Chevron

July 6, 1995

Chevron U.S.A. Products Company
6001 Bollinger Canyon Rd., Bldg. L
P.O. Box 5004
San Ramon, CA 94583-0804

Site Assessment & Remediation Group
Phone (510) 842-9500

Ms. Juliet Shin
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Former Chevron Service Station #9-1153
3126 Fernside Boulevard, Alameda, CA

Dear Ms. Shin:

Enclosed is the Work Plan for Additional Site Assessment dated July 6, 1995, prepared by our consultant Groundwater Technology, Inc. for the above referenced site.

The work plan includes advancing two soil borings, completing the soil borings as ground water monitor wells, and collecting and analyzing soil and ground water samples. This work will be done to further define the down gradient extent of dissolved hydrocarbons in ground water.

The locations for the two wells as proposed in the work plan may be adjusted based upon the results of an underground utility survey to be conducted prior to drilling. Should it be necessary to relocate one or both well locations, we will contact your office for your concurrence.

If you have any questions or comments, please feel free to contact me at (510) 842-8134.

Sincerely,
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Ms. B.C. Owen

Mr. Larry Bolton
State Farm Insurance
2509 Santa Clara Avenue
Alameda, CA 94501

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GROUNDWATER TECHNOLOGY ®

Groundwater Technology, Inc.
4057 Port Chicago Highway, Concord, CA 94520 USA
Tel: (510) 671-2387 Fax: (510) 685-9148

WORK PLAN FOR ADDITIONAL SITE ASSESSMENT
CHEVRON SERVICE STATION NO. 9-1153
3126 FERNSIDE BOULEVARD
ALAMEDA, CALIFORNIA

GTI Project 020200036

July 6, 1995

Prepared for:
Mr. Mark Miller
Chevron U.S.A. Products Company
6001 Bollinger Canyon Road, Building L
San Ramon, California 94583-0804

Groundwater Technology, Inc.
Submitted by:

Sean Watcher for
Michael A. Chamberlain
Project Manager

Groundwater Technology, Inc.
Approved by:

James W. Grasty, R.G.
Senior Geologist

REGISTERED GEOLOGIST
JAMES W. GRASTY
NO. 6102
STATE OF CALIFORNIA

For:
Wendell W. Lattz
Vice President, General Manager
West Region

20200036.WP

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FIGURES

APPENDIXES

1.0 INTRODUCTION

Groundwater Technology, Inc. has prepared this Work Plan for Additional Site Assessment to investigate subsurface soil and water conditions by installing two off-site groundwater monitoring wells at the Chevron Service Station No. 9-1153, located at 3126 Fernside Boulevard in Alameda, California (figure 1).

2.0 SCOPE OF WORK

The scope of work consists of drilling two soil borings, complete soil borings as 2-inch diameter permanent groundwater monitoring wells, collecting and submitting soil samples for laboratory analyses, developing the new monitoring wells, and preparing a summary report. The locations of the proposed groundwater monitoring wells are shown on figure 2. However, the locations of the proposed two groundwater monitoring wells may be adjusted based upon the results of an underground utility location survey conducted prior to scheduling the drilling activities. The tasks required to meet these objectives are discussed below.

2.1 Site-Specific Health and Safety Plan, Background Review, and Permitting

A site-specific *Health and Safety Plan* has been previously prepared by Groundwater Technology as required by the Occupational Health and Safety Administration Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120). The *Health and Safety Plan* will be reviewed and signed by Groundwater Technology personnel and subcontractors performing work at the site before field operations begin.

Groundwater Technology will review historical site information. This information will consist of Groundwater Technology reports and additional historical data provided by Chevron U.S.A. Products Company (Chevron). Monitoring well drilling permit applications will be completed and submitted to the Alameda County Zone 7 Water Agency. Encroachment and excavation permits applications will be completed and submitted to the City of Alameda Engineering and Central Permit offices.

