples will be analyzed as soon as possible after collection; the holding times listed are the maximum time samples can be held before analysis without the results being qualified.
2. All analyses will be performed by Con-Test Analytical Laboratory, except for asbestos which will be analyzed by AmeriSci affiliates.
3. Asbestos plastics bags have no preservative.

Reference: Connecticut DEP RCPs, Quality Assurance and Quality Control Requirements, Polychlorinated Biphenyls by Method 8082, SW-846 Version 2.0 July 2006.

6.0 SAMPLING AND ANALYTICAL METHODS REQUIREMENTS

This section summarizes site-specific requirements for analyses and field sampling activities.

6.1 Summary of Analytical Methods and Requirements (Form F-2)

Table 1 provides a list of the sample quantities and locations. Table 1 is a summary of analytical and QA/QC samples. Table 2 provides a list of the sample containers and preservation requirements for each analysis.

Deliverable requirements for this project will be consistent with Connecticut Department of Health Reasonable Confidence Protocol (RCP) for the soil samples. The analysis of soil samples will be to determine concentrations of the target parameter with respect to the CT RSRs in remaining soils and to provide a benchmark for future site remediation.

6.2 Method and Project Operating Procedure (POP) Reference Table (Form F-1)

The method and POP reference table is provided as Table 3, along with descriptions of proposed modifications. The POP references include soil sampling procedures (Appendix A), photoionization detector (PID) operation and maintenance (Appendix B), and equipment decontamination (Appendix C).

7.0 PREVENTATIVE MAINTENANCE / CALIBRATION AND CORRECTIVE ACTION – FIELD EQUIPMENT (Form G, Form H

The use of a field PID is anticipated for evaluating VOCS.

8.0 PREVENTATIVE MAINTENANCE / CALIBRATION AND CORRECTIVE ACTION – LABORATORY EQUIPMENT (Form I, Form J)

Preventative maintenance is considered the responsibility of the laboratory. POPs for AmeriSci Affiliates to complete laboratory analysis of building materials for asbestos and POPs for each analytical method being performed on soil samples by Con-Test are available upon request.

9.0 SAMPLE HANDLING AND CUSTODY REQUIREMENTS (Form K)

An overriding consideration essential for the evaluation of environmental measurement data is the necessity to demonstrate that samples have been obtained from the locations stated and that they have reached the laboratory without alteration. Evidence of the sample traceability from collection to shipment, laboratory receipt, and laboratory custody (until proper sample disposal and the introduction of field investigation results as evidence in legal proceedings) must be documented for each sample collected by proper recording on a chain of custody form. The document record is initialed by the appropriate field team member responsible for sample collection and must be completed along with the signatures (and transfer dates) of all the individuals responsible for sample collection, shipment, and receipt. The forms must also contain pertinent information concerning sampling location, date and times; signatures of the sampling team members; types of samples collected along with a unique sample identification number; the number of samples collected and shipped for analysis in each lot; the project name and number; and the name of the laboratory to which the samples are being sent. Chain of custody forms will be filled out in ink and will note time in 24 hour format. A sample is considered to be in custody if it is:

- In a person's actual possession
- In a person's view after being in their physical possession
- Locked so that no one can tamper with it after having been in physical custody
- In a secured area, restricted to authorized personnel

In addition to initiating the chain of custody forms, field personnel are responsible for uniquely identifying, labeling, providing proper preservation, and packaging samples to preclude breakage during shipment. All labels must be recorded in indelible/waterproof ink. Any errors must be crossed out with a single line, dated, and initialed; the use of white-out is not permissible.

Every sample label must be securely affixed to the appropriate sample container and should include:

- Project number and Site name
- Unique sample identification number
- Sampling date and time
- Method of sample preservation
- Sampler's initials
- Analyses requested

Samples will be collected in containers compatible with the intended analysis and properly preserved. Typical requirements for analytical parameters to be utilized on the project with respect to the type of container, preservation method, and maximum holding time between collection and analysis are specified by the analysis method and analytical laboratory and are outlined in Table 2 of this QAPP.

10.0 ANALYTICAL PRECISION AND ACCURACY (Form L)

Analytical precision and accuracy is considered the responsibility of the analytical laboratory (i.e., Con-Test) and will follow the RCP where applicable.

Precision is expressed as Relative Percent Difference (RPD) (or Average RPD for a group of compounds analyzed together during a single analysis such as "volatile") of duplicate measurements made on a single laboratory sample or set of field duplicate samples. Accuracy is expressed as percent recovery of analytes added to actual samples as part of a matrix spike and matrix spike-duplicate (MS/MSD) regime, recovery of surrogates added to control samples, or recovery of analytes from laboratory control spikes (LCSs). Completeness is a measure of the amount of valid data obtained from a measurement process compared to the amount of valid data that was planned to be taken to achieve a particular statistical level of confidence in the data resulting from that measurement process. This value is usually presented as a percent.

10.1 Laboratory Precision and Accuracy

Each laboratory has internal data quality objectives for individual parameters based on laboratory methods used and the laboratory's own QA/QC protocol. These objectives will be to meet the RCP precision and accuracy criteria, where applicable, and the general data quality objectives stated above. The laboratory POPs contain the laboratory's specific precision and accuracy criteria.

Solids Samples. Laboratory accuracy will be assessed by evaluating adherence to sample holding time requirements; method blanks; percent recoveries of MS/MSD (where performed), LCSs, and surrogates; and instrument performance as it relates to accurate reporting of sample results.

Method blanks will be analyzed as part of each analytical batch for each methodology performed where appropriate. Method blanks are used to evaluate contamination introduced during sample preparation and/or analysis by the laboratory.

LCSs are used to evaluate the laboratory's ability to accurately identify and quantify target analytes in a reference matrix. When appropriate, LCS analyses will be performed at a frequency of one per 20 investigative samples, or one per SDG, whichever is more frequent.

10.2 Field QC Sample Precision and Accuracy

Solids Samples. One field duplicate will be collected from the asbestos samples. Field duplicate results will be compared to a precision criterion of 50% for analytes detected in both samples at concentrations above the reporting limits.

Accuracy in the field is assessed by monitoring the adherence to sample handling and preservation requirements.

Bottle blanks will not be collected as part of this project. Instead, other actions are taken to evaluate bottle cleanliness and to identify contamination attributable to the bottles. Sample bottles are obtained from commercial suppliers that provide certified pre-cleaned bottles that meet the cleanliness requirements described in Specifications and Guidance for Contaminant-Free Sample Containers (U.S. EPA, 1992). Quality control is performed by suppliers and certificates of analysis for organics and metals are provided for each bottle lot. A copy of the laboratory certification, which accompanies each case of sample bottles, will be maintained with field records in the project files.

11.0 FIELD AND LABORATORY QUALITY CONTROL REQUIREMENTS (Form M)

QC samples will be collected as part of the investigation to allow for the evaluation of the precision, accuracy, and usability of data collected during the field effort. Table 2 lists the estimated number of samples and associated field QC samples to be collected.

Solids Samples. The field QC samples to be collected include field duplicates. One field duplicate will be collected for the asbestos sample.

Laboratory QC samples include method blanks, surrogate spikes, laboratory duplicates, and laboratory control spikes (LCSs). Laboratory QC samples shall be performed by the laboratory consistent with the requirements of the RCP methods, where applicable. Required laboratory QC samples for each analysis are described in the RCP methods and the laboratory POPs.

Laboratory accuracy will be assessed by evaluating adherence to sample holding time requirements; reviewing method blank results; and reviewing percent recoveries of LCSs and surrogates (as applicable to the RCP methods used). Method blanks are used to evaluate contamination introduced during sample preparation and/or analysis by the laboratory. LCSs are used to evaluate the laboratory's ability to accurately identify and quantitate target analytes in a reference matrix. Surrogate compounds are used to evaluate extraction efficiency or analytical bias on a sample by sample basis.

Method blank results, LCS recoveries, and surrogate recoveries must be reported under RCP deliverable requirements and the laboratory is required to discuss non-conformances with acceptance criteria in the case narrative. Non-conformance with acceptance criteria for the site contaminants of concern will be discussed in the data usability assessment when such situations could affect site decision-making, such as the potential for low bias in results due to low LCS or surrogate recoveries, or the presence of potential false positive results because of the method blank contamination.

Laboratory precision measures both sample preparation and analysis reproducibility. Results of laboratory duplicate analyses as required by the RCP methods will be used to evaluate laboratory precision. If the RPDs are not within acceptance limits, the laboratory will report the non-conformances in the case narrative.

12.0 DATA MANAGEMENT AND DOCUMENTATION (Form N)

Collection and recording of field observations, field measurements, analytical data, and other data management activities will be performed and documented such that all project staff can use the information. Data reduction consists of compiling and summarizing data collected during field activities. Field and analytical data typically will be summarized in a tabular or other appropriate format. All information and data will be reported, and verified for accuracy with the original sources of data. For analytical data, units designated by the analytical method will be reported. Whenever transcribed, analytical data will be verified with the original sources of laboratory data.

