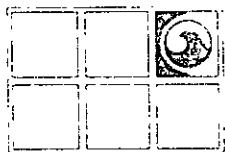


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Alameda County  
Environmental Health



# GROUNDWATER TECHNOLOGY, INC.

1401 Halyard Drive, Suite 140, West Sacramento, CA 95691, (916) 372-4700

FAX (916) 372-8781

May 4, 1994

Project No. 02070 0004

Mr. Brett Hunter  
Chevron U.S.A. Products Company  
2410 Camino Ramon  
San Ramon, CA 94583-0804

**RE: WORK PLAN FOR ADDITIONAL ASSESSMENT  
FORMER CHEVRON STATION NO. 9-1924  
4904 SOUTH FRONT STREET  
LIVERMORE, CALIFORNIA**

Dear Mr. Hunter:

In response to your request, Groundwater Technology, Inc. has prepared this work plan for additional soil and groundwater assessment at Chevron station #9-1924 located at 4904 South Front Street in Livermore, California (Figure 1). The scope of work is designed to further assess the limits of hydrocarbon-impacted soil and groundwater at the site. Two groundwater monitoring wells will be installed on the southeast portion of the British Petroleum (BP) service station site located southwest of Chevron station #9-1924. Details of the scope of work for additional assessment are summarized below.

**TASK 1: SITE-SPECIFIC HEALTH AND SAFETY PLAN/BACKGROUND REVIEW/  
PERMITTING**

A site-specific *Health and Safety Plan* has been prepared by Groundwater Technology as required by the Occupational Safety and Health Administration (OSHA) Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120). The site-specific *Health and Safety Plan* had been prepared prior to the previous assessment conducted at the site. The document will be reviewed and signed by all Groundwater Technology personnel and subcontractors performing work at the site.

Groundwater Technology will conduct a technical review of the pertinent information associated with the site. Off-site access agreements for well installation on BP property are currently being negotiated by Chevron. Permits for well installation will be obtained from the Alameda County Environmental Health Department (ACEHD).

**TASK 2: SOIL BORINGS/SOIL SAMPLING AND ANALYSES**

Groundwater Technology will drill two soil borings at the locations shown on Figure 1 using a truck-mounted drill rig equipped with 8-inch-diameter hollow-stem augers. The soil borings will be drilled to a depth of approximately 20 feet below ground surface (BGS) to accommodate groundwater monitoring well installation. Soil samples will be collected at 5-foot intervals using a split-spoon sampler lined with 2-inch-diameter by 6-inch-long brass sample tubes. The hollow-stem augers will be steam cleaned before drilling, and sampling equipment will be cleaned between each sampling interval. Each soil sample will be screened for hydrocarbon vapors using a portable photoionization detector (PID). Soils encountered during drilling 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 tube from each sampling interval will be sealed with aluminum foil, capped, taped, labeled, and placed on ice in an insulated container pending laboratory analysis. All soil generated through drilling will be stored on and covered with plastic sheeting on Chevron property pending characterization and disposal.

Based on field observations, selected soil samples from each soil boring will be analyzed by a State-certified analytical laboratory for benzene, toluene, ethylbenzene and xylenes (BTEX), and total petroleum hydrocarbons-as-gasoline (TPH-G) by Environmental Protection Agency (EPA) methods 5030/8020/modified 8015.

**TASK 3: GROUNDWATER MONITORING WELL INSTALLATION/DEVELOPMENT**

The groundwater monitoring wells will be constructed of 2-inch-diameter PVC blank casing and 0.020-inch-slot well screen. The well screen will be installed from approximately 20 feet BGS to 10 feet BGS. A sand filter pack will be placed within the annulus of each well from the bottom of the boring to approximately 2 feet above the top of the well screen. The annulus will be sealed with approximately 2 feet of bentonite on top of the sand, and a portland cement/bentonite grout to the surface. The well head will be protected by a locking cap and a traffic-rated, watertight street box set in concrete. Typical groundwater monitoring well construction is shown on Figure 2.

Prior to the scheduled quarterly groundwater monitoring and sampling event, the new groundwater monitoring wells will be developed by surging and pumping to remove fines from the well and sand pack. Periodic measurements of pH, conductivity and temperature will be collected during development. Wells will be developed until well water is visibly clear or until four well volumes of groundwater have been removed.

Top of casing (TOC) elevation of the new wells will be surveyed relative to mean sea level using the established bench mark for the current monitoring well network.