2.2 Soil Borings, Sampling and Analyses, and Monitoring Well Installation

Groundwater Technology will supervise the drilling of two soil borings using a limited access drilling rig equipped with 6-inch hollow-stem augers. Two soil borings will be drilled to approximately 10 feet below surface grade for soil sample collection. The water table is expected to be encountered at approximately 2-5 feet below surface grade. To avoid introducing off-site or cross contamination, the hollow-stem augers will be steam cleaned before each soil boring, and the

sampling equipment will be properly cleaned before sampling. Groundwater Technology assumes that the drilling will be completed in one day. Soil samples will be collected at 5-foot intervals and at notable lithologic changes using a split-spoon sampler lined with three 2-inch-diameter by 6-inch-long brass sample tubes. Groundwater Technology Standard Operating Procedures (SOPs) are included in appendix A. Each soil sample will be screened for volatile organic compounds using a photo-ionization detector (PID). The soil samples will be logged using the Unified Soil Classification System by a Groundwater Technology field geologist working under the supervision of a California registered geologist. One sample from every 5-foot interval will be sealed with aluminum foil, capped with plastic caps, taped, labeled, and placed on ice in an insulated container. Soil generated through drilling activities will be placed on and covered with plastic sheets. One composite soil sample from the drill cuttings will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and total petroleum hydrocarbons-as-gasoline (TPH-g) to characterize the cuttings for disposal. After characterization, the soil will be transported to a licensed disposal facility by a licensed transportation company.

Two soil samples from each soil boring exhibiting the highest volatile organic compound readings with the PID will be chosen for chemical analyses. The soil samples will be analyzed by a California-certified laboratory for BTEX and TPH-g and concentrations using Environmental Protection Agency (EPA) Methods 8020/5030/8015.

Groundwater Technology personnel will install a groundwater monitoring well in each soil boring (figure 2). The monitoring wells will be constructed of 2-inch-diameter Schedule 40 poly vinyl-chloride (PVC) casing with flush threads and 0.020-inch-slot well screen. The well screen for the monitoring wells will be installed approximately 1 foot above and 5 feet below the water table to permit entry of separate-phase hydrocarbons, if present, and to allow for seasonal fluctuation of the water table. A sand filter will be placed around the well screen to a maximum height of 0.5 foot above the top of the screen. The annular space surrounding the well casing will be sealed to grade with 0.5 foot of bentonite followed by a neat-cement grout containing 95 pounds Portland Type I/II cement to 5 gallons of clean water. The wellhead will be protected by a watertight locking cap and a road box. A typical groundwater monitoring well construction diagram is presented in appendix B.

2.3 Well Development, and Surveying

Approximately 48 hours after installation, the monitoring wells will be developed by hand bailing to remove fine-grain sediments from the well and filter pack. Water from the development process will be transported by Groundwater Technology to the Chevron Terminal in Richmond, California for recycling. The top-of-well casing elevation for each new monitoring well will be surveyed to mean sea level datum by a licensed professional surveyor.