Laboratory data, produced for internal records and reported as part of a data package, include laboratory worksheets and notebooks, sample tracking system forms, instrument logs, standards records, maintenance records, calibration records, and associated QC data. Non-laboratory sources of data include field logbooks, sample tracking sheets, and instrumentation and calibration logs. These data are generated during field activities and, where relevant, are summarized for interpretation or use throughout the data evaluation process.

12.1 Project Documentation and Records

Documents and records will be generated for this project as outlined in Table 4. The QAPP will be distributed to each person on the organization chart (Figure 1). The AECOM Project Manager will be responsible for confirming that each member of the project team has the most recent version of this QAPP.

12.2 Field Analysis Data Package Deliverables

Field analyses are not planned.

12.3 Fixed Laboratory Data Packages Deliverables

Con-Test will submit data reports in the form of data packages, which provide the analytical results for each sample. The data package will include environmental and field QC samples, the corresponding laboratory QC samples and requirements and RCP Laboratory Analysis Certification Form. The laboratory analyzing the samples is responsible for preparing the packages, and providing the information in printed form.

12.4 Data Reporting Formats

Soil Laboratory Data. Data reporting requirements will be consistent with the RCP.

The required turn-around time for each data package will be specified in the work order used to retain the laboratory. In general, the laboratory is required to submit the following deliverables:

- Tabulated sample results; positive results and detection limits for nondetects; for soil samples, results must be reported on a dry weight basis and sample weight and percent moisture content must be reported
- Dates of sample collection, sample receipt, sample extraction (if applicable), and analysis
- Tabulated results of duplicate and matrix spike analyses; tabulations of blank results
- Sample preparation logs
- Copies of the COC forms, telephone logs, and shipping airbills
- Narrative explaining all anomalies and corrective action(s) taken, and included in the narrative, a tabulation of the unique sample numbers with the corresponding laboratory numbers
- Completed and signed RCP Laboratory Analysis Certification Form

All laboratory reports will be kept along with their respective COC forms in project files at AECOM or with readily accessible archival services maintained by AECOM. At project close-out, copies of applicable laboratory reports will be provided to the Town of East Hampton.

In addition to laboratory reports, data usability reports will be generated for each of the soil data packages. Copies of the data usability reports will be included in the Interim Remedial Measures Report to be prepared for the site.

12.5 Data Handling and Management

Tracking of samples from the field, to the laboratory, and through receipt of data will be performed. Original COC forms completed in the field will be kept on file at AECOM.

12.6 Data Tracking and Control

AECOM's project files for this site will be reviewed to identify any correspondence and project documents that need to be returned to the Town of East Hampton. Documents that are typically returned include

original materials such as field logbooks, photographs, and laboratory data. Materials that are not typically returned include telephone conversation records (telecons), internal memoranda, correspondence, and documents already submitted to the city. At project close-out, files will be duplicated, distributed, and stored. Files will be archived in accordance with AECOM standard document retention policies.

13.0 ASSESSMENTS AND RESPONSE ACTIONS (Form O)

Field assessment and response actions will include the following activities:

- Field QC sample review - Indicators of the level of field performance are the analytical data for QC samples such as the results of equipment blanks and field duplicates. The results of the field duplicates for this project will be used as an indirect audit of the ability of the field team to collect representative portions of each matrix type. The assessment of field duplicate results will be performed as part of the data usability review.

- Sampling procedures – any problems or compromises made in the sampling procedures will be reported to the field team leader immediately and recorded in the field sampling notes and boring logs.

- Field documentation review – field sampling notes and boring logs will be reviewed daily for errors, omissions, and legibility and corrections will be made immediately if possible.

- Sample labeling – labels will be checked prior to shipping or turnover to the laboratory couriers, and errors corrected immediately.

- Chain-of-custody – chain-of-custody forms will accompany each shipment of samples and any errors will be reported by the laboratory upon receipt. If data quality or custody has been compromised in shipping, the project manager will determine if analysis should be carried out or if sampling would need to be repeated.

- The AECOM QA Officer will perform a field audit the first day of sampling.

- Any proposed modification of this QAPP Addendum requires the approval of the EPA Project Manager.

14.0 PROJECT REPORTS (Form P)

As part of this project, the following reports have been/will be submitted by AECOM to the Town of East Hampton and the EPA:

- Remedial Action Plan
- Remedial Action Report

15.0 DATA EVALUATION AND USABILITY

This section describes verification of field sampling data and analytical data and assessment of data usability for project purposes.

15.1 Verification of Sampling Procedures (Form Q-1)

Field sampling data will be verified by each person performing the tasks. These data will be verified for completeness and correctness. Field sampling data will also be independently reviewed by the project's QA Officer to verify that records are complete, accurate, and legible and that sampling procedures are in accordance with the protocols specified in this QAPP.

15.2 Data Verification and Validation (Form Q-2)

Data verification in the laboratory begins with the technician who performs a 100 percent review of the data to ensure that the work was performed correctly. An experienced peer will then systematically check the data. A third-level review will be performed by the Laboratory Project Manager before results are submitted to AECOM. This review serves to verify the completeness of the data report and that project requirements have been met for the analyses performed. The Laboratory Project Manager will prepare a narrative to accompany the data report that includes relevant comments, including data anomalies and nonconformances, pertaining to the analyses.

Data from the laboratory will be checked for completeness and adherence to the project reporting limits.

15.3 Data Usability (Form R)

Data generated will be assessed prior to the data being reported or used in subsequent evaluations. A limited data usability check will be performed for completeness of all forms and to check that data meets reporting limits specified in the project objectives. Laboratory reporting limits must be below the CT RSR criteria to be a valid data point. The completeness goal of this project is greater than 90% valid data points.

16.0 REFERENCES

AECOM USA, Inc. 2010. *Remedial Action Plan, Former Gong Bell Site, 103 Main Street, East Hampton, Connecticut.* Prepared for the Town of East Hampton, CT. August 2010.

AECOM USA, Inc. 2009, *Remedial Investigation Report (Draft), former Gong Bell site, 103 Main St, East Hampton, CT.* Prepared for the Town of East Hampton, CT. July 2009.

AECOM USA, Inc. 2009. *Quality Assurance Project Plan for Pre-Remediation Sampling Program Former Summit Thread Powerhouse, 13 Watrous Street, East Hampton, Connecticut.* Prepared for US Environmental Protection Agency and the Town of East Hampton, CT. August 2009.

Tighe & Bond (T&B 2005) Receptor Survey for Reporting of Environmental Hazards, 13 Watrous St and 103 Main St, East Hampton, CT. prepared for the Town of East Hampton. 2005.

Tighe & Bond (T&B 2005a) Phase I Environmental Site Assessment for 103 Main St East Hampton, CT. prepared for the Town of East Hampton. 2005.

Tighe & Bond (T&B 2005b) Phase II Environmental Site Assessment for 103 Main St East Hampton, CT. prepared for the Town of East Hampton. 2005.

Tighe & Bond (T&B 2007) Significant Hazard Report, 13 Watrous St and 103 Main St, East Hampton, CT. prepared for the Town of East Hampton. 2007.

Tighe & Bond (T&B 2007) Hazardous Materials Survey, 13 Watrous St and 103 Main St, East Hampton, CT. Prepared for the Town of East Hampton. 2007

Metcalf & Eddy, Inc. (M&E). 2004. *Generic Quality Assurance Project Plan, Non-Superfund Targeted Brownfields Assessments, Various New England Locations, Revision 01, Volumes I and II. RFA 04266.* December 2004.

Tables

Table 3. POP Reference Table (Form F-1)		
Field or Sampling Activity*	**Project Operating Procedure Title**	**Modifications to the POP(s) or Additional Site-Specific Requirements**
SOIL PROCEDURES		
Soil Sampling	POP-006. *Project Operating Procedure for Surface and Subsurface Soil Sampling, Revision 0.* March 2010	
PID OPERATION AND CALIBRATION	POP-004.Operation and Calibration of a Photoionization Detector, Revision 0. March 2010	
EQUIPMENT DECONTAMINATION	POP-009. Decontamination of Field Equipment, Revision 0. March 2010	
GENERAL PROCEDURES		
Preservation Methods	Preservation Methods	Refer to Table 2 for Site-Specific Analyses and Preservation Requirements
Shipping Protocols	Shipping Protocols	

