GETTLER-RYAN INC.

TRANSMITTAL

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P.O. Box 6004
San Ramon, CA 94568

DATE: November 16, 2001
PROJ #:DG90338.4C01
SUBJECT: Chevron Service Station #9-0338
5500 Telegraph Ave
Oakland, California

#F 401

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COMMENTS:

On your behalf, GR is submitting copies of the above referenced workplan to the following:

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WORKPLAN FOR PLUME DELINEATION

At
Chevron Service Station No. 9-0338
5500 Telegraph Avenue
Oakland, California
Report No. DG90338G.3C01-1
Delta Project No. DG90-338

Prepared for:

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November 16, 2001

TABLE OF CONTENTS

INTRODUCTION 1

SITE DESCRIPTION 1

PREVIOUS ENVIRONMENTAL WORK 2

Groundwater Monitoring and Sampling 3

PROPOSED SCOPE OF WORK 4

Task 1. Pre-Field Activities 4

Task 2 Soil Borings 4

Task 3 Waste Oil Parameter Sampling 5

Task 4 Laboratory Analyses 5

Task 5. Report Preparation 5

PROJECT STAFF 5

SCHEDULE 5

FIGURES

Figure 1: Vicinity Map
Figure 2: Extended Site Plan

APPENDIX

Appendix A: Gettler-Ryan Inc Field Methods and Procedures

WORKPLAN FOR PLUME DELINEATION

At
Chevron Service Station No. 9-0338
5500 Telegraph Avenue
Oakland, California

Report No. DG90338G.3C01-1
Delta Project No. DG90-338

INTRODUCTION

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants Inc. network associate Gettler-Ryan Inc. (GR) prepared this Work Plan for Plume Delineation at the subject site (Figure 1). In a letter dated October 23, 2001, the Alameda County Health Care Services Agency (ACHCSA) requested the delineation of the petroleum hydrocarbon plume downgradient of well C-1A and the analysis of a groundwater sample from well C-4 for waste oil parameters.

The proposed scope of work includes: obtaining the necessary drilling permits from Alameda County Public Works Agency (ACPWA); obtaining a minor encroachment permit from the City of Oakland, updating the site health and safety plan; advancing four off-site shallow soil borings; collecting soil samples for description and possible chemical analysis; collecting a grab groundwater sample from each boring, analyzing selected soil and groundwater samples; and preparing a report which presents the findings of the investigation. Also, a groundwater sample collected from well C-4 during the next scheduled monitoring and sampling event at the site will be additionally analyzed for waste oil parameters.

The scope of work described in this report is intended to comply with the State of California Water Resources Control Board's *Leaking Underground Fuel Tanks (LUFT) Manual*, the Regional Water Quality Control Board's *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites*, and ACHCSA guidelines.

SITE DESCRIPTION

The subject site is a Chevron service station located at the northeastern corner of Telegraph Avenue and 55th Street in Oakland, California (Figure 1). Site facilities consist of a station building, a car wash, six dispenser islands, and two gasoline underground storage tanks (USTs) that share a common pit near the northern site boundary. Pertinent site features are shown on Figure 2. The site vicinity is used for transportation, commercial, and residential purposes. The subject site is bordered to the north by State Route 24, to the east by residential housing, to the west by Telegraph Avenue, to the south by 55th Street. Beyond 55th Street to the south and southwest lie commercial buildings. West of Telegraph Avenue lies State Route 24.

The subject site is located on the East Bay Plain, approximately 2.5 miles east of San Francisco Bay and 2 miles north of Lake Merritt. The local topography is relatively flat at an elevation of approximately 125 feet above mean sea level. As mapped by E.J. Helley and others (1979, Flatland Deposits of the San Francisco Bay Region, California: U.S. Geological Survey Professional Paper 943), soil in the site vicinity consists of Holocene-age Bay Mud consisting of unconsolidated saturated dark plastic carbonaceous clay and silty clay. These materials are underlain by late Pleistocene-age alluvium consisting of weakly consolidated slightly weathered poorly sorted irregularly interbedded clay, silt, sand, and gravel. The nearest surface water body is Glen Echo Creek located approximately 1 mile south of the site.

