RO-341

Delta
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AUG 27 2002

August 20, 2002

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-9335

Subject: *Work Plan Addendum for Hand-Augered Soil Borings*
Former Chevron Service Station No. 9-1153
3135 Gibbons Drive
Alameda, California
Delta Project No. DG91-153

Ms. Chu:

Delta Environmental Consultants, Inc. (Delta) has been authorized by Chevron Products Company (Chevron) to prepare a work plan addendum for the collection of soil vapor, grab groundwater, and soil physical characteristic samples at the above-referenced site. The location of the site is presented on Figure 1, and a site map is included on Figure 2. This work is being proposed to collect representative soil vapor and groundwater chemical data for use in evaluating volatilization of petroleum hydrocarbons to indoor air. This data will be used to prepare a Risk Based Corrective Action (RBCA) model as requested in an e-mail from Alameda County Health Care Services (ACHCS) dated February 11, 2002 (Enclosure A).

Site Description

The site was formerly Chevron Service Station No. 9-1153 located at 3126 Fernside Boulevard, Alameda, California, that operated from 1956 to 1986. Following demolition and excavation of the underground storage tanks and product lines, a residential building was constructed on site. Previous environmental work detected elevated levels of petroleum hydrocarbons in the vicinity of the former pump islands. Monitoring wells were installed to evaluate concentrations of petroleum hydrocarbons in soil and groundwater. Currently, there is a quarterly monitoring and sampling program established for the site. Liquid phase hydrocarbons are often measured in monitoring well C-1, at thicknesses typically between 0 and 5 inches, but occasionally ranging up to 1 foot since January 2000.

Scope of Work

Pre-field
Prior to conducting field activities, Delta will notify the property owner of the impending activities at least two weeks in advance. Boring permit applications will be filed with the Alameda County Department of Public Works. Upon approval of the permit applications, Delta will mark boring locations at the site for underground utility location and contact Underground Service Alert at least 48 hours prior to commencing field activities. Additional parties to be notified at least 48 hours in advance include Chevron and ACHCS.

Soil Vapor Samples

Delta proposes the collection of seven soil vapor samples from the locations shown on Figure 2. A hollow stainless steel probe lined with a perforated tip will be advanced to a depth of three feet below ground surface (bsg) using a rotary hammer drill. Ambient air within the hollow probe will be purged with a small pump prior to sample collection. The soil vapor sample will be collected within a pre-evacuated Summa canister. A flow controller will be connected in-line, prior to the Summa canister to ensure collection of a high-quality, representative sample.

Grab Groundwater Samples

To facilitate the collection of a grab groundwater samples, Delta proposes to advance seven hand-augered soil borings at the locations shown on Figure 2. Prior to advancing the hand-augered soil borings, Delta will measure depth to water in several site wells. The borings will be advanced to a depth of approximately one foot below measured depth to groundwater. A Delta geologist will classify the soil encountered in the boring using the Unified Soil Classification System. Soil cuttings will be field screened for the presence of organic vapors using a photoionization detector. Prior to collection of the grab groundwater sample, Delta will allow groundwater to equilibrate in the boring. Once groundwater has equilibrated, a grab groundwater sample from the soil boring will be collected. Soil cuttings generated by hand-augered boring activities will be used to backfill the borings.

Laboratory Analysis

Soil vapor samples will be submitted to Lancaster Laboratories in Lancaster, Pennsylvania (Lancaster) for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), and total petroleum hydrocarbons as gasoline range organics (TPH-GRO) using EPA Method TO-15. Groundwater samples will be submitted to Lancaster for analysis of BTEX and MTBE using EPA Method 8021 and TPH-GRO using EPA Method 8015 Modified.

Additionally, two hand-augered soil borings will be advanced for the collection of soil samples to be submitted for analysis of physical properties including: fraction of organic carbon, bulk density, and total soil porosity. The location of these hand-augered borings is included on Figure 2. Soil samples will be collected from a depth of 2 feet bsg using a core sampler advanced with a manual slide hammer. The core sampler will be lined with a brass tube. Soil cuttings generated by hand-augered boring activities will be used to backfill the borings. Field methods and procedures to be used by Delta for the proposed scope of work are described in Enclosure B.

Rose Diagram

At the request of ACHCS, a rose diagram was generated to give indication to the patterns of groundwater flow direction. Historically, groundwater flow direction beneath the site vicinity has been to the east. Gradient has ranged from 0.005 to 0.08. The rose diagram is included as Figure 3.