**TASK 4: GROUNDWATER MONITORING AND SAMPLING**

Groundwater samples will be collected from all site-related groundwater monitoring wells during the quarterly groundwater monitoring sampling event. At least 24 hours after development of the new wells, all site-related wells will be gauged for depth to water and for separate-phase hydrocarbon (SP) thickness using an ORS Interface Probe Well Monitoring System™ which utilizes a dual optical/conductivity sensor to distinguish between water and SP. Before groundwater sampling, the wells will be purged of approximately four well volumes, or until pH, conductivity, and temperature of the purge water have stabilized.

Groundwater samples will be collected using a disposable bailer. Distilled water field blanks will be collected to document ambient sampling conditions. Groundwater samples will be placed in 40-milliliter glass vials with teflon septum caps. Each sample will be labeled and placed on ice in an insulated container pending delivery under chain-of-custody manifest to a State-certified analytical laboratory.

The groundwater samples collected from the groundwater monitoring wells will be analyzed for BTEX and TPH-G by EPA methods 5030/8020/modified 8015. All water generated during well development and sampling will be pumped into a DOT-approved purge water trailer and transported to the Chevron refinery in Richmond, California for recycling.

**TASK 5: REPORT PREPARATION**

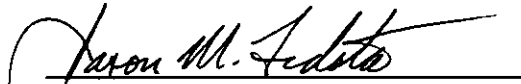
Groundwater Technology will prepare an assessment report summarizing the data collected under the scope of work detailed above. The report will document the methods and results of the assessment, summarize laboratory analytical results, and include appropriate maps.

**TASK 6: PROJECT SCHEDULE**


Groundwater Technology is prepared to begin work on this project within two weeks of work plan approval by the ACEHD. Drilling and soil sampling will be completed over a one day period. The report will be submitted approximately four weeks after the receipt of all laboratory analytical results.

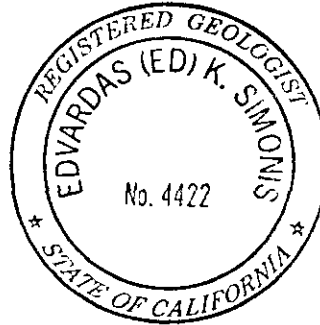
Please contact our West Sacramento office at 916-372-4700 if you have questions or comments about this work plan.