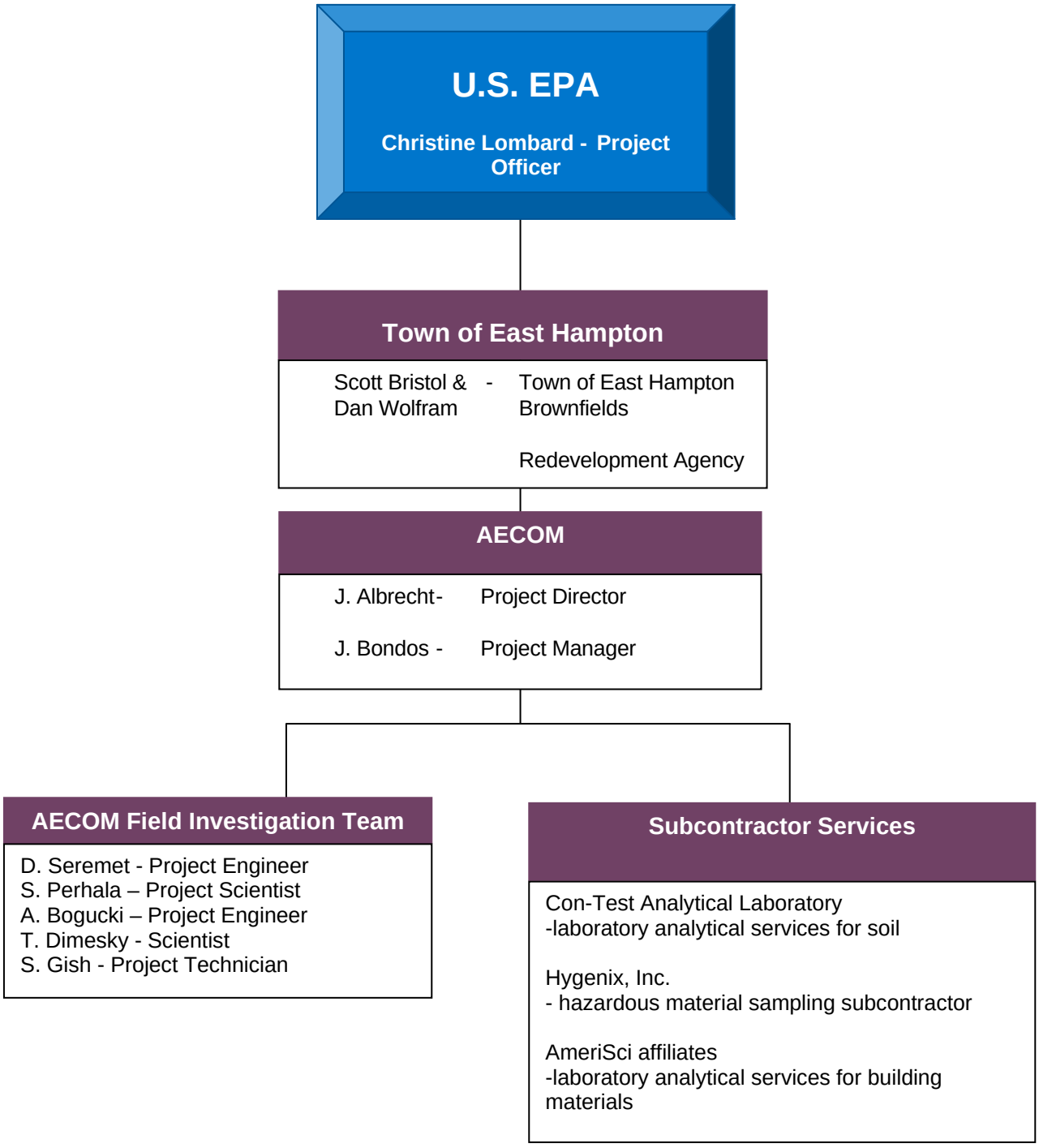
Table 4. Project Documentation and Records

Sample Collection Records	Field Analysis Records	Fixed Laboratory Records	Data Assessment Records	Project Documents
Logbooks	Equipment Calibration Logs	Sample Receipt, Custody and Tracking Records	Data Evaluation and Usability Reports	Quality Assurance Project Plan
Chains-of-Custody	Telephone Logs	Standard Traceability Logs	Sample Tracking Forms	Health and Safety Plan
Air-bills		Equipment Calibration Logs	Telephone Logs	Remedial Action Plan
Telephone Logs		Sample Preparation Logs	Corrective Action Forms	
Boring Logs		Run Logs		
		Equipment Maintenance, Testing, and Inspection Logs		
		Corrective Action Forms		
		Reported Field Sample Results		
		Reported Results for Standards, QC Checks, and QC Samples		
		Data Package Completeness Checklists		
		Method QC Checklists		
		Sample Disposal Records		

Figures

Figure 1

Project Organizational Chart



AECOM

103 MAIN STREET
EAST HAMPTON, CONNECTICUT
FIGURE 2
SITE LOCATION MAP

DATE: AUGUST 2010

PATH/FILENAME: X:\60046844 (GONG BELL EAST HAMPTON)\500 PROJECT SUBMITTAL-DELIVERABLES\FIGURES CAD\GZGBE001.DWG
LAST UPDATE: Tuesday, August 03, 2010 4:22:48 PM
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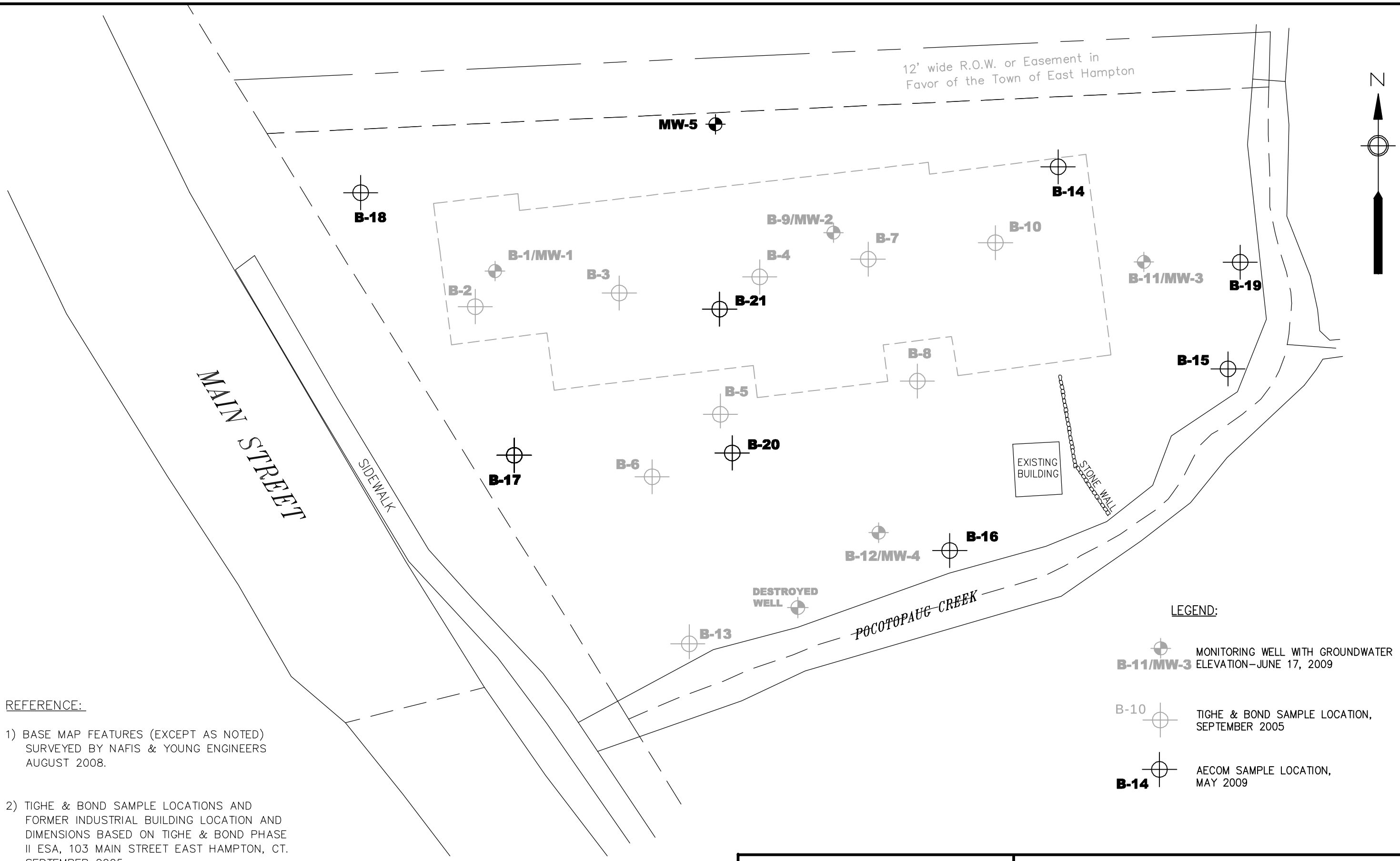

REFERENCE:

1) BASE MAP FEATURES (EXCEPT AS NOTED) SURVEYED BY NAFIS & YOUNG ENGINEERS AUGUST 2008.

2) TIGHE & BOND SAMPLE LOCATIONS AND FORMER INDUSTRIAL BUILDING LOCATION AND DIMENSIONS BASED ON TIGHE & BOND PHASE II ESA, 103 MAIN STREET EAST HAMPTON, CT. SEPTEMBER 2005.