2.4 Well Purging, Water Sampling, and Analyses

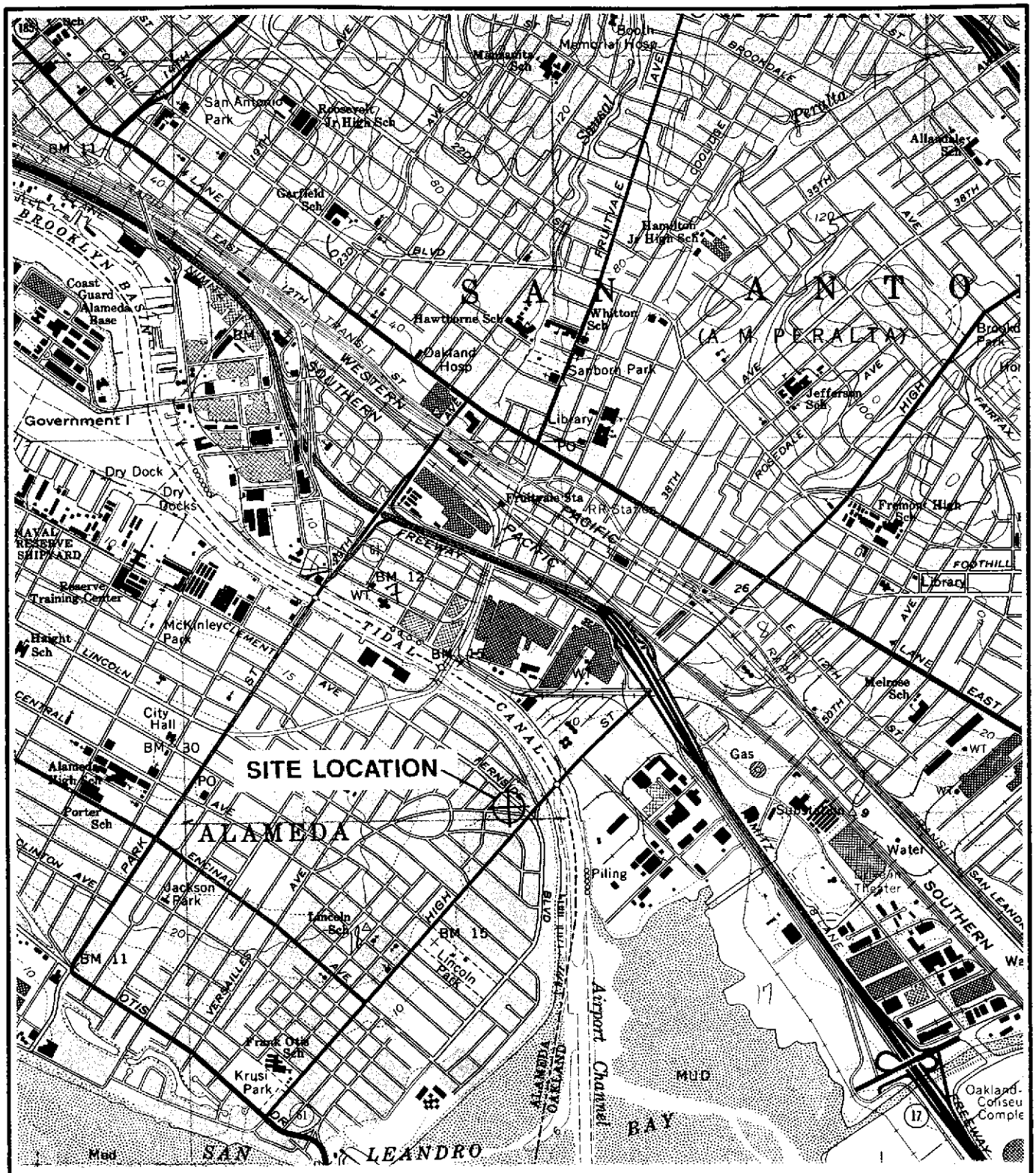
Groundwater monitoring and sampling of the new monitoring wells will be scheduled and conducted by a Chevron contracted environmental consultant as part of the ongoing quarterly groundwater monitoring and sampling program for the site.