Schedule

Upon approval of this work plan, Delta will submit permit applications to install the hand auger soil borings. A report summarizing the results and the RBCA analysis for indoor air will be submitted to the appropriate agencies within 60 days following the receipt of soil vapor and groundwater analytical data.

Remarks/Signatures

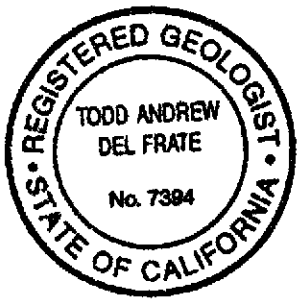
The interpretations contained in this document represent our professional opinions, and are based in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeological and engineering practices. Other than this, no warranty is implied or intended.

If you have any questions regarding this project, please contact Todd Del Frate at (916) 536-2612.
Sincerely,

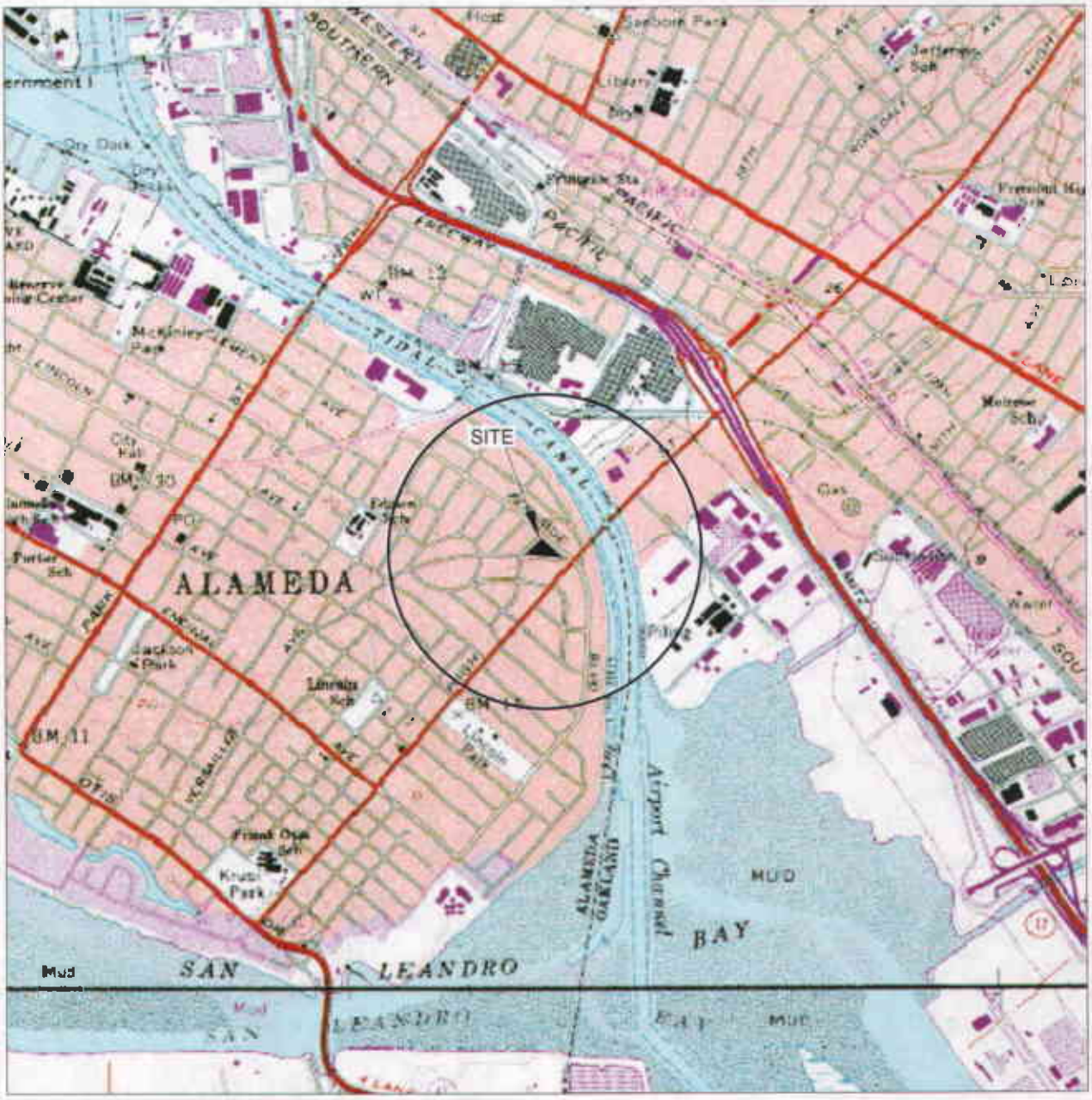
DELTA ENVIRONMENTAL CONSULTANTS, INC.