NOTE:

1) RSR EXCEEDANCES BASED ON 2009 SAMPLING DATA ONLY

LEGEND:

B-11/MW-3 MONITORING WELL WITH GROUNDWATER ELEVATION–JUNE 17, 2009

B-10 TIGHE & BOND SAMPLE LOCATION, SEPTEMBER 2005

B-14 AECOM SAMPLE LOCATION, MAY 2009

AECOM

FORMER GONG BELL SITE
103 MAIN STREET, EAST HAMPTON, CONNECTICUT
QUALITY ASSURANCE PROJECT PLAN

SITE PLAN WITH PREVIOUS SAMPLING LOCATIONS

SCALE: 1"=20 FT	DATE: AUGUST 2010	FIGURE 3

Appendix A

Soil Sampling Procedures

AECOM

Project Operating Procedure

Surface and Subsurface Soil Sampling Procedures

Procedure Number: 006

Revision No.: 0

Revision Date: March 2010

Project Operating Procedure

Surface and Subsurface Soil Sampling Procedures

Contents

List of Attachments

Project Operating Procedure

Surface and Subsurface Soil Sampling Procedures

1.0 Project Scope and applicability

This project operating procedure (POP) is applicable to soil sampling. The procedure includes surface and subsurface sampling by various methods using hand auguring, test pit, direct-push, and split-spoon equipment. The procedure includes soil sampling for volatile organic compounds (VOCs). For project specific information (e.g. sampling depths, equipment to be used, and frequency of sampling), refer to the Work Plan, which takes precedence over these procedures.

Surface soil sampling, typically considered to be up to two feet below ground surface by EPA standards, is typically accomplished using hand tools such as shovels or hand augers. Test pit samples are considered subsurface samples, although normally collected via hand tools similar to surface soil sampling or by excavation machinery. Direct-push and split-spoon sampling offer the benefit of collecting soil samples from a discrete or isolated subsurface interval, without the need of extracting excess material above the target depth. These methods dramatically reduce time and cost associated with disposal of material from soil cuttings when compared to test pit sampling. In addition, direct-push and split-spoon sampling methods can obtain samples at targeted intervals greater than 15 feet in depth, allowing for discrete depth soil sampling while speeding up the sampling process. Direct-push methods work best in medium to fine-grained cohesive materials such as medium to fine sands, silts, and silty clay soils. Split-spoon sampling works well in all types of soil, but is somewhat slower than direct-push methods. Samples are composited so that each sample jar to be analyzed contains a homogenized representative portion of the interval samples. Due to potential loss of analytes, samples for volatile analysis are not composited. Samples for chemical analysis can be collected by any of the above-mentioned sampling methods, as disturbed soil samples. Undisturbed samples are collected, sealed, and sent directly to the laboratory for analysis. For undisturbed samples, the samples are not homogenized.

2.0 Health and safety considerations

All calibration, maintenance and servicing of soil sampling equipment and instrumentation should be performed in a safe area, away from hazardous locations.

Refer to the Site-Specific Health and Safety Plan for health and safety issues and equipment/instrumentation needed. General health and safety equipment includes a combustible gas indicator (CGI), photo/flame ionization detector (PID/FID), tyvek, gloves, safety glasses, and steel-toe boots.

The Site-Specific Health and Safety Plan should be followed during all site activities. Health and safety meetings should be held each day prior to the commencement of activities.

Before soil sampling commences, appropriate entities (e.g. DigSafe, local public works departments, company facilities) must be contacted to assure the anticipated soil sampling locations are marked for utilities, including electrical, telecommunications, water, sewer, and gas.

3.0 Interferences

Low recovery of soil from sampling equipment will prevent an adequate representation of the soil profile and sufficient amount of soil sample. If low recovery is a problem, the hole may be offset and re-advanced, terminated, or continued using a larger diameter sampler.

Asphalt in soil samples can cause false positive results for hydrocarbons. To ensure samples are free of asphalt, do not collect sample from soil with possible asphalt. Note the sampling depth(s) and the depths at with the presence of asphalt are suspected.

Instrumentation interferences addressed in POPs for Calibration of the PID, Headspace Screening for Total Volatile Organics, and Equipment Decontamination Procedures must also be considered.

Cross contamination from sampling equipment will be prevented by using sampling equipment constructed of stainless steel that is adequately decontaminated between samples.

4.0 Equipment and materials

The depth at which samples will be collected and the anticipated method of sample collection (direct-push, split-spoon, hand auger, shovel, or test pits) will be presented in the Work Plan. The following details equipment typically needed for soil sampling, based on the various methods. See the Work Plan for specific detail of equipment and supply needs.

Depending on the nature of suspected contamination, field screening instrumentation may be used to direct sampling. Appropriate instrumentation and calibration standards should be available. If volatile organic contaminants are suspected and a PID will be used, refer to the equipment and instrumentation listed in the POP 004 Operation and Calibration of a Photoionization Detector. Equipment in this POP includes but is not limited to:

- PID/FID
- Calibration gas
- Tedlar® gas bags (for calibration)

If field screening methods include jar headspace screening for volatile organics, refer to the equipment and procedure in the POP No. 007 Headspace Screening for Total VOCs. Equipment in this POP includes but is not limited to:

- Clean soil ("drillers jars") jars
- Aluminum foil

Appropriate decontamination procedures must be followed for sampling equipment. Refer to POP No. 009 Decontamination of Field Equipment. Equipment in this POP includes but is not limited to:

- Phosphate-free detergent
- Isopropyl Alcohol
- Tap water
- Deionized Ultra-Filtered (DIUF) Water
- Plastic buckets or washbasins
- Brushes
- Polyethylene sheeting

The following general equipment is needed for all soil sampling, regardless of method:

- Stainless steel bowls
- Stainless steel trowels
- Appropriate sample containers for laboratory analysis
- CGI (as necessary – i.e. sites where explosive gasses may be encountered)
- Personal Protective Equipment (PPE)
- Log Book
- Cooler and ice for preservation
- Stakes and flagging to document sampling location

The following additional equipment is needed for volatile organic sampling:

- Electronic pan scale and weights for calibration
- Syringes or other discrete soil core samplers

The following additional equipment may be needed for surface and test pit soil sampling:

- Hand Auger

The following additional equipment may be needed for soil sampling from split-spoon equipment:

- Tape measure or folding carpenter's rule for recording the length of soil recovered in the split-spoon.

All subsurface drilling equipment will be provided and maintained by the subcontractor.

5.0 Procedures

5.1 General Soil Sampling Procedure for All Soil Sampling Methods

1. Record the weather conditions and other relevant on-site conditions.
2. Select the soil sampling location, clear vegetation if necessary, and record the sampling location identification number and pertinent location details.
3. Verify that the sampling equipment is properly decontaminated, in working order, and situated at the intended sampling location.
4. Place polyethylene sheeting on the ground and assemble all necessary sampling equipment on top of it. Cover surfaces onto which soils or soil samplers will be placed (i.e. tables with polyethylene sheeting).
5. Follow the appropriate procedures listed below for either surface, split-spoon, direct push, or test pit sample collection (5.2, 5.3, 5.4, and 5.5 respectively).
6. Collect soil samples according to procedures listed in Section 5.6 depending on project specific analyses.
7. Record date/time, sample ID, and sample descriptions in the field logbook for field form. A sketch or description of the location should also be recorded so the sample location can be re-constructed.
8. Immediately label (and tag if required) the sample containers and place them on ice, if required for preservation. Complete the CoC form(s) as soon as possible.
9. Dispose of all excess excavated soil in accordance with the site-specific Work Plan. Soils may either be segregated based on level of contamination, stockpiled, drummed for disposal, or put back into the hole from which the soil came.
10. Upon completion, clearly label a wooden stake or pin flag with indelible ink and stake or flag the sampling location.
11. Decontaminate the sampling equipment according to POP No. 009 Decontamination of Field Equipment.

5.2 Surface Sampling

The following procedures are to be used to collect surface soil samples. Surface soils are considered to be soils that are up to one (1) foot below ground surface, though state regulations and project objectives may define surface soils differently; therefore, the Work Plan should be consulted for direction on the depth from which to collect the surface soil samples. Sampling and other pertinent data and information will be recorded in the field logbook and/or on field forms. Photographs will be taken as needed or as specified in the Quality Assurance Project Plan (QAPP).

1. Gently scrape any vegetative covering until soil is exposed. Completely remove any pavement.
2. Remove soil from excavation with a trowel, hand auger, or shovel. Put soils within the sampling interval in a stainless steel bowl for homogenizing. Monitor the excavation as required in the site-specific HASP and/or QAPP (i.e., PID).