PREVIOUS ENVIRONMENTAL WORK

In October of 1988, Chevron removed one 1,000-gallon waste oil UST. A soil sample collected from beneath the waste oil tank at a depth of 8 feet bgs contained Total Oil and Grease (TOG) at a concentration of 81 parts per million (ppm). Total Petroleum Hydrocarbons as diesel (TPHd) or Volatile Organic Compounds (VOCs) were not detected in the waste oil tank sample.

In July of 1989, Chevron replaced product lines associated with the gasoline USTs. During the removal and replacement of the product lines, contaminated soil was discovered in the western-most product line trench (closest to Telegraph Avenue). Ten compliance soil samples were collected from the western-most product trench at depths of 4 to 6.75 feet below ground surface (bgs). Total Petroleum Hydrocarbons as gasoline (TPHg) were detected in seven of the ten soil samples at concentrations ranging from 1.5 to 480 ppm. Benzene was detected in only one soil sample at a concentration of 0.31 ppm. The contaminated soil around the product lines was excavated and removed from the site. No confirmation samples were taken after soil was removed from the site.

Three on-site groundwater monitoring wells (C-1 through C-3) were installed in 1989. TPHg or benzene, toluene, ethylbenzene, and xylenes (BTEX) were not detected in soil samples collected from the well borings. In addition, TPHd, TOG, or VOCs were not detected in soil samples collected from well boring C-3. TPHg or BTEX were not detected in initial groundwater samples collected from wells C-1, C-2, and C-3. TPHd or TOG were not detected in the initial groundwater sample collected from well C-3.

On July 22, 1998, GR removed three 10,000-gallon single wall fiberglass gasoline USTs, one 1,000-gallon fiberglass waste oil UST, associated product lines and dispenser islands, three hydraulic hoists, and an oil/water separator. Groundwater was encountered in the UST pit at 9 feet bgs. Six compliance samples were collected from the gasoline UST pit sidewalls at approximately 9 feet bgs. TPHg were not detected in any of the sidewall samples. Benzene was detected in one soil sample at a concentration of 0.013 ppm. Methyl tert-Butyl Ether (MtBE) was detected in all six soil samples at concentrations ranging from 3.3 to 6.8 ppm.

Five soil samples were collected from beneath the product lines at depths between 3.5 and 4 feet bgs. TPHg, benzene, or MtBE were not detected in any of these samples. Lead was detected in two of the five samples at concentrations of 1.0 and 2.8 ppm.

One soil sample was collected from beneath the waste oil UST at a depth of 9 feet bgs. No groundwater was encountered in the waste oil UST pit. TPHg, benzene, MtBE, TPHd, VOCs, semivolatile organic compounds (SVOCs), or lead were not detected in this sample. However, TOG was detected in this sample at a concentration of 130 ppm.

Three compliance soil samples were collected from beneath the three hydraulic hoists and oil/water separator at depths of 9 feet bgs. The soil sample collected beneath the south hydraulic hoist-oil/water separator contained 1.6 ppm of an unidentifiable hydrocarbon in the gasoline range, 2,000 ppm of TPHd, and 2,600 ppm of TOG, 2,800 ppm of Total Petroleum Hydrocarbons as hydraulic oil (TPHho), 24 ppm of chromium, 23 ppm of nickel, and 47 ppm of zinc. TPHho were not detected beneath the other two hydraulic hoists.

On June 30, 1998, GR supervised the destruction of well C-3. Following destruction of well C-3, GR collected a grab groundwater sample from the UST backfill well. TPHg or benzene were not detected in this sample, however MtBE was detected at a concentration of 15,000 parts per billion (ppb).

On May 15, 1999, GR supervised the installation of two new groundwater monitoring wells (C-4 and C-5) and replacement of two existing groundwater monitoring wells (C-1 and C-2 with C-1A and C-2A, respectively). TPHg, benzene, or MtBE were not detected in soil samples collected from well boring C-5, except the soil sample at 11 feet bgs in capillary fringe zone. This sample contained TPHg, benzene, and MtBE at concentrations of 1.3, 0.017 and 0.10 ppb, respectively. Groundwater samples collected from wells C-2A and C-4 did not contain TPHg or benzene; however, MtBE was detected in both samples at a concentration of 44 ppb. Groundwater samples collected from wells C-1A and C-5 contained TPHg at 9,100 and 2,800 ppb, respectively; benzene at 40 and 350 ppb, respectively; and MtBE at 35 and 2,500 ppb, respectively.