William Slowik
Staff Scientist

Todd A. Del Frate, R.G.
Project Manager
California Registered Geologist No. 7394



WS (Lrp011.9-1153 workplan addendum)
Enclosures
cc: Ms. Karen Streich – Chevron Products Company
Mr. Chuck Headlee – San Francisco Bay Regional Water Quality Control Board
Mr. Mark Hom – 3135 Gibbons Drive, Alameda, CA



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
OAKLAND EAST, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

N

0 2000 FT

SCALE 1:24,000

QUADRANGLE LOCATION

FIGURE 1

SITE LOCATION MAP

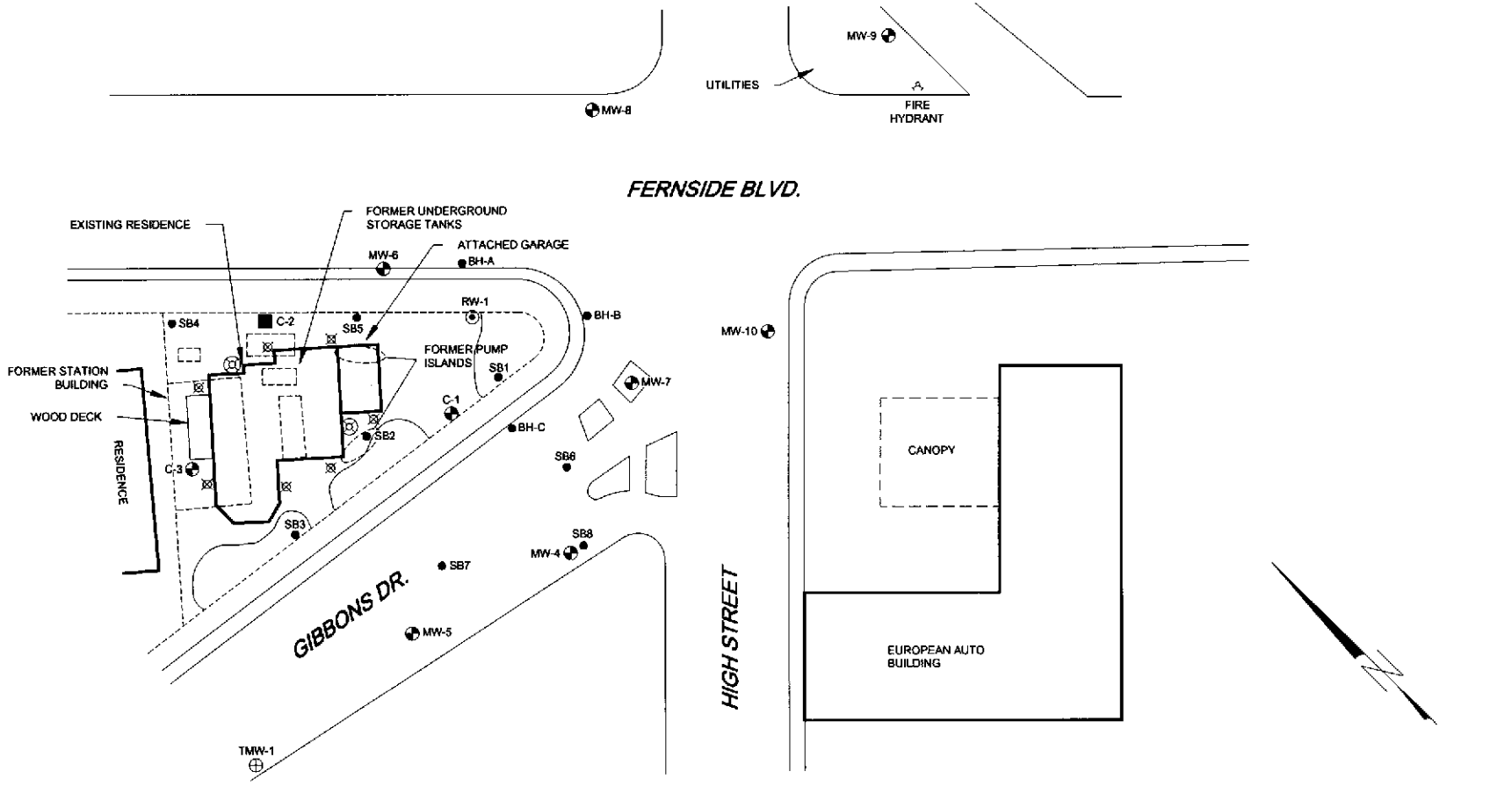
CHEVRON STATION NO. 9-1153

3126 FERNSIDE BOULEVARD

ALAMEDA, CA.