The criteria used for selecting surface soil locations for sampling may include the following:

- Visual observations (soil staining, fill materials)
- Other relevant soil characteristics
- Site features
- Screening results
- Predetermined sampling approach (i.e. grid or random)
- Sampling objectives as provided in the Work Plan and/or QAPP

3. For VOC analyses, collect representative soil samples directly from the recently-exposed sidewall of the excavation using a syringe or other soil coring device (e.g,, TerraCore®, EnCore®). Follow procedures in Section 5.6.1 for VOC sampling.
4. Collect sufficient soil to fill all remaining sample jars into a stainless steel bowl. Homogenize the soil samples to obtain a uniform soil composition which is representative of the total soil sample collected according to the following procedure:
    a) Remove all rocks and non-soil objects using a stainless steel spoon or scoop.
    b) Form a cone shaped mound with the sample material, then flatten the cone and split the sample into quarters.
    c) Use the stainless steel spoon/scoop to mix the quarter samples that are opposite.
    d) After mixing the opposite quarters, reform the cone shaped mound.
    e) Repeat this procedure a minimum of five (5) times, removing any non-soil objects and breaking apart any clumps.

5.3 Split-Spoon Sampling

1. At each boring location, the frequency and depth of split-spoon samples will be determined from the Work Plan. Split-spoon samples may be collected continuously, intermittently, or from predetermined depths.
2. Standard penetration tests will be conducted according to ASTM D1586-99, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils to record the number of hammer blows required to advance the sampler each 6 inches of depth in the boring log.

3. Split-spoon samplers shall be driven into undisturbed soil by driving the spoon ahead of the drill augers/casing. In cohesive soils, or soils where the borehole remains open (does not collapse), two split-spoon samples may be taken prior to advancing the augers/casing.
4. After split-spoons are retrieved, open the split-spoon and measure the recovery of soil. If a PID will be used for screening, immediately scan the recovered sample for VOCs using a PID/FID. Scan the recovered soil by making a hole in the soil and placing the PID in or very close to the hole. Be very careful not to get soil on the tip of the PID. Take these PID scan readings every 6 inches along the split-spoon. Note any staining and/or presence of water. Record the highest PID reading and the depth at which it was observed along with other observations. If required in the Work Plan, VOC and headspace samples should be collected (see Section 5.6.1) prior to logging the sample.
5. If headspace screening for VOCs is required in the Work Plan, collect a soil sample (as defined in the Work Plan) and perform headspace screening according to POP No. 007 Headspace Screening for Total VOCs.
6. Soils collected using the split-spoon sampler will be logged by the AECOM field representative using the procedure described in ASTM D2488-00 Standard Practice for Description and Identification of Soils. In addition to the description of the soils, blow counts, sample recovery, PID readings (headspace), and the depth to water will also be recorded.
7. Collect the remainder of the sample volume required into a stainless steel bowl. Homogenize the soil so the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in Section 5.2.
8. The Work Plan may specify that intervals to be sent to the laboratory be determined by visual observation and/or highest PID screening or headspace results, which can only be determined once the boring is complete. In this instance, a VOC sample should be collected at each interval. The remainder of the soil from that interval will be set aside in a clearly labeled stainless steel bowl covered with aluminum foil. Once the boring has been completed and the sample interval has been determined, the remainder of the soil can be homogenized according to Section 5.2 and submitted for laboratory analysis.
9. Once a boring is complete and all required samples have been collected, the boring may be filled or a monitoring well or piezometer may be installed. Borings must be completed as specified in the Work Plan.

5.4 Direct Push Sampling

At each boring location, the frequency of direct-push samples will be determined from the Work Plan. Typically, samples with direct-push equipment are collected in 4 ft intervals.

1. Sample using either 2' or 4' Macro-Core samplers with acetate liners to obtain discrete soil samples at specific depths.

2. Cut open the acetate liner, and immediately scan the recovered sampler for VOCs using a PID/FID. Note any staining and/or presence of water. Record the highest PID reading and the depth at which it was observed along with other observations. VOC and headspace samples, if required in the Work Plan should be collected (see Section 5.6.1) prior to logging the sample.
3. If required in the Work Plan, collect a soil sample (as defined in the Work Plan) and perform headspace screening according to POP No. 007 Headspace Screening for Total VOCs.
4. Soils collected using the direct-push sampler will be logged by the AECOM field representative using the procedure described in ASTM D2488-00 Standard Practice for Description and Identification of Soils. In addition to the description of the soils and sample recovery, PID readings (headspace), and the depth to water will also be recorded.
5. Collect the remainder of the sample into a stainless steel bowl. Homogenize the soil collected so that the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in Section 5.2.
6. Once a boring is complete and all required samples have been collected, the boring may be filled or a monitoring well or piezometer may be installed. Borings must be completed as specified in the Work Plan.

5.5 Test Pit Sampling

1. Excavate the test pit to the desired depth.
2. Using the excavator bucket, collect soil samples as specified in the Work Plan. Collect a sample and perform screening analyses as required by the Work Plan. If VOCs contamination is suspected, perform headspace screening according to POP No. 007 Headspace Screening for Total VOCs.
3. Collect the sample from center of the bucket to avoid potential contamination from the bucket.
4. VOC samples should also be collected from an undisturbed section soil in the excavator bucket. The top layer of exposed soil should be scraped away just prior to collecting the VOC samples.
5. Collect the remainder of the sample volume required into a stainless steel bowl. Homogenize the soil so the material is uniform in composition and representative of the total soil sample collected. Follow homogenizing techniques as described in section 5.2.
6. Dispose of all excavated soil according to the Work Plan.

5.6 Sample Collection Methods

5.6.1 Volatile Organics Sampling

For soils collected for analyses of volatile organics, including Volatile Petroleum Hydrocarbons (VPH) or other purgable compounds, a closed system is maintained. From collection through analysis, the sample bottles are not opened. The bottle kit for a routine field sample for these analyses will typically include three 40-mL VOA vials and one soil jar. Two 40-mL VOA vials will contain either 5 mL reagent water or 5 mL sodium bisulfate and magnetic stir bars (i.e., low level vials). The third VOA vial will contain 15 mL methanol with no magnetic stir bar (i.e., high level vial). These vials are usually provided by the laboratory and are pre-weighed. No sample labels are affixed to the VOA vials, as addition of a label would alter the vial weight. All information is recorded directly on the VOA vial using indelible marker. The soil jar is provided for percent solids determination. For VOC or VPH analyses, samples are collected prior to sample homogenization. Collect the VOC sample in accordance with the procedure described below.

1. Prior to sampling, weigh the 40-mL VOA vials received from the laboratory or purchased by AECOM. Record this weight. This weight will be used to determine if the proper amount of soil has been added to the vial.
2. Determine the soil volume necessary for the required sample weight, typically 5 grams:
    a) Prepare a 5 mL sampling corer (e.g., Terra Core®) or cut-off plastic syringe.
    b) Tare the sampler by placing it on the scale, and zeroing the scale.
    c) Draw back the plunger to the 5 gram mark or 5mL (5cc) mark on cut-off syringe, and insert the open end of the sampler into an undisturbed area of soil with a twisting motion, filling the sampler with soil. Note the location of the plunger with respect to the milliliter (cc) or other graduation printed on the sampler.
    d) Weigh the filled sampler, and remove or add soil until the desired weight is obtained. Note the location of the plunger which corresponds to this weight. Do not use this sample for laboratory analysis.
3. Once the required soil volume has been determined, pull the plunger back to this mark and hold it there while filling the syringe for each sample.
4. Collect 5 grams of soil using the cut-off syringe or Terra Core® sample device. Extrude the 5-grams of soil into one of the low level 40-mL VOA vials. Quickly wipe any soil from the threads of the VOA vial with a clean Kimwipe® and immediately close the vial. It is imperative that the threads be free from soil or other debris prior to replacing the cap on the vial in order to maintain the closed system necessary for the analysis.
5. Gently swirl the vial so that all of the soil is fully wedded with the preservative.
6. Weigh the 40 mL vial with the sample contained. Sample weight should be within 0.5 grams (±10%) of the target weight. Record the sample weight.

7. Fill the other low level 40 mL VOA vial in this manner,
8. Repeat the process for the high level VOA vials, only for the high level VOA vial three 5 gram aliquots (i.e., 15 grams total) should be extruded into the high level VOA vial.

NOTE: Depending on the laboratory, some high level VOA vials only contain 5 mL or 10 mL of methanol. If this is the case, either 5 grams total or 10 grams total, respectively, should be extruded into the high level VOA vial. In other words, the mass of soil in grams should be identical to the volume of methanol in mL (i.e., 1:1 ratio of soil to methanol).

9. Collect any additional QC sample collected (e.g., field duplicate, MS, and MSD) in the same manner as above.
10. Fill the 4-oz glass jar with soil from the same area for percent moisture determination.

5.6.2 Soil Sampling Method (All other analyses except VOC/VPH)

When all the required soil for a sampling location has been obtained, the soil can be homogenized as described in section 5.2. Collect sufficient volume to fill all of the remaining sample containers at least ¾ full for all other analyses. Homogenize the soil in a decontaminated stainless steel bowl, removing rocks, sticks, or other non-soil objects and breaking apart any lumps of soil prior to filling the remaining sample containers.