A Site Conceptual Model (SCM) dated September 26, 2001 was prepared by GR. The SCM presented summaries of fieldwork to date, descriptions of hydrogeological conditions, contaminant distributions over time and space, current and potential receptors, and recommendations for future fieldwork.

Groundwater Monitoring and Sampling

Between November 1989 and August 2001, the wells were monitoring and sampled a total of 22 times. During this period, the depth to shallow groundwater beneath the site fluctuated between 6 and 12 feet bgs. Between November 1989 and May 1999, groundwater flow direction fluctuated between the west and the southeast. However, since the installation of wells C-4 and C-5, the flow direction has been fluctuating between the southwest and the southeast.

The highest concentrations of TPHg have been detected in well C-1A at 11,000 ppb (5/10/00). The highest concentrations of benzene and MtBE have been detected in well C-5 at 350 and 2,200 ppb, respectively (5/27/99).

During the recent monitoring and sampling event conducted on August 6, 2001, petroleum hydrocarbons were detected in all four wells. TPHg were detected in wells C-5 and C-1A at concentrations of 94 and 3,300 ppb, respectively. Benzene was detected in wells C-5 and C-1A at concentrations of 0.84 and 3.1 ppb, respectively. Concentrations of MtBE ranged from 3.2 (C-4) to 360 ppb (C-5).

PROPOSED SCOPE OF WORK

In order to delineate the petroleum hydrocarbon plume downgradient of well C-1A, GR proposes to advance four off-site shallow soil borings southwest, south, and southeast of well C-1A. During the next quarterly monitoring and sampling event that is scheduled for the subject site, GR will analyze a groundwater sample from well C-4 for waste oil parameters. GR Field Methods and Procedures are included as Appendix A.

To implement the proposed scope of work, GR proposes the following five tasks:

Task 1. Pre-Field Activities

GR will update the Site Health and Safety Plan. Drilling permits will be obtained from ACPWA. A minor encroachment permit will be obtained from the City of Oakland. Underground Service Alert (USA) will be notified at least 48 hours prior to initiating drilling activities.

Task 2 Soil Borings

GR will advance four shallow soil borings at the locations shown on Figure 2. Soil boring activities will be performed by a California licensed well driller. A GR geologist will monitor the soil boring activities and prepare a log of each well boring. The shallow soil borings will be advanced to approximately 10 feet below the water table using 2-inch diameter Geoprobe® direct push technology. Based upon historical monitoring data, GR expects to encounter groundwater at approximately 6 feet bgs. Soil samples for description and possible chemical analysis will be obtained from the borings at five-foot intervals, as a minimum. Sampling procedures are described in Appendix A. Although the actual number of samples submitted for chemical analysis will depend on site conditions and field screening data, we anticipate a minimum of one soil sample collected from above the water table will be submitted for chemical analysis. A grab groundwater sample will be collected from each boring, and each sample will be submitted for chemical analysis. Soil and groundwater analytical procedures are described in Task 4.

Soil from each sampled interval will be screened in the field for the presence of VOCs using a photoionization detector (PID). These data will be collected for reconnaissance purposes only, and will not be used as verification of the presence or absence of petroleum hydrocarbons.

Borings will be hand-cleared to five feet bgs with a hand auger. Geoprobe® direct push technology does not generate soil cuttings. Upon completion, each boring will be backfilled to within 0.5 feet of ground surface with neat cement then to ground surface with concrete.

Task 3 Waste Oil Parameter Groundwater Sampling

The waste oil groundwater sample will be collected from well C-4 during the next scheduled groundwater monitoring and sampling event by GR. The sample will be analyzed by Lancaster Laboratories (ELAP#2116). In addition to regular analyses for TPHg, BTEX, and MtBE, the groundwater sample collected from well C-4 will also be analyzed for TPHd by DHS LUFT Methods, Oil and Grease (OG) by EPA Method 418.1, cadmium, chromium, lead, nickel, and zinc by EPA Method 6010B, and chlorinated hydrocarbons by EPA Method 8120. The analytical results will be presented in that quarter's groundwater monitoring and sampling report. GR Standard Operating Procedures-Quarterly Groundwater Sampling is included in Appendix A.

Task 4 Laboratory Analyses

Soil and groundwater samples will be submitted for chemical analysis by Lancaster Laboratories (ELAP #2116). Selected soil and groundwater samples will be analyzed for TPHg, BTEX, and MtBE by DHS LUFT Methods.