2.5 Report Preparation

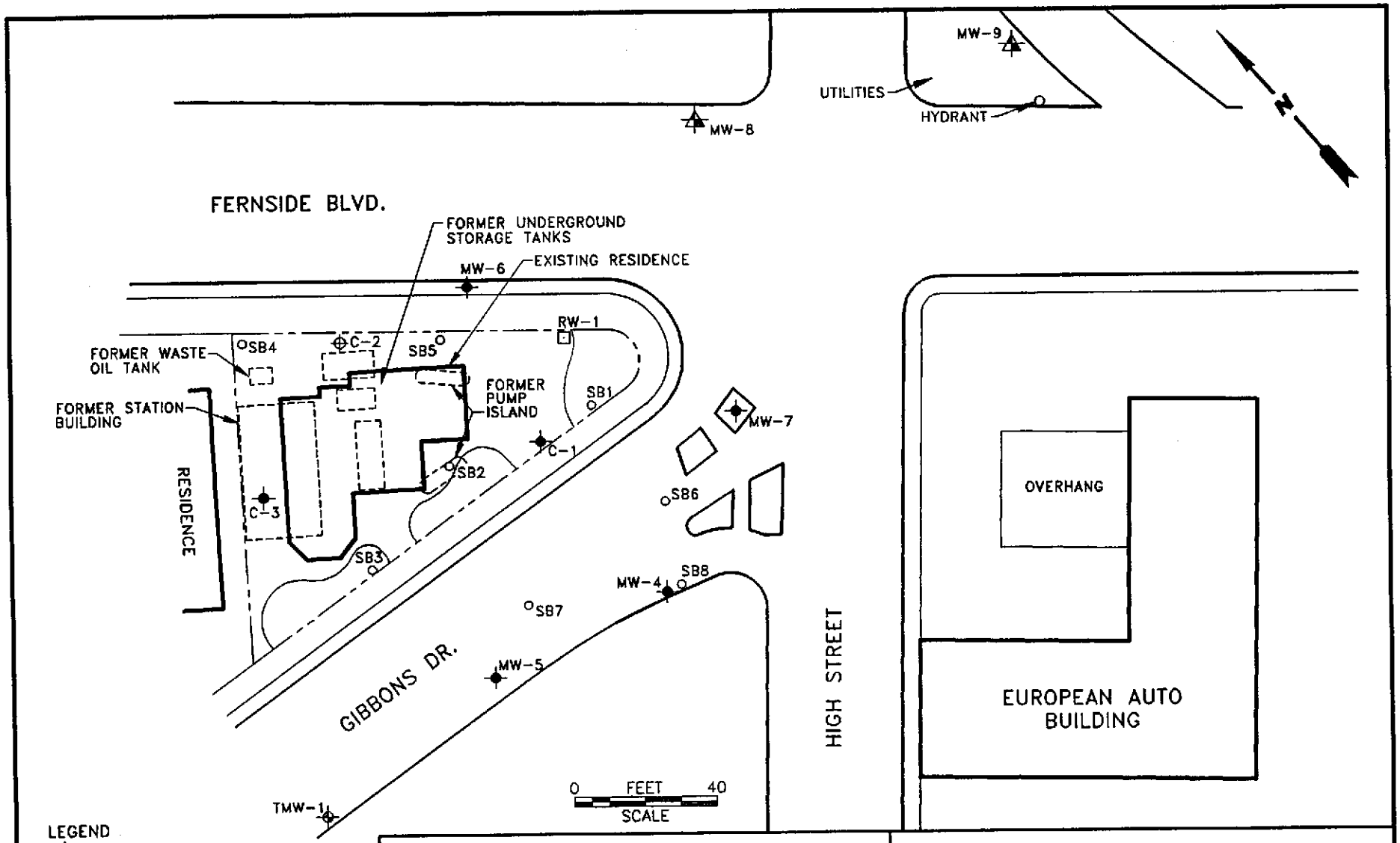
Groundwater Technology will prepare an additional site assessment report summarizing the data collected. The report will include descriptions of methods used, laboratory results, and site-specific maps.

3.0 PROJECT SCHEDULE

Groundwater Technology is prepared to begin work on this project immediately after approval by Chevron and Alameda County Health Care Services Agency. Groundwater Technology estimates the project will be completed approximately 3 weeks after receiving data from the laboratory.



GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY CONCORD, CA 94520 (510) 671-2387	N	SCALE: 0 FEET 2000	**SITE LOCATION MAP**
		CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-1153	DATE: 7/14/92
		LOCATION: 3126 FERNSIDE BLVD. ALAMEDA, CALIFORNIA	FIGURE: 1



GROUNDWATER TECHNOLOGY
4057 PORT CHICAGO HWY
CONCORD, CA 94520
(510) 671-2387

SITE PLAN

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-1153	3126 FERNSIDE BLVD. ALAMEDA, CALIFORNIA	0	1/7/94

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
		TW	ML	SP194	020204100	2

APPENDIX A

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURES

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 11
CHAIN-OF-CUSTODY PROTOCOL

1. Samples must be maintained under custody until shipped or delivered to the laboratory. The laboratory will then maintain custody. A sample is under custody if:

    a) It is in your possession
    b) It is in your view after being in your possession
    c) You locked it up after it was in your possession
    d) It is in a designated secure area

2. Custody of samples may be transferred from one person to another. Each transferrer and recipient must date, sign and note the time on the chain-of-custody form.

