GETTLER-RYAN INC.

OCT 3 0 2001

October 26, 2001

Mr. Don Hwang
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: **Workplan for Additional Site Investigation, Chevron Service Station #9-2029, 890 West MacArthur Boulevard, Oakland, California.**

Mr. Hwang:

On the behalf of Chevron Products Company (Chevron), Delta Environmental Consultants, Inc. network associate Gettler-Ryan Inc. (GR) is submitting the Workplan for Additional Site Investigation for agency approval. Please find enclosed a copy of the above referenced workplan. GR will commence with the work once the workplan is approved

A file review of Chevron and GR files was conducted to find the reports requested in your September 4, 2001 letter. Upon completion of file review, only GR Soil Sampling during Product Dispenser Replacement Report was found and a copy of the report is enclosed for your files.

If you have any questions, please call feel free to call our Sacramento office at (916) 631-1300.

Sincerely,
Gettler-Ryan Inc.

Geoffrey D. Risse
Staff Geologist

Enclosed:
Workplan for Additional Site Investigation dated October 25, 2001
GR Soil Sampling during Product Dispenser Replacement Report dated April 10, 1997

Cc: (w/o GR Soil Sampling Report dated April 10, 1997)
Thomas Bauhs, Chevron Products Company, P.O. Box 6004, San Ramon, CA 94583.
James Brownell, Delta Environmental Consultants Inc., 3164 Gold Camp Dr. Ste. 200, Rancho Cordova, CA 95670.

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WORK PLAN FOR ADDITIONAL SITE INVESTIGATION

At
Chevron Service Station No. 9-2029
890 West MacArthur Boulevard
Oakland, California

Report No. DG92029G.4C01
Delta Project No. DG92-029

Prepared for:

Mr. Thomas Bauhs
Chevron Products Company
P.O. Box 6004
San Ramon, California 94568

Prepared by:

Delta Environmental Consultants Inc.
Network Associate **Gettler-Ryan Inc.**
3140 Gold Camp Drive, Suite 170
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Geoffrey D. Risse
Staff Geologist

David W. Herzog
Senior Geologist
R.G. 7211

October 25, 2001

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At
Chevron Service Station No. 9-2029
890 West MacArthur Boulevard
Oakland, California

Delta Report No. DG92029G.4C01
Delta Project No. DG92-029

INTRODUCTION

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants Inc. network associate Gettler-Ryan Inc. (GR) prepared this Work Plan for Additional Site Investigation at the subject site (Figure 1). In a letter dated September 4, 2001, the Alameda County Health Care Services Agency (ACHCSA) requested the delineation of the lateral extent of hydrocarbon impacted soil and groundwater at the subject site. The purpose of this work is to delineate the lateral extent of hydrocarbon impacted soil and groundwater at the subject site.

The proposed scope of work includes: obtaining the necessary drilling permits from Alameda County Public Works Agency (ACPWA); updating the site health and safety plan; installing four on-site groundwater monitoring wells; collecting soil samples for possible chemical analysis; developing and sampling the newly installed groundwater monitoring wells; surveying wellhead elevations of the newly installed wells; analyzing selected samples; and preparing a report which presents the findings of the investigation.

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 an active Chevron station located on the northeastern corner of West MacArthur Boulevard and Market Street in Oakland, California (Figure 1). The subject site is located on the East Bay Plain, approximately 1 ¼ mile east of San Francisco Bay and approximately 1 ½ mile north of Lake Merritt. The site is a relatively flat lot at an elevation of approximately 50 feet above mean sea level (MSL). The nearest surface water body is Glen Echo Creek (approximately 1 mile southeast of the site), which drains into Lake Merritt.

The current site configuration consists of a station building and five dispenser islands located in the central portion of the site. Three 10,000 gallon gasoline underground storage tanks (USTs) share a common pit located near the eastern site boundary. Current site features are shown on Figure 2.

Based on GR review of the Chevron file of the site, the Chevron service station has been operating at the site since at least 1957. The former aboveground station facilities consisted of a station building located north of the current building location, and three dispenser islands (one located west and two south of the station building). Two hydraulic hoists were present within the former station building.

Two 5,000 gallon and one 3,000 gallon gasoline steel USTs were located in the common pit located near the eastern site boundary, in the location of the current USTs. A waste oil tank was located north of the station building. Former site features are shown on Figure 2. The 3,000 gallon UST was replaced with a 10,000 gallon fiberglass UST (installed in the same location) sometime before 1978. Product lines were replaced in 1970. No soil investigation was conducted at that time.