Task 5. Report Preparation

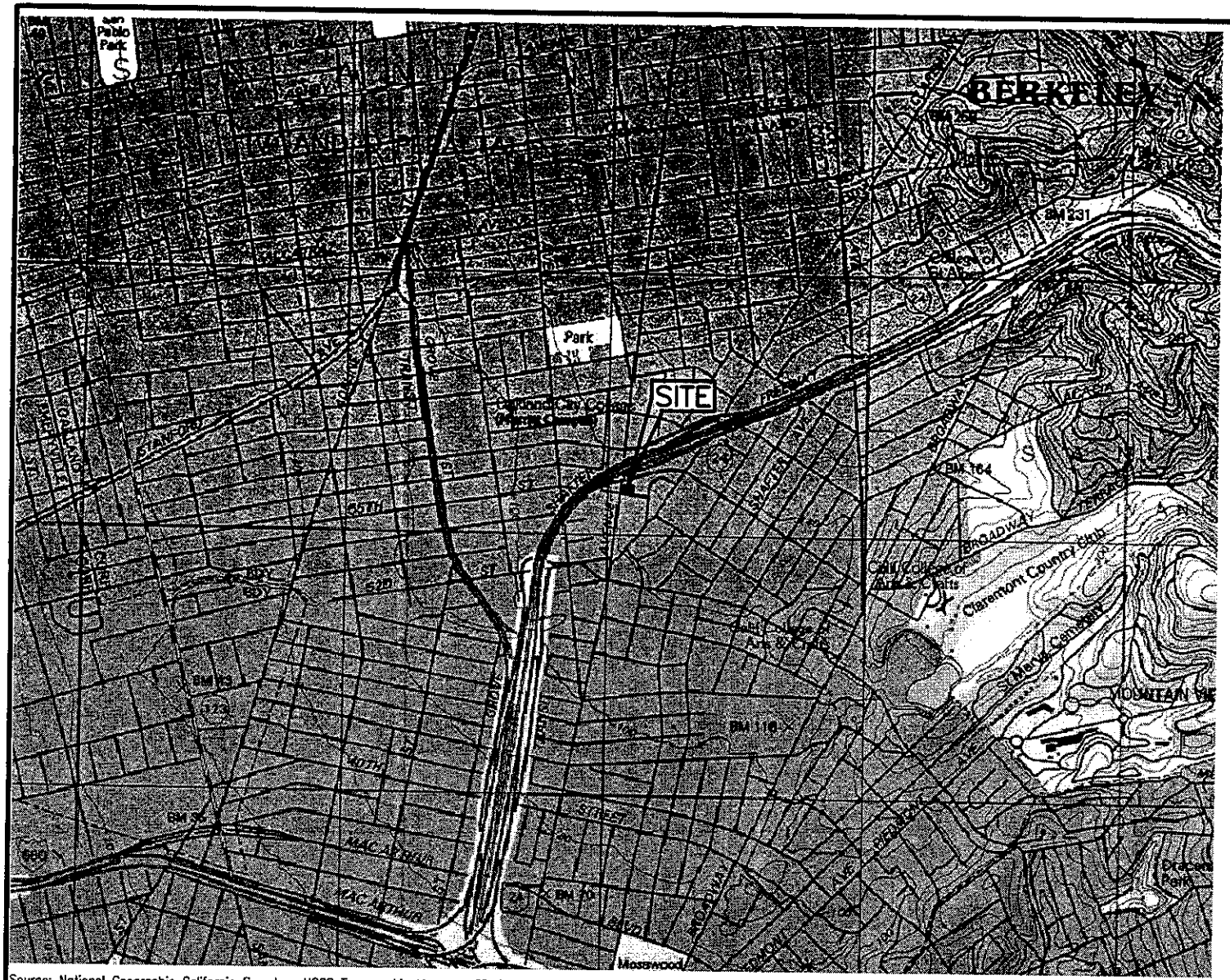
Following receipt and analysis of all data, a report will be prepared which summarizes the procedures and findings associated with this investigation. This report will be submitted to Chevron for their use and distribution.

PROJECT STAFF

Mr. David W. Herzog, a Registered Geologist in the State of California (R.G. No. 7211), will provide technical oversight and review of the work. Mr. Greg Gurss, Senior Project Manager, will supervise implementation of field and office operations. GR employs a staff of geologists, engineers, and technicians who will assist with the project.