3. In shipping, the container must be sealed with tape, and bear the sender's signature across the area of bonding at the ends of the tape to prevent undetected tampering. Each sampling jar should be taped and signed as well. Scotch tape works well.

4. Write "sealed by" and sign in the "Remarks" box at the bottom of the form before sealing the box. Place form in a plastic bag and seal it inside the box.

5. The "REMARKS" section of the form is for documenting details such as:

    a) Correlation of sample numbers if samples are split between labs.
    b) QC numbers when lab is logging in the samples.
    c) Sample temperature and condition when received by lab.
    d) Preservation notation.
    e) pH of samples when opened for analysis (if acidified).
    f) Sampling observation or sampling problem.

6. The chain-of-custody form should be included inside the shipping container. A copy should be sent to the project manager.

7. When the samples are received by the lab, the chain-of-custody form will be dated, signed, and the time noted by a laboratory representative. The form will be retained in the laboratory files along with shipping bills and receipts .

8. At the time of receipt of samples by the laboratory, the shipping container will be inspected and the sealing signature will be checked. The samples will be inspected for condition and bubbles, and the temperature of a representative sample container will be measured

externally by a thermocouple probe (held tightly between two samples) and recorded. The laboratory QC numbers will be placed on the labels, in the accession log, and on the chain-of-custody form. If samples are acidified, their pH will be measured by narrow range pH paper at the time of opening for analysis. All comments concerning procedures requiring handling of the samples will be dated and initialed on the form by the laboratory person performing the procedure. A copy of the completed chain-of-custody form with the comments on sample integrity will be returned to the sampler.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 14
SOIL SAMPLING METHODOLOGY

1. Soil samples should be collected and preserved in accordance with Groundwater Technology Standard Operating Procedure (SOP 15) concerning Soil Sample Collection and Handling when Sampling for Volatile Organics. A hollow stem soil auger should be used to drill to the desired sampling depth. A standard 2 inch diameter split spoon sampler 18 inches in length shall be used to collect the samples. The samples are contained in 2 inch diameter by 6 inch long thin walled brass tube liners fitted into the split spoon sampler (three per sampler).

2. The split spoon sampler should be driven the full depth of the spoon into the soil by a 140 pound hammer. The spoon shall then be extracted from the borehole and the brass tube liners containing the soil sample removed from the sampler. The ends of the liner tubes should be immediately covered with aluminum foil, sealed with a teflon or plastic cap, and taped with duct tape. After being properly identified with sample data entered on a standard chain of custody form the samples shall be placed on dry ice (maintained below 4~C) and transported to the laboratory within 24 hours.

3. One of the three soil samples retrieved at each sample depth shall be analyzed in the field using a photoionization detector and/or explosimeter. The purpose of the field analysis is to provide a means to choose samples to be laboratory analyzed for hydrocarbon concentrations and to enable comparisons between the field and laboratory analyses. The soil sample shall be sealed in a plastic bag and allowed to equilibrate with the air surrounding the soil for approximately 10 minutes. One of the two field vapor instruments shall be used to quantify the amount of hydrocarbon released to the air from the soils. The data shall be recorded on the drill logs at the depth corresponding to the sample point.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 15
SOIL SAMPLE COLLECTION AND HANDLING WHEN SAMPLING FOR VOLATILE ORGANICS

1. Use a sampling means which maintains the physical integrity of the samples. The project sampling protocol will designate a preferred sampling tool. A split spoon sampler with liners, or similar tube sampler which can be sealed, is best.

2. The samples should be sealed in the liner, with teflon plugs (The "California Sampler") or plastic caps.

3. For sending whole-core samples (above):

   A. Seal ends of liner with teflon plugs or plastic caps, leaving no free air space inside.

   B. Tape with duct tape.

   C. Label the sample with the following information: sample identification, depth, date and time, project number and required analyses.