PROJECT NO. DG91-153	DRAWN BY M.L. 6/20/01
FILE NO. DG91153A	PREPARED BY TAD
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.



LEGEND:

MW-4	MONITORING WELL LOCATION
RW-1	EXTRACTION WELL LOCATION
C-2	ABANDONED WELL LOCATION
TMW-1	TEMPORARY MONITORING WELL LOCATION
SB1	SOIL BORING LOCATION
	PROPOSED SOIL VAPOR SAMPLE LOCATION AND HAND-AUGERED BORING LOCATION FOR GRAB GROUNDWATER SAMPLE COLLECTION.
	PROPOSED HAND-AUGERED BORING LOCATION FOR PHYSICAL ANALYSIS

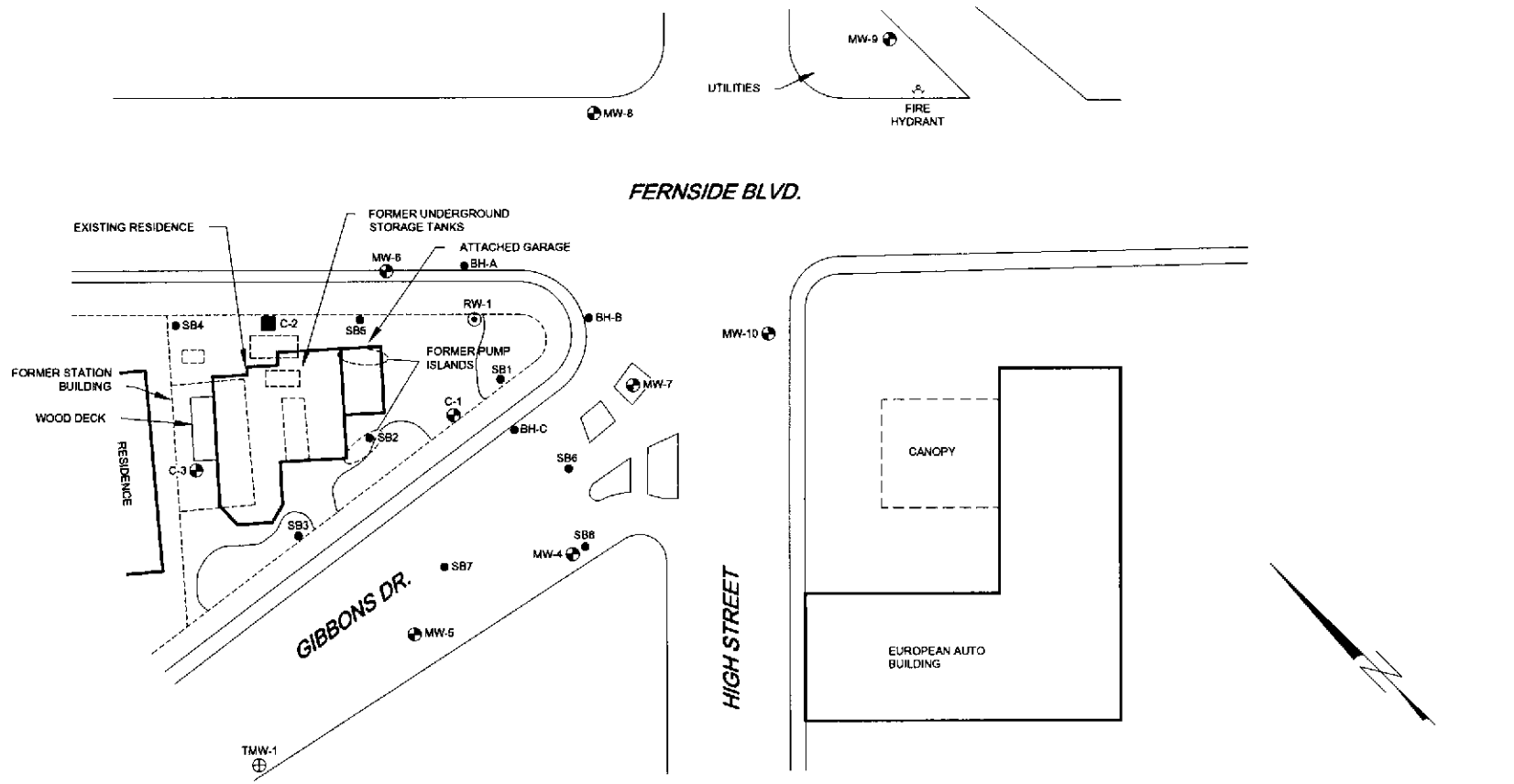
FIGURE 2

SITE MAP

CHEVRON SERVICE STATION NO. 9-1153
3135 GIBBONS DRIVE
ALAMEDA, CA.

PROJECT NO. DG91-153	DRAWN BY M.L. 8/7/02
FILE NO. 9-1153 Site	PREPARED BY W.S.
REVISION NO. 4	REVIEWED BY

Delta Environmental Consultants, Inc.



LEGEND:

MW-4	MONITORING WELL LOCATION
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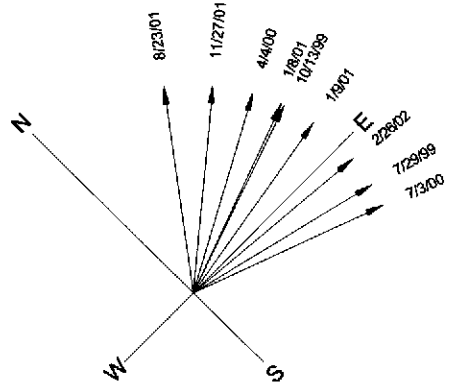
SB1	SOIL BORING LOCATION



ROSE DIAGRAM

FIGURE 3

ROSE DIAGRAM

CHEVRON SERVICE STATION NO. 9-1153
3135 GIBBONS DRIVE
ALAMEDA, CA.

PROJECT NO. DG91-153	DRAWN BY M.L. 7/12/02
FILE NO. 9-1153 Site	PREPARED BY W.S.
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

ENCLOSURE A

Alameda County Health Care Services Letter
Dated February 11, 2002

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502
(510) 567-6700
Fax (510) 337-9335

RO0000341

February 11, 2002

Mr. Tom Bauhs
Chevron Products
P.O. Box 6004
San Ramon, CA 94583

RE: Soil Gas Risk Assessement at Former Chevron 9-1153 at 3135 Gibbons Drive, Alameda, CA

Dear Mr. Bauhs:

In 1996 a risk evaluation was prepared for the above referenced site. The potential exposure pathway evaluated was for groundwater volatilization to outdoor air for a residential scenario. Not included in the evaluation was soil and groundwater volatilization of vapors to indoor residential air. Previous investigations conducted identified soil vapor from borings advance in the vicinity of the perimeter of the existing building. Groundwater from C-1 still contains elevated gasoline constituents (when separate phase hydrocarbon is not present).