SCHEDULE

Implementation of the proposed scope of work will commence upon receipt of regulatory approval.



Source: National Geographic California Seamless USGS Topographic Maps on CD-ROM.

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VICINITY MAP
Chevron Service Station No. 9-0338
5500 Telegraph Avenue
Oakland, California

FIGURE
1

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
DG90338B.3C01		7/01	

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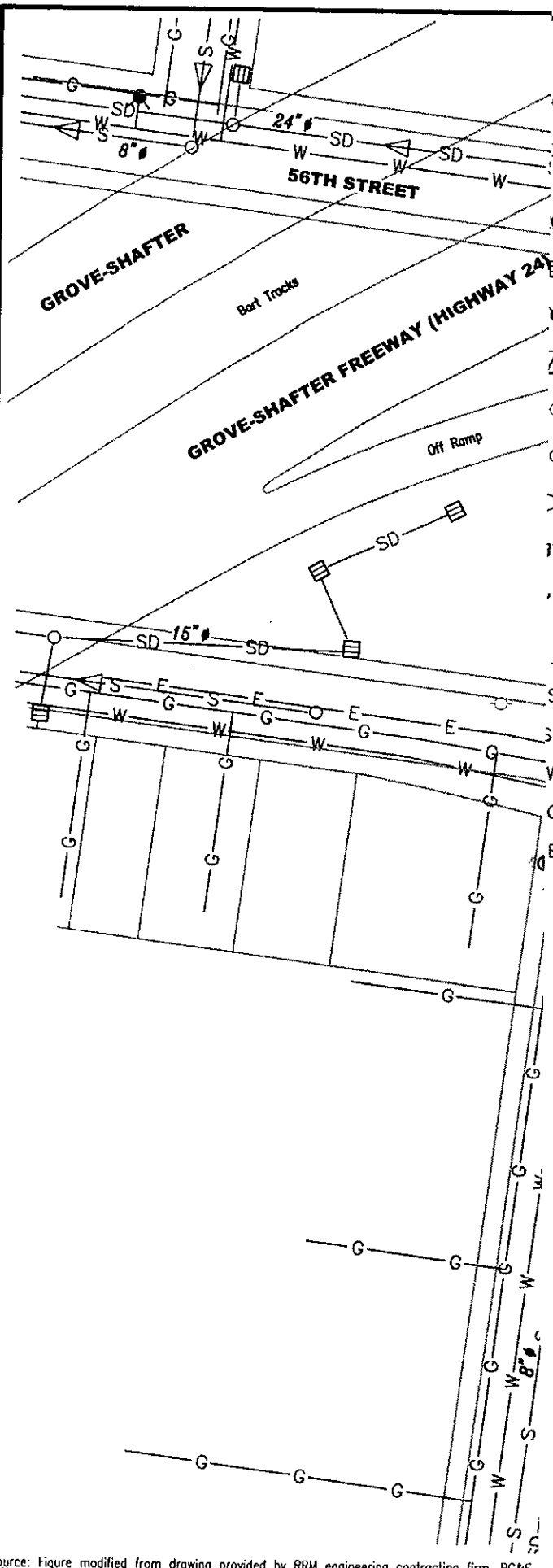

EXPLANATION

- Groundwater monitoring well
- Destroyed groundwater monitoring well
- Proposed soil boring
- Storm drain
- Fire Hydrant
- Electrical transformer
- Power pole
- Manhole
- Flow direction
- Pipe diameter
- Approximate pipe depth

UNDERGROUND UTILITIES

- S — Sanitary sewer
- SD — Storm drain
- W — Water
- G — Natural gas
- E — Electric

N

0 80

Scale in Feet

Source: Figure modified from drawing provided by RRM engineering contracting firm, PG&E.

FIGURE 2

EXTENDED SITE PLAN
Chevron Service Station No. 9-0338
5500 Telegraph Avenue
Oakland, California

DATE 11/01

REVISED DATE

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PROJECT NUMBER DG9033B.3C01

REVIEWED BY

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GETTLER-RYAN INC.