   D. Place in plastic bag labeled with indelible marker. Use Well #, depth, date, and job #.

   E. Place inside a second bag and place a labelling tag inside outer bag.

   F. Enclose samples in a cooler with sufficient ice or dry ice to maintain samples at 4 degrees C during shipment.

   G. Seal cooler with a lock, or tape with samplers signature so tampering can be detected.

   H. Package cooler in a box with insulating material. Chain of custody forms can be placed in a plastic bag in this outer box.

   I. If dry ice is used, a maximum of 5 pounds is allowed by Federal Express without special documents(documents are easy to obtain but are not necessary for under 5 pounds). Write "ORM-A dry ice", "_____ pounds, for research" on outside packaging and on regular airbill under classification. UPS does not accept dry ice.

J. Soil cores kept a 4 degrees C are only viable for up to 7 days when aromatic hydrocarbons are involved. The lab should prepare the samples in methanol once in the lab.

4. Good sampling practice would include preparing 1 out of 5 samples to be prepared in duplicates for analysis. These 4 out of 20 samples will be used for the following purposes:

   A. One in every 20 samples should be analyzed as a field replicate to evaluate the precision of the sampling technique. A minimum of 1 sample per data set is suggested.

   B. An additional 1 in 20 samples should be selected by sampler to be prepared in duplicate as alternative to Step (A). Choose a different soil type if available.

   C. The remaining 2 in 20 samples should be used by lab for spiking with reference materials for internal QC.

   Other QC procedures can be specified at the project manager's discretion. See Table 3-2 (reference 2) attached.

5. Decontamination of equipment in the field requires a detergent wash, with a distilled water rinse.

REFERENCES

1. Soil Sampling Quality Assurance Users Guide, U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, NV, EPA 600/4-84-043, May 1984.

2. Preparation of Soil Sampling Protocol. Techniques and Strategies, U.S. EPA, Environmental Monitoring Systems Laboratory, Las Vegas, NV, EPA 600/4-83-020, August 1983 (PB83-206979).

3. Test Methods for Evaluating Solid Waste, U.S. EPA, Office of Solid Waste and Emergency Response, Washington, D.C., SW 846, July 1982.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 19
OPERATION/CALIBRATION OF PHOTOIONIZATION ANALYZER