Sincerely,  
**Groundwater Technology, Inc.**  
Written/Submitted by

  
\_\_\_\_\_  
JASON M. FEDOTA  
Staff Geologist  
Project Manager

**Groundwater Technology, Inc.**  
Reviewed/Approved by

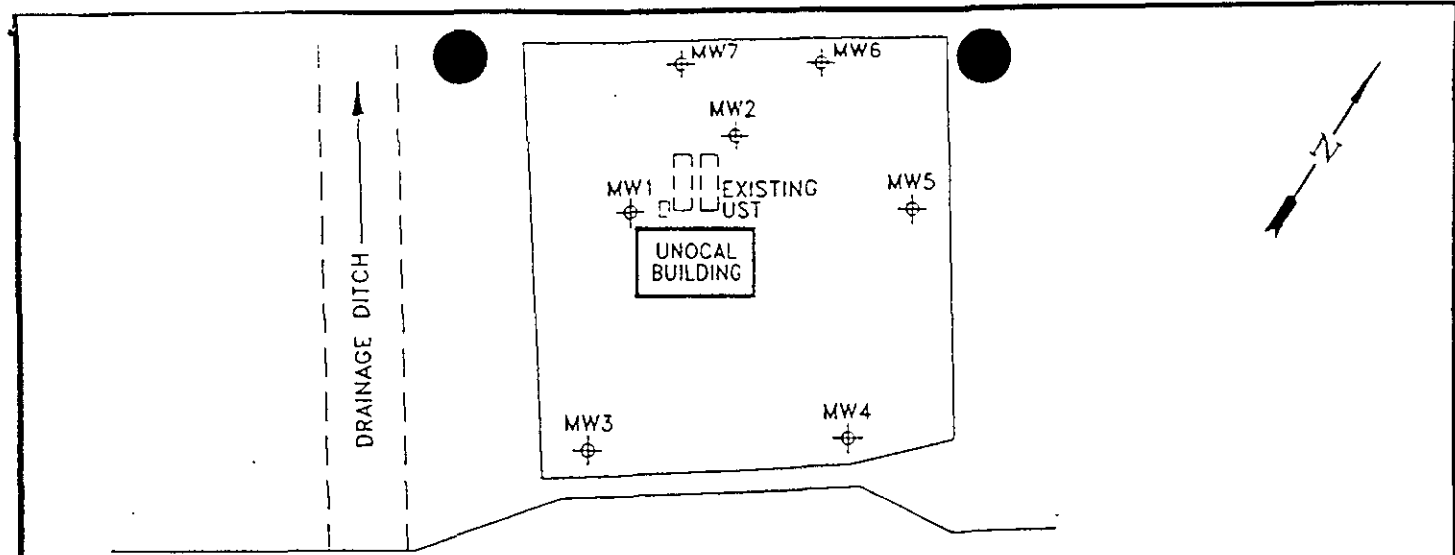
  
\_\_\_\_\_  
E. K. SIMONIS, R.G.  
Senior Environmental Geologist



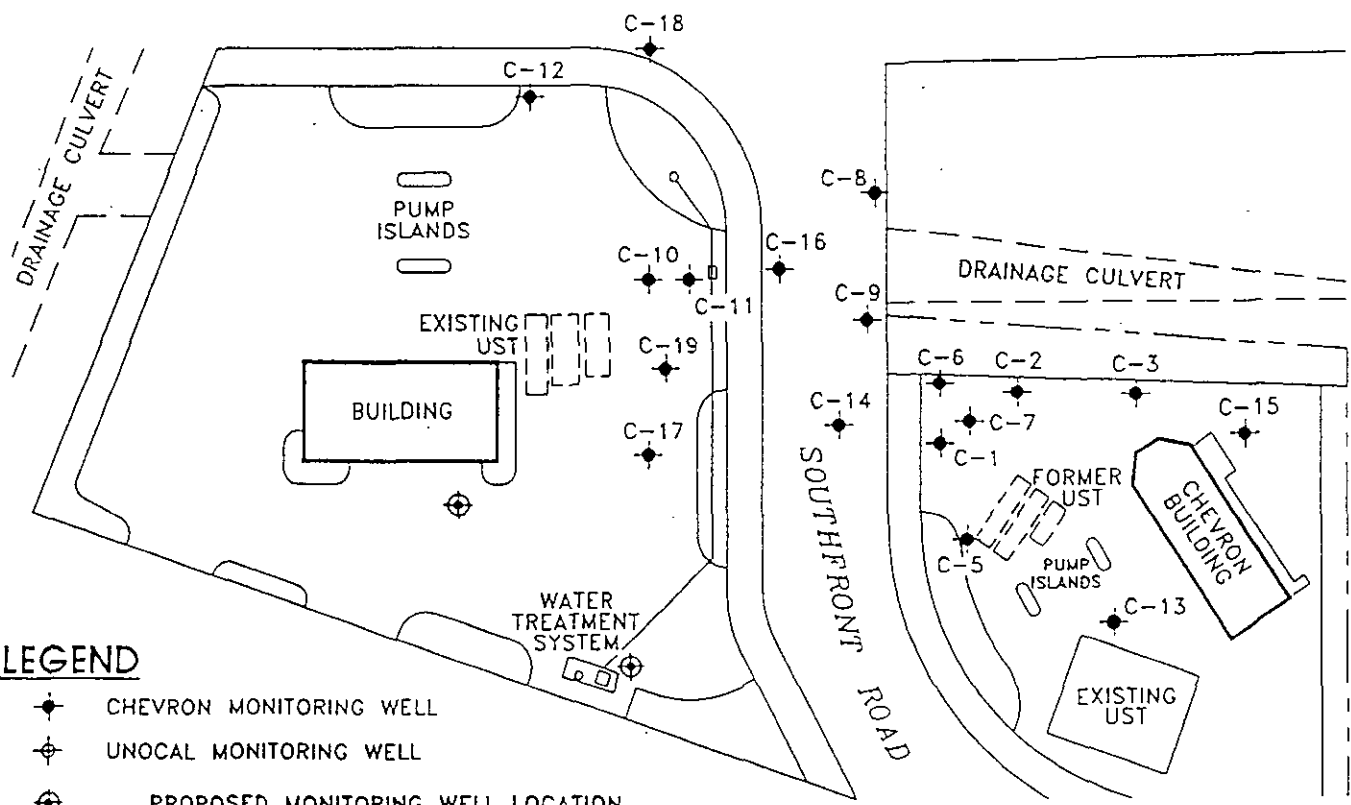
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**FIGURES**