FIELD METHODS AND PROCEDURES

Site Safety Plan

Field work performed by Gettler-Ryan Inc. (GR) is conducted in accordance with GR's Health and Safety Plan and the Site Safety Plan. GR personnel and subcontractors who perform work at the site are briefed on the contents of these plans prior to initiating site work. The GR geologist or engineer at the site when the work is performed acts as the Site Safety Officer. GR utilizes a photoionization detector (PID) to monitor ambient conditions as part of the Health and Safety Plan.

Collection of Soil Samples

Soil borings are drilled by a California-licensed well driller. A GR geologist is present to observe the drilling, collect soil samples for description, physical testing, and chemical analysis, and prepare a log of the exploratory soil boring. Soil samples obtained with a Geoprobe® rig are collected from the soil boring with a split-barrel sampling device fitted with 1.5-inch-diameter, clean brass tubes. The Geoprobe® drives the sampling device approximately 24 inches, and the filled sampler is then retrieved from the boring. The encountered soils are described using the Unified Soil Classification System (ASTM 2488-84) and the Munsell Soil Color Chart or GSA Rock Color Chart.

After removal from the sampling device, soil samples for chemical analysis are covered on both ends with teflon sheeting, capped, labeled, and place in a cooler with blue ice for preservation. A chain-of-custody form is initiated in the field and accompanies the selected soil samples to the analytical laboratory. Samples are selected for chemical analysis based on:

a. depth relative to underground storage tanks and existing ground surface
b. depth relative to known or suspected groundwater
c. presence or absence of contaminant migration pathways
d. presence or absence of discoloration or staining
e. presence or absence of obvious gasoline hydrocarbon odors
f. presence or absence of organic vapors detected by headspace analysis

Field Screening of Soil Samples

A PID is used to perform head-space analysis in the field for the presence of organic vapors from the soil sample. This test procedure involves placing a plastic cap over the end of the tube and allowing the sample to sit for several minutes. The PID probe is then inserted through a hole in the cap and the atmosphere within tested. Head-space screening results are recorded on the boring log. Head-space screening procedures are performed and results recorded as reconnaissance data. GR does not consider field screening techniques to be verification of the presence or absence of hydrocarbons.

Grab Groundwater Sampling

Grab samples of groundwater are collected from the boring using a parastaltic pump or micro-bailer. With the parastaltic pump, new Tygon® tubing is placed in the pump prior to collection of each sample. The tubing

is lowered into the boring through the GeoProbe equipment after groundwater has been allowed to collect. The parastaltic pump is used to evacuate water from the boring where it is discharged to laboratory-supplied containers appropriate for the anticipated analyses. With the micro-bailer, the cleaned bailer is lowered through the GeoProbe equipment into the groundwater. The bailer is allowed to fill, then is brought to the surface where the water is decanted into the sample container. The micro-bailer may also consist of a clean piece of tubing with a check valve at the bottom. The tubing is pumped up and down to bring the water sample to the surface and discharge the sample to the appropriate container.

Following collection of the groundwater sample, the sample bottles are then labeled and placed in chilled storage for transport to the analytical laboratory. A chain-of-custody form is initiated in the field and accompanies the groundwater samples to the analytical laboratory.

Soil Vapor Sampling

Soil vapor samples are collected by advancing the Geoprobe® to a discrete depth. Once the desired depth is attained, a 1/4-inch polyethylene tubing is threaded through the inside diameter of the drive rods and connected either to a tedlar bag or summa canister. The bottom portion of the drive rod is retracted and a vacuum is induced to purge a soil vapor sample. Used tubing is discarded after each sample.

STANDARD OPERATING PROCEDURE -
QUARTERLY GROUNDWATER SAMPLING

Gettler-Ryan field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analyses by the analytical laboratory. Prior to sample collection, the type of analyses to be performed is determined. *Loss prevention of volatile compounds is controlled and sample preservation for subsequent analyses is maintained.*

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using a MMC flexi-dip interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is recorded in the field notes. In addition, static water level measurements are collected with the interface probe and are also recorded in the field notes.

After water levels are collected and prior to sampling, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or polyvinyl chloride bailers. Temperature, pH, and electrical conductivity are measured a minimum of three times during purging. Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories are used when possible. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards. The samples are labeled to include job number, sample identification, collection date and time, analyses, preservative (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4 °C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivery to the laboratory.

The chain of custody includes the job number, type of preservation, if any, analyses requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory-supplied trip blank accompanies each sampling set. For sampling sets greater than 20 samples, 5% trip blanks are included. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.


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