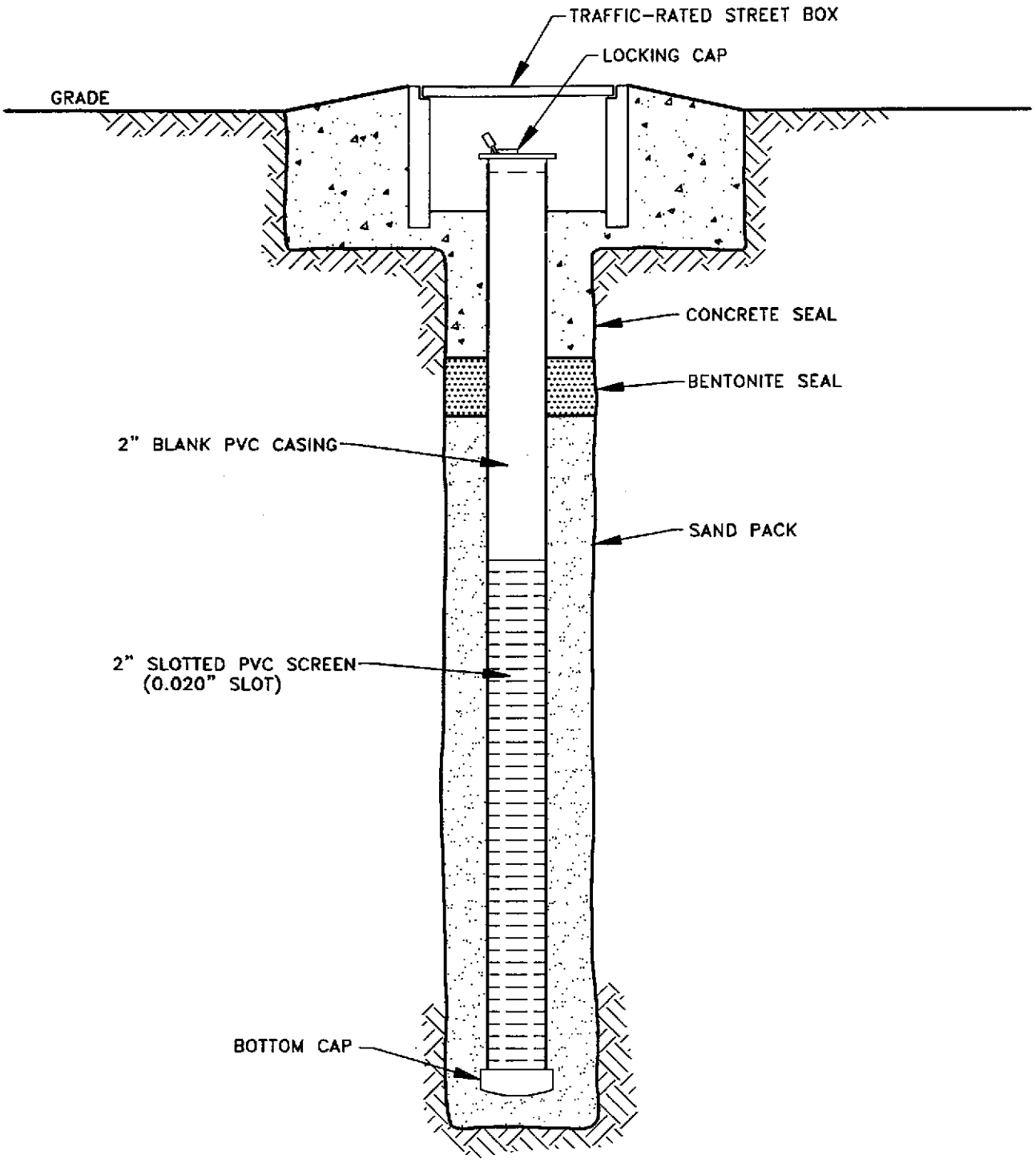
1. The Thermo Environmental Instruments Inc. Model 580B OVM Photoionization Analyzer shall be used, using photoionization, to measure the concentration of trace gases over a range of less than 1 ppm to 2,000 ppm. The specific instrument used for investigations related to hydrocarbon contamination should be calibrated for direct readings in parts per million (ppm) volume/volume of isobutylene. Specifics of the detection principle/theory and functions of various components can be found in the manufactures instruction manual.

2. To assure optimum performance, the photoionization analyzer should be calibrated with a standard gas mixture of known concentration from a pressurized container. A daily procedure for calibration involves bringing the probe and readout close to the calibration gas, cracking the valve on the tank and checking the instrument reading. This provides a useful spot check for the instrument.

3. A procedure conducted weekly for more accurate calibration of the instrument from a pressurized container is to connect one side of a "T" to the pressurized container of calibration gas, another side of the "T" to a rotameter and the third side of the "T" directly to the 8" extension to the photoionization probe (see Figure 2). Crack the valve of the pressurized container until a slight flow is indicated on the rotameter. The instrument draws in the volume of sample required for detection, and the flow in the rotameter indicates an excess of sample. Now adjust the span pot so that the instrument reads the exact value of the calibration gas. (If the instrument span setting is changed, the instrument should be turned back to the standby position and the electronic zero should be readjusted, if necessary).

APPENDIX B

WELL CONSTRUCTION SPECIFICATIONS



GROUNDWATER TECHNOLOGY	NOT TO SCALE	**TYPICAL MONITORING WELL CONSTRUCTION**

CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION NO. 9-1153	FILE: MONWELL	PROJECT NO:	PM	RG/PE	
	REV: 1				
LOCATION: 3126 FERNSIDE BLVD. ALAMEDA, CALIFORNIA	DES: TW	DET: ML	DATE: 7/6/95	FIGURE:	