NOTE: Soil samples must contain greater than 30% solids for the data to be considered valid.

6.0 Quality assurance / quality control

Sampling personnel should follow specific quality assurance guidelines as outlined in the QAPP. Proper quality assurance requirements should be provided which will allow for collection of representative samples from representative sampling points. Quality assurance requirements outlined in the QAPP typically suggest the collection of a sufficient quantity of field duplicate, field blank, and other samples.

Quality control requirements are dependent on project-specific sampling objectives. The QAPP will provide requirements for equipment decontamination (frequency and materials), sample preservation and holding times, sample container types, sample packaging and shipment, as well as requirements for the collection of various quality assurance samples such as trip blanks, field blanks, equipment blanks, and field duplicate samples.

7.0 Data and records management

All data and information (e.g., sample collection method used) must be documented on field data sheets, boring logs, or within site log books with permanent ink. Data recorded will include the following:

- weather conditions
- arrival and departure time of persons on site
- instrument type, lamp (PID), make, model and serial number
- calibration gas used
- date, time and results of instrument calibration and calibration checks
- sampling date and time
- sampling location
- samples collected
- sampling depth and soil type
- deviations from the procedure as written
- readings obtained

8.0 Personnel qualifications and training

All field staff are required to be OSHA 40-Hour Health and Safety certified with a current annual 8-hour refresher prior to engaging in any field collection activities.

Prior to implementation of these soil sampling procedures, the field sampler will be instructed by a person experienced with these procedures. The field staff will demonstrate to the field team leader the proper set-up, calibration, operation, and routine maintenance of the instrumentation and hand-held equipment, as well as the proper procedures, used to collect soil samples.

9.0 References

POP 004 Operation and Calibration of a Photoionization Detector

POP 007 Headspace Screening for Total VOCs

POP 009 Decontamination of Field Equipment

ASTM D1586-99, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils

ASTM D2488-00 Standard Practice for Description and Identification of Soils

10.0 Revision History

Revision	Date	Changes
0	March 2010	Original POP

Attachment 1. Example Boring Log

AECOM	Client:		Boring ID:
	Project Number:		
	Site Location:		
	Coordinates:	Elevation:	Sheet: 1 of 1
	Drilling Method:		Monitoring Well Installed:
	Sample Type(s):	Boring Diameter:	Screened Interval:
Weather:	Logged By:	Date/Time Started:	Depth of Boring:
Drilling Contractor:	Ground Elevation:	Date/Time Finished:	Water Level:

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

NOTES:	Date	Time	Depth to groundwater while drilling

Checked by _____ Date: _____

Appendix B

PID Operation and Calibration

AECOM

Project Operating Procedure

Operation and Calibration of a Photoionization Detector

Procedure Number: 004

Revision No.: 0

Revision Date: March 2010

Project Operating Procedure

Operation and Calibration of a Photoionization Detector

Contents

Project Operating Procedure

Operation and Calibration of a Photoionization Detector

1.0 Project Scope and applicability

1.1 Purpose and Applicability

This document describes the procedures that will be followed by field staff for operation and calibration of a photoionization detector (PID). The PID is primarily used by AECOM personnel for safety and survey monitoring of ambient air, determining the presence of volatiles in soil and water, and detecting leakage of volatiles.

PIDs routinely used by AECOM personnel include the Photovac Microtip, Thermoelectron 580EZ, and MiniRAE 2000. Personnel responsible for using the PID should first read and thoroughly familiarize themselves with the instrument instruction manual.

1.2 Principle of Operation

The PID is a non-specific vapor/gas detector. The unit generally consists of a hand-held probe that houses a PID, consisting of an ultraviolet (UV) lamp, two electrodes, and a small fan which pulls ambient air into the probe inlet tube. The probe is connected to a readout/control box that consists of electronic control circuits, a readout display, and the system battery. Units are available with UV lamps having an energy from 9.5 electron volts (eV) to 11.7 eV.

The PID analyzer measures the concentration of trace gas present in the atmosphere by photoionization. Photoionization occurs when an atom or molecule absorbs a photon of sufficient energy to release an electron and become a positive ion. This will occur when the ionization potential of the molecule (in electron volts (eV)) is less than the energy of the photon. The source of photons is an ultraviolet lamp in the probe unit. Lamps are available with energies ranging from 9.5 eV to 11.7 eV. All organic and inorganic vapor/gas compounds having ionization potentials lower than the energy output of the UV lamp are ionized and the resulting potentiometric change is seen as a positive reading on the unit. The reading is proportional to the concentration of organics and/or inorganics in the vapor.

Sample gases enter the probe through the inlet tube and enter the ion chamber where they are exposed to the photons emanating from the UV lamp. Ionization occurs for those molecules having ionization potentials near to or less than that of the lamp. A positive- biased polarizing electrode causes these positive ions to travel to a collector electrode in the chamber. Thus the ions create an electrical current which is amplified and displayed on the meter. This current is proportional to the concentration of trace gas present in the ion chamber and to the sensitivity of that gas to photoionization.

In service, the analyzer is first calibrated with a gas of known composition equal to, close to, or representative of that to be measured. Gases with ionization potentials near to or less than the energy of the lamp will be ionized. These gases will thus be detected and measured by the analyzer. Gases with ionization potentials greater than the energy of the lamp will not be detected. The ionization potentials of the major components of air, i.e., oxygen, nitrogen, and carbon dioxide, range from about

12.0 eV to 15.6 eV and are not ionized by any of the lamps available. Gases with ionization potentials near to or slightly higher than the lamp are partially ionized, with low sensitivity.

1.3 Specifications

Refer to the manufacturer's instructions for the technical specifications of the instrument being used. The operating concentration range is typically 0.1 to 2,000 ppm isobutylene equivalent.

2.0 Health and safety considerations

The health and safety considerations for the site, including both potential physical and chemical hazards, will be addressed in the site-specific Health and Safety Plan (HASP). In the absence of a site-specific HASP, work will be conducted according to the AECOM Health and Safety Policy and Procedures Manual and/or direction from the Regional Health and Safety Manager.

Only PIDs stamped Division I Class I may be used in explosive atmospheres. Refer to the project HASP for instructions pertaining to instrument use in explosive atmospheres.

3.0 Interferences

Regardless of which gas is used for calibration, the instrument will respond to all analytes present in the sample that can be detected by the type of lamp used in the PID.

Moisture will generate a positive interference in the concentration measured for a PID and is characterized by a slow increase in the reading as the measurement is made. Care must be taken to minimize uptake of moisture to the extent possible. Refer to the manufacturers' instructions for care, cleaning, and maintenance.

Uptake of soil into the PID must be avoided as it will compromise instrument performance by blocking the probe, causing a positive interference, or dirtying the PID lamp. Refer to the manufacturers' instructions for care, cleaning, and maintenance.

The user should listen to the pitch of the sampling pump. Any changes in pitch may indicate a blockage and corrective action should be initiated.

4.0 Equipment and materials

- Calibration Gas: Compressed gas cylinder of isobutylene in air or similar stable gas mixture of known concentration. The selected gas should have an ionization potential

similar to that of the vapors to be monitored, if known. The concentration should be at 50-75% of the range in which the instrument is to be calibrated.

- Regulator for calibration gas cylinder
- Approximately 6 inches of Teflon® tubing
- Tedlar bag (optional)
- Commercially-supplied zero grade air (optional)
- "Magic Marker" or “Sharpie” or other waterproof marker
- Battery charger
- Moisture traps
- Spare lamps
- Manufacturer’s instructions
- Field data sheets or logbook/pen

5.0 Procedures

5.1 Preliminary Steps

Preliminary steps (battery charging, check-out, calibration, maintenance) should be conducted in a controlled or non-hazardous environment.

5.2 Calibration

The PID must be calibrated in order to display concentrations in units equivalent to ppm. First a supply of zero air (ambient air or from a supplied source), containing no ionizable gases or vapors is used to set the zero point. A span gas, containing a known concentration of a photoionizable gas or vapor, is then used to set the sensitivity.

Calibrate the instrument according to the manufacturer’s instructions. Record the instrument model and identification number, the initial and adjusted meter readings, the calibration gas composition and concentration, and the date and the time in the field records.

If the calibration cannot be achieved or if the span setting resulting from calibration is 0.0, then the lamp must be cleaned (Section 4.4).

5.3 Operation

Turn on the unit and allow it to warm up (minimum of 5 minutes). Check to see if the intake fan is functioning; if so, the probe will vibrate slightly and a distinct sound will be audible when holding the probe casing next to the ear. Also, verify on the readout display that the UV lamp is lit.

Calibrate the instrument as described in Section 4.2, following the manufacturer's instructions. Record the calibration information in the field records.

The instrument is now operational. Readings should be recorded in the field records.

When the PID is not being used or between monitoring intervals, the unit may be switched off to conserve battery power and UV lamp life; however, a "bump" test should be performed each time the unit is turned on and prior to taking additional measurements. To perform a bump test, connect the outlet tubing from a Tedlar bag containing a small amount of span gas to the inlet tubing on the unit and record the reading. If the reading is not within the tolerance specified in the project plan, the unit must be recalibrated.