At this time an addendum to the 1996 risk evaluation is required where vapor to indoor air for a residential scenario is considered. Please include in the risk assessment how representative concentrations were determined, site specific parameters used, etc. The risk assessment is due within 60 days of the date of this letter, **or by April 22, 2002.**

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

email: James Brownell

c: Mark Hom, 3135 Gibbons Drive, Alameda, CA 94501

chevron9-1153-2

1.0 METHODS AND PROCEDURES

1.1 Health and Safety Plan

Field work performed by Delta at the site is conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. Directions to the nearest hospital emergency room and a map of the route to the hospital are also included. A copy of the SHSP is at the site and available for reference by appropriate parties during work at the site.

1.2 Locating Underground Utilities

Prior to commencement of work on-site, Delta researches the location of all underground utilities with the assistance of Underground Service Alert (USA). USA contacts the owners of the various utilities in the vicinity of the site to have the utility owners mark the locations of their underground utilities. Although scope of work includes the advancing of hand auger borings exclusively, additional caution will be taken to avoid contact with underground utilities.

1.3 Soil Vapor Sampling

Soil vapor sampling will be performed by a Delta geologist. The soil vapor samples will be collected by advancing a length of hollow steel rod capped with a hardened drive tip using either a roto-hammer or a manual slide hammer to a depth of approximately three feet below surface grade.