FIRST STREET



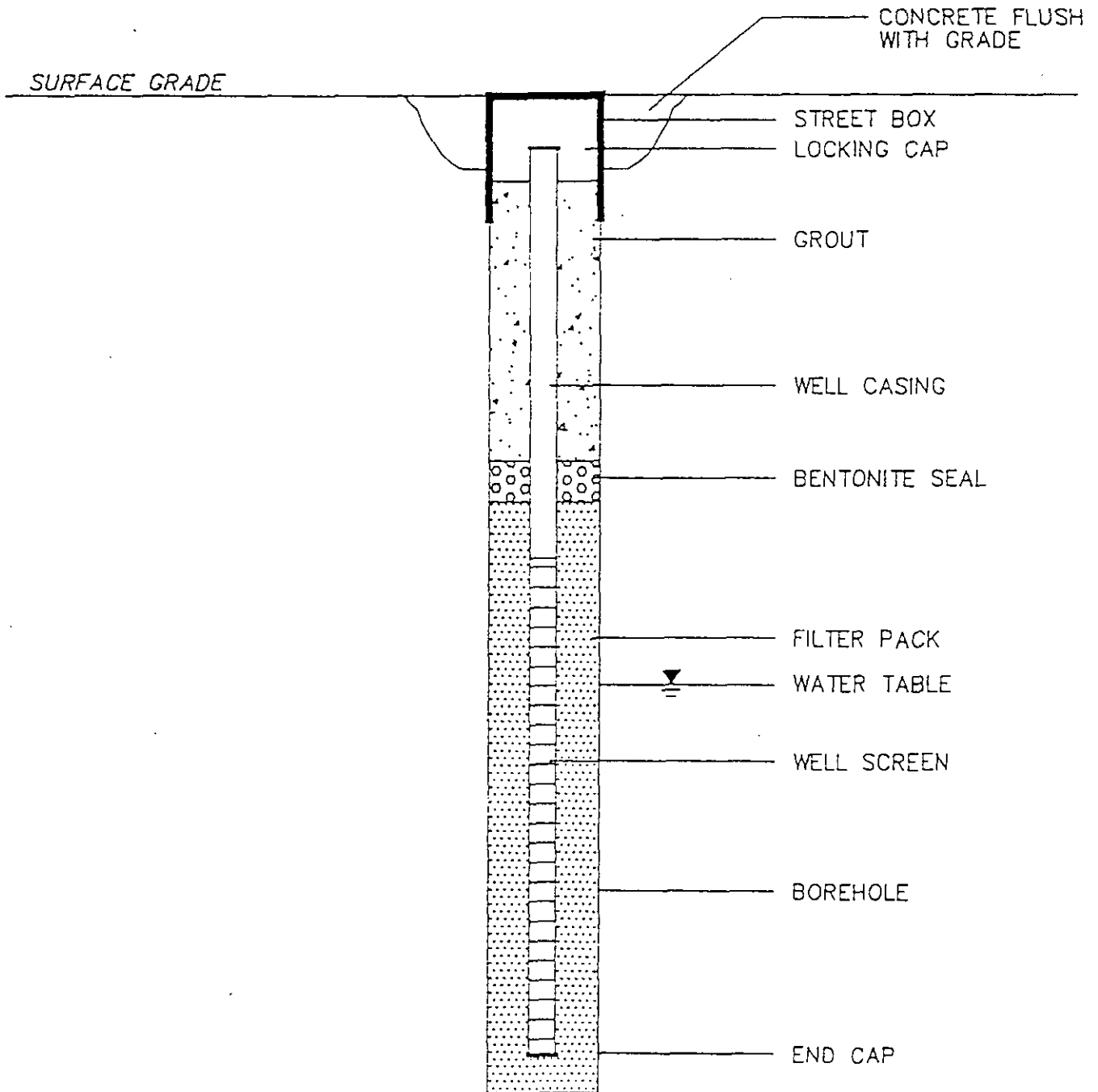
**LEGEND**

- ◆ CHEVRON MONITORING WELL
- ⊕ UNOCAL MONITORING WELL
- ⊕ PROPOSED MONITORING WELL LOCATION

			<h3>SITE PLAN</h3>	
	<b>CLIENT:</b> CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION NO. 9-1924	<b>FILE:</b> 4233SMA (1:80)	<b>PROJECT NO.:</b> 02070-4233	<b>PM</b> 
<b>LOCATION:</b> 4904 SOUTHFRONT ROAD LIVERMORE, CALIFORNIA	<b>REV.</b> 4	<b>DES.</b> DSB	<b>DET.</b> AJK	<b>DATE:</b> 11/23/93
			<b>FIGURE:</b> 1	

FIGURE 2

MONITORING WELL SCHEMATIC



NOT TO SCALE



GROUNDWATER TECHNOLOGY, INC.