At the end of each day, recheck the calibration. The check will follow the same procedures as the initial calibration (Section 4.2) except that no adjustment will be made to the instrument. Record the information in the field records.

Recharge the battery after each use (Section 5.4).

When transporting, ensure that the instrument is packed in its stored condition in order to prevent damage.

5.4 Routine Maintenance

Routine maintenance associated with the use of the PID includes charging the battery, cleaning the lamp window, replacing the detector UV lamp, replacing the inlet filter, and replacing the sample pump. Refer to the manufacturer's instructions for procedures and frequency.

All routine maintenance should be performed in a non-hazardous environment.

5.5 Troubleshooting Tips

One convenient method for periodically confirming instrument response is to hold the sensor probe next to the tip of a magic marker. A significant reading should readily be observed.

Air currents or drafts in the vicinity of the probe tip may cause fluctuations in readings.

A fogged or dirty lamp, due to operation in a humid or dusty environment, may cause erratic or fluctuating readings. The PID should never be operated without the moisture trap in place.

Moving the instrument from a cool or air-conditioned area to a warmer area may cause moisture to condense on the UV lamp and produce unstable readings.

A zero reading on the meter should not necessarily be interpreted as an absence of air contaminants. The detection capabilities of the PID are limited to those compounds that will be ionized by the particular probe used.

Many volatile compounds have a low odor threshold. A lack of meter response in the presence of odors does not necessarily indicate instrument failure.

When high vapor concentrations enter the ionization chamber in the PID the unit can become saturated or “flooded”. Remove the unit to a fresh air environment to allow the vapors to be completely ionized and purged from the unit.

6.0 Quality assurance / quality control

The end use of the data will determine the quality assurance requirements that are necessary to produce data of acceptable quality. These quality assurance requirements will be defined in the site-specific work plan or Quality Assurance Project Plan (QAPP), hereafter referred to as the project plan.

Calibration of the PID will be conducted at the frequency specified in the project plan. In the absence of project-specific guidance, calibration will be performed at the beginning of each day of sampling and will be checked at the end of the sampling day or whenever instrument operation is suspect. The PID will sample a calibration gas of known concentration. The instrument must agree with the calibration gas within ±10%. If the instrument responds outside this tolerance, it must be recalibrated.

Checks of the instrument response (Section 5.5) should be conducted periodically and documented in the field records.

7.0 Data and records management

Safety and survey monitoring with the PID will be documented in a bound field logbook, or on standardized forms, and retained in the project files. The following information is to be recorded:

- Project name and number.
- Instrument manufacturer, model, and identification number.
- Operator's signature.
- Date and time of operation.
- Calibration gas used.
- Calibration check at beginning and end of day (meter readings before adjustment).
- Span setting after calibration adjustment.
- Meter readings (monitoring data obtained).
- Instances of erratic or questionable meter readings and corrective actions taken.

- Instrument checks and response verifications – e.g., battery check, magic marker response (Section 4.5.1) or similar test.

8.0 Personnel qualifications and training

The project manager is responsible for ensuring that project-specific requirements are communicated to the project team and for providing the materials, resources, and guidance necessary to perform the measurements in accordance with this POP and the project plan.

The field operator is responsible for verifying that the PID is in proper operating condition prior to use and for implementing the calibration and measurement procedures in accordance with this POP and the project plan.

9.0 References

United States Environmental Protection Agency. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM). USEPA, Region 4, SESD, Enforcement and Investigations Branch, Athens, GA. November 2001.

10.0 Revision History

Revision	Date	Changes
0	March 2010	Original POP

Appendix C

Equipment Decontamination

AECOM

Project Operating Procedure

Decontamination of Field Equipment

Procedure Number: 009

Revision No.: 0

Revision Date: March 2010

Project Operating Procedure

Decontamination of Field Equipment

Contents

Project Operating Procedure
Decontamination of Field Equipment

1.0 Project Scope and applicability

1.1 Purpose and Applicability

This POP describes the methods to be used for the decontamination of field equipment used in the collection of environmental samples. The list of field equipment may include a variety of items used in the collection of soil and/or water samples, such as split-spoon samplers, trowels, scoops, spoons, bailers and pumps. Heavy equipment such as drill rigs and backhoes also require decontamination, usually in a specially constructed temporary decontamination area.

Decontamination is performed as a quality assurance measure and a safety precaution. Improperly decontaminated sampling equipment can lead to misinterpretation of environmental data due to interference caused by cross-contamination. Decontamination protects field personnel from potential exposure to hazardous materials. Decontamination also protects the community by preventing transportation of contaminants from a site.

This POP emphasizes decontamination procedures to be used for decontamination of reusable field equipment. Occasionally, dedicated field equipment such as well construction materials (well screen and riser pipe) or disposable field equipment (bailers or other general sampling implements) may also require decontamination prior to use. The project-specific RAP should indicate the specific decontamination requirements for a particular project.

Respective state or federal agency (regional offices) regulations may require specific types of equipment or procedures for use in decontamination of field equipment. The project manager should review the applicable regulatory requirements, if any, prior to the start of the field investigation program.

1.2 General Principles

Decontamination is accomplished by manually scrubbing, washing, or spraying equipment with detergent solutions, tap water, distilled/deionized water, steam and/or high pressure water, or solvents. The decontamination method and agents are generally determined on a project-specific basis and must be stated in the Quality Assurance Project Plan (QAPP).

Generally, decontamination of equipment is accomplished at each sampling site between collection points. Waste decontamination materials such as spent liquids and solids will be collected and managed as investigation-derived waste for later disposal. All decontamination materials, including wastes, should be stored in a central location so as to maintain control over the quantity of materials used or produced throughout the investigation program.

2.0 Health and safety considerations

Decontamination procedures may involve chemical exposure hazards associated with the type of contaminants encountered or solvents employed and may involve physical hazards associated with decontamination equipment. When decontamination is performed on equipment which has been in contact with hazardous materials or when the quality assurance objectives of the project require decontamination with chemical solvents, the measures necessary to protect personnel must be addressed in the project Health and Safety Plan (HASP). This plan must be approved by the project Health and Safety Officer before work commences, must be distributed to all personnel performing equipment decontamination, and must be adhered to as field activities are performed.

3.0 Interferences

Improper decontamination can result is sample contamination and affect the accuracy of data.

4.0 Equipment and materials

- Decontamination agents (per RAP requirements):
    - LIQUI-NOX, ALCONOX, or other phosphate-free biodegradable detergent,
    - Tap water,
    - Distilled/deionized water,
    - Nitric acid and/or hydrochloric acid,
    - Methanol and/or hexane, acetone, isopropanol.
- Health and Safety equipment
- Chemical-free paper towels
- Waste storage containers: drums, 5-gallon pails w/covers, plastic bags
- Cleaning containers: plastic buckets or tubs, galvanized steel pans, pump cleaning cylinder
- Cleaning brushes
- Pressure sprayers
- Squeeze bottles
- Plastic sheeting

- Aluminum foil
- Field project notebook/pen

5.0 Procedures

5.1 General Preparation

It should be assumed that all sampling equipment, even new items, are contaminated until the proper decontamination procedures have been performed on them or unless a certificate of analysis is available which demonstrates the items cleanliness.

Field equipment that is not frequently used should be wrapped in aluminum foil, shiny side out, and stored in a designated "clean" area. Small field equipment can also be stored in plastic bags to eliminate the potential for contamination. Field equipment should be inspected and decontaminated prior to use if the equipment appears contaminated and/or has been stored for long periods of time. Unless customized procedures are stated in the RAP and/or QAPP for decontamination of equipment, the standard procedures specified in this POP shall be followed.

Establish the decontamination station within an area that is convenient to the sampling location. If single samples will be collected from multiple locations, then a centralized decontamination station, or a portable decontamination station should be established.

An investigation-derived waste (IDW) containment station should be established at this time also. The project-specific RAP should specify the requirements for IDW containment. In general, decontamination solutions are discarded as IDW between sampling locations. Solid waste is disposed of as it is generated.

5.2 Decontamination for Organic Analyses

This procedure applies to soil sampling and groundwater sampling equipment used in the collection of environmental samples submitted for organic constituents analysis. Examples of relevant items of equipment include split-spoons, trowels, scoops/spoons, bailers, and other small items. Submersible pump decontamination procedures are outlined in Section 4.4.

Decontamination is to be performed before sampling events and between sampling points.

After a sample has been collected, remove all gross contamination from the equipment or material by brushing and then rinsing with available tap water. This initial step may be completed using a 5-gallon pail filled with tap water. Steam or a high-pressure water rinse may also be conducted to remove solids and/or other contamination.

Wash the equipment with a phosphate-free detergent and tap water solution. This solution should be kept in a 5-gallon pail with its own brush.

Rinse with tap water or distilled/deionized water until all detergent and other residue is washed away. This step can be performed over an empty bucket using a squeeze bottle or pressure sprayer.