The length of hollow steel rod will then be removed from the soil and the hardened drive tip will be replaced with a retractable tip designed for the collection of soil vapor samples. A length of Teflon tubing will be attached to the retractable tip and routed all the way through the hollow rod. The rod and tip assembly will be re-inserted into the pilot hole to the previously advanced depth and driven an additional six to eight inches. The accessible end of the Teflon tubing will be attached to an electric pump which will be used to purge ambient air within the tubing and introduce the soil vapor sample into the tubing. A 6-liter, pre-evacuated Summa canister will be used to collect the soil vapor sample. A flow controller will be connected in-line prior to the Summa canister to ensure the soil vapor sample is not collected too quickly. The Teflon tubing will then be attached to the flow controller using a Swage-lok threaded fitting and the valve on the Summa canister will be opened to collect the soil vapor sample. After approximately 20 minutes, the vapor sample will be collected and the valve on the Summa canister will be closed. Upon removal from each sample point, The retractable tip and rod assembly will be decontaminated using a solution of Liqui-nox and the Teflon tubing will be discarded.

1.4 Soil Sampling and Contamination Reduction

Soil borings and groundwater sampling will be performed by a Delta geologist. For the collection of grab groundwater samples, the hand auger will be advanced to a depth of approximately one foot below first encountered groundwater. The hand auger will be removed from the boring and the groundwater in the boring will be allowed to equilibrate.

Separate soil borings will be advanced with the hand auger for the collection of physical characteristics. The hand-augered borings will be advanced into the native material, at a depth between two and three feet below surface grade. A brass tube measuring approximately 6 inches long and 2 inches in diameter will be placed in a core sampler. The core sampler is attached to a manual slide hammer, which will be used to advance the core sampler containing the brass tube into the native material. Once the core sampler has been advanced 6 inches, it is pulled from the boring and the brass tube containing the sample is removed from the core sampler. Upon recovery, the brass tube containing the sample will be sealed at both ends with Teflon and capped. To reduce cross-contamination between samples, the core sampler will also be washed in the Liqui-Nox solution and rinsed between each boring.

1.5 Soil Classification

As the samples are obtained in the field, they will be classified by the geologist in accordance with the Unified Soil Classification System (USCS). Representative portions of the samples will then be retained for further examination and for verification of the field classification.

1.6 Soil Sample Screening/hNu Portable Photoionization Detector Method

A portion of the soil collected from the borings will be placed in plastic bags. After the plastic bags containing soil have been brought to ambient temperature, the headspace vapors of the sample in the bag will be screened with a PID equipped with a 10.2 eV lamp. The sample corner of the bag will be opened and the detector probe immediately placed within the headspace. The highest observed reading will be recorded.

1.7 Grab Groundwater Sampling

A liquid sample will be collected from each boring with a clean disposable bailer and transferred into a laboratory supplied sampling container. Each sample will be appropriately labeled and stored on ice from the time of collection through the time of delivery to the laboratory. Groundwater samples will be transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses.

2.0 ANALYTICAL PROCEDURES

Soil vapor samples submitted to the laboratory will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), and total petroleum hydrocarbons in the gasoline range (TPH as GRO) using the EPA Method TO-15. Groundwater samples submitted to the laboratory will be analyzed for BTEX and MTBE using EPA Method 8021 and TPH as GRO using EPA Method 8015 Modified. Soil samples submitted for physical analyses will be tested for fraction of organic carbon, bulk density, and total porosity.

3.0 QUALITY ASSURANCE PLAN

This section describes the field and analytical procedures to be followed throughout the investigation.

3.1 General Sample Collection and Handling Procedures

Proper collection and handling are essential to ensure the quality of a sample. Each sample will be collected in a suitable container, preserved correctly for the intended analysis, and stored prior to analysis for no longer than the maximum allowable holding time. Details on the procedures for collection and handling of soil samples used on this project can be found in Section 1.0 (Methods).

3.2 Sample Identification and Chain-of-Custody Procedures

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis will have a label affixed to identify the job number, sampler, date and time of sample collection, and a sample number unique to that sample. This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations, will be recorded on the borehole log or in the field records. Samples will be analyzed by a California-certified laboratory.

A chain-of-custody form will be used to record possession of the sample from time of collection to its arrival at the laboratory. When the samples are shipped, the person in custody of them will relinquish the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory will verify sample integrity and confirm that it was collected in the proper container, preserved correctly, and that there is an adequate volume for analysis.

If these conditions are met, the sample will be assigned a unique log number for identification throughout analysis and reporting. The log number will be recorded on the chain-of-custody form and in the legally-required log book maintained by the laboratory in the laboratory. The sample description, date received, client's name, and other relevant information will also be recorded.