Rinse with methanol or other appropriate solvent using a squeeze bottle or pressure sprayer. Rinsate should be collected in a waste bucket.

Rerinse with deionized water to remove any residual solvent. Rinsate should be collected in the solvent waste bucket.

Allow the equipment to air-dry in a clean area or blot with chemical-free paper towels before reuse. Wrap the equipment in tin foil and/or seal it in a plastic bag if it will not be reused for a while.

Dispose of soiled materials and spent solutions in the designated IDW disposal containers.

5.3 Decontamination for Inorganic (Metals) Analyses

This procedure applies to soil sampling equipment used primarily in the collection of environmental samples submitted for inorganic constituents analysis. Examples of relevant items of equipment include split-spoons, trowels, scoops/spoons, bailers, and other small items.

For plastic and glass sampling equipment, follow the steps outlined in 5.2 above, however, use a 10% nitric acid solution (acid in water) in place of the solvent rinse.

For metal sampling equipment, follow the steps outlined in 5.2 above, however, use a 10% hydrochloric acid solution (acid in water) in place of the solvent rinse.

5.4 Decontamination of Submersible Pumps

This procedure will be used to decontaminate submersible pumps before and between ground-water sample collection points. This procedure applies to both electric submersible and bladder pumps. This procedure also applies to discharge tubing if it will be reused between sampling points.

Prepare the decontamination area if pump decontamination will be conducted next to the sampling point. If decontamination will occur at another location, the pump and tubing may be removed from the well and placed into a clean trash bag for transport to the decontamination area. Pump decontamination is easier with the use of 3-foot tall pump cleaning cylinders (i.e., Nalgene cylinder) for the various cleaning solutions, although the standard bucket rinse equipment may be used.

Once the decontamination station is established, the pump should be removed from the well and the discharge tubing and power cord coiled by hand as the equipment is removed. If any of the equipment needs to be put down temporarily, place it on a plastic sheet (around well) or in a clean trash bag. If a disposable discharge line is used it should be removed and discarded at this time.

As a first step in the decontamination procedure, use a pressure sprayer with tap water to rinse the exterior of the pump, discharge line, and power cord as necessary. Collect the rinsate and handle as IDW.

Place the pump into a pump cleaning cylinder or bucket containing a detergent solution (detergent in tap water). Holding the tubing/power cord, pump solution through the pump system. A minimum of one gallon of detergent solution should be pumped through the system. Collect the rinsate and handle as IDW.

Place the pump into another cylinder/bucket containing a 10% solution of solvent (methanol, or other designated solvent) in distilled/deionized water. Pump until the detergent solution is removed. Collect the rinsate and handle as IDW.

Place the pump into another cylinder/bucket containing distilled/deionized water. Pump a minimum of 3 to 5 pump system volumes (pump and tubing) of water through the system. Collect the rinsate and handle as IDW.

Remove the pump from the cylinder/bucket and if the pump is reversible, place the pump in the reverse mode to discharge all removable water from the system. If the pump is not reversible the pump and discharge line should be drained by hand as much as possible. Collect the rinsate and handle as IDW.

Using a pressure sprayer with distilled/deionized water, rinse the exterior of the pump, discharge line, and power cord thoroughly, shake all excess water, then place the pump system into a clean trash bag for storage. If the pump system will not be used again right away, the pump itself should also be wrapped with aluminum foil before placing it into the bag.

5.5 Decontamination of Large Equipment

Consult the RAP for instruction on the location of the decontamination station and the method of containment of the wash solutions. On large projects usually a temporary decontamination facility (decontamination pad) is required which may include a membrane-lined and bermed area large enough to drive heavy equipment (drill rig, backhoe) onto with enough space to spread other equipment and to contain overspray. Usually a small sump with pump is necessary to collect and contain rinsate. A water supply and power source is also necessary to run steam cleaning and/or pressure washing equipment.

Upon arrival and prior to leaving a sampling site, all heavy equipment such as drill rigs, trucks, and backhoes should be thoroughly cleaned and then the parts of the equipment which come in contact or in close proximity to sampling activity should be decontaminated. This can be accomplished in two ways, steam cleaning or high pressure water wash and manual scrubbing. Following this initial cleaning, only those parts of the equipment which come in close proximity to the sampling activities (i.e., auger stems, rods, backhoe bucket) must be decontaminated in between sampling events.

Occasionally, well construction materials such as well screen and riser pipe may require decontamination before the well materials are used. These materials may be washed in the decontamination pad, preferably on a raised surface above the pad (i.e., on sawhorses), with clean plastic draped over the work surfaces. Well materials usually do not require a multistep cleaning process as they generally arrive clean from the manufacturer. Usually, a thorough steam-cleaning of the interior/exterior of the well materials will be sufficient. The RAP should provide specific guidance regarding decontamination of well materials.

6.0 Quality assurance / quality control

6.1 General Considerations

Sampling personnel should follow specific quality assurance guidelines as outlined in the site-specific QAPP. The QAPP guidelines typically require collection of equipment blank samples in order to determine the effectiveness of the decontamination procedure.

The decontamination method, solvent, frequency, location on site and the method of containment and disposal of decontamination wash solids and solutions are dependent on site logistics, site-specific chemistry, and nature of the contaminated media to be studied and the objectives of the study. Each topic must be considered and addressed during development of a decontamination strategy and should be outlined in the RAP.

6.2 Solvent Selection

There are several factors which need to be considered when deciding upon a decontamination solvent. The solvent should not be an analyte of interest. The sampling equipment must be resistant to the solvent. The solvent must be evaporative or water soluble or preferably both. The applicable regulatory agency may have specific requirements regarding decontamination solvents. The QAPP should specify the type of solvent to be used for a particular project.

The analytical objectives of the study must also be considered when deciding upon a decontamination solvent. Pesticide-grade methanol is the solvent of choice for general organic analyses. It is relatively safe and effective. Hexane, acetone, and isopropanol are sometimes used as well. A 10% nitric acid in deionized water solution is the solvent of choice for general metals analyses. Nitric acid can be used only on Teflon, plastics and glass. If used on metal equipment, nitric acid will eventually corrode the metal and lead to the introduction of metals to the collected samples. Dilute hydrochloric acid is usually preferred over nitric acid when cleaning metal sampling equipment.

Equipment decontamination should be performed a safe distance away from the sampling area so as not to interfere with sampling activities but close enough to the sampling area to maintain an efficient working environment. If heavy equipment such as drill rigs or backhoes are to be decontaminated, then a central decontamination station should be constructed with access to a power source and water supply.

6.3 Field Blank Sample Collection

General guidelines for quality control check of field equipment decontamination usually require the collection of one field blank from the decontaminated equipment per day. The QAPP should specify the type and frequency of collection of each type of quality assurance sample.

Field blanks are generally made by pouring laboratory-supplied deionized water into, over, or through the freshly decontaminated sampling equipment and then transferring this water into a sample container. Field blanks should then be labeled as a sample and submitted to the laboratory to be analyzed for the same parameters as the associated sample. Field blank sample numbers, as well as collection method, time and location should be recorded in the field notebook.

7.0 Data and records management

Specific information regarding decontamination procedures should be documented in the project-specific field notebook. Documentation within the notebook should thoroughly describe the construction of each decontamination facility and the decontamination steps implemented in order to show compliance with the project RAP. Decontamination events should be logged when they occur with the following information documented:

- Date, time and location of each decontamination event
- Equipment decontaminated
- Method
- Solvents
- Noteable circumstances
- Identification of field blanks and decontamination rinsates
- Method of blank and rinsate collection
- Date, time and location of blank and rinsate collection
- Disposition of IDW

Repetitive decontamination of small items of equipment does not need to be logged each time the item is cleaned.

8.0 Personnel qualifications and training

All sampling technicians performing decontamination must be properly trained in the decontamination procedures employed, the project data quality objectives, health and safety procedures and the project QA procedures. Specific training or orientation will be provided for each project to ensure that personnel understand the special circumstances and requirements of that project. Field personnel should be health and safety certified as specified by OSHA (29 CFR 1910.120(e)(3)(i)) to work on sites where hazardous materials may be present.

8.1 Sampling Technician

It is the responsibility of the sampling technician to be familiar with the decontamination procedures outlined within this POP and with specific quality assurance, and health and safety requirements outlined within project-specific RAP, HASP, and/or QAPP. The sampling technician is responsible for decontamination of field equipment and for proper documentation of decontamination activities. The sampling technician is also responsible for ensuring that decontamination procedures are followed by subcontractors when heavy equipment requires decontamination.

8.2 Field Project Manager

The field project manager is responsible for ensuring that the required decontamination procedures are followed at all times. The project manager is also responsible for ensuring that subcontractors construct and operate their decontamination facilities according to project specifications. The project manager is responsible for collection and control of IDW in accordance with project specifications.

9.0 References

Not applicable.

10.0 Revision History

Revision	Date	Changes
0	March 2010	Original POP