A tank and line integrity test conducted in 1981 indicated corrosion perforation on the product lines. The tanks were also corroded but with no perforations. In March through April 1982, the existing product line, two 5,000-gallon steel gasoline USTs, and one 10,000 gallon UST were replaced with the three current 10,000-gallon fiberglass USTs. The new USTs were installed in the former UST pit, which was extended to the east to accommodate the larger new tanks. The tank and line tests indicate that the current tanks and lines have tested tight since. The waste oil UST was removed sometime between 1984 and 1997; however, no specific information regarding the tank removal was available. In April 1997, product dispensers were replaced, and the USTs were upgraded by installing containment collars, sumps, and a leak monitoring system.

PREVIOUS ENVIRONMENTAL WORK

In April 1981, Smith and Denison conducted a tank integrity test at the subject site, which included drilling two borings to 12 feet below ground surface (bgs) and collecting two soil samples from each boring. The test results indicated that the tanks were corroded but with no holes. Gasoline hydrocarbons (concentrations unknown) were observed in three of the four soil samples collected. Groundwater was encountered in one boring at 12 feet bgs.

In March 1991, a strong hydrocarbon odor was noted in the service station building, and ambient air monitoring and sampling was conducted at the site by Environmental Health Consultants. The results indicate that hydrocarbons were present in air entering the station building from the crawl space beneath the building. The photoionization detector reading averaged between 100 and 150 parts per million (ppm), and peaked at 505 ppm. The analytical results of air samples indicated the presence of approximately 100 ppm of gasoline hydrocarbons and less than 1 ppm of benzene.

In February 1997, GR conducted a soil investigation during the product dispenser replacement and UST upgrade. The existing dispensers were removed and the soil in the immediate vicinity of each dispenser island was excavated. Soil samples were collected from the base of each excavation at approximately 3 feet bgs. An additional sample was collected at 3 feet bgs from the northern wall of the gasoline UST pit. Soil beneath all dispenser islands except the northeastern island exhibited hydrocarbon odor. Soil in the vicinity of the northeastern dispenser island exhibited greenish gray discoloration. Total Petroleum Hydrocarbons as gasoline (TPHg) [up to 38 ppm] were detected in four samples and benzene (up to 0.63 ppm) was detected in three of the six samples. Methyl tert-butyl ether (MtBE) [up to 0.62 ppm] was detected in all samples collected beneath dispenser islands, but was not detected in the sample collected from the UST sidewall.

On October 5-9, 2000, GR supervised the drilling of ten on-site soil borings (B-1 through B-10). Analytical results from the investigation indicates that gasoline impacted soil appears to be limited to the central and southern portion of the site.

The highest hydrocarbon concentrations in soil (up to 930 ppm TPHg, 6.7 ppm benzene, and 13 ppm MtBE) are present in the vicinity of the former southern dispenser island. The lateral extent of hydrocarbon impacted soil has been delineated except to the south and southwest. Shallow groundwater beneath the subject site has been impacted by gasoline hydrocarbons [up to 33,000 parts per billion (ppb) TPHg, 1,200 ppb benzene, and 820 ppb MtBE]. Shallow groundwater in the vicinity of the waste oil UST has been impacted by diesel hydrocarbons. The extent of gasoline hydrocarbons in shallow groundwater beneath the subject site has not been delineated to the south, southwest, and west.

Soil encountered during previous investigations consisted predominantly of clays and clayey gravels. During the previous investigation, groundwater was encountered beneath the site at depths between 11.8 and 14 feet bgs. Based upon site topography, the shallow groundwater beneath the site is assumed to flow to the southwest.

PROPOSED SCOPE OF WORK

In order to delineate the lateral extent of petroleum hydrocarbons in soil and groundwater at the site, GR proposes to install four groundwater monitoring wells on the subject site. GR Field Methods and Procedures are included as Appendix A.

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

Task 1. Pre-Field Activities

GR will update the Site Health and Safety Plan. Drilling permits will be obtained from ACPWA. Underground Service Alert (USA) will be notified at least 48 hours prior to initiating well installation activities.

Task 2 Well Installation

GR will install four groundwater monitoring wells at the locations shown on Figure 2. Drilling and well construction will be performed by a California licensed well driller. The well borings will be drilled with 8-inch diameter hollow-stem augers to approximately 25 feet bgs. Based upon local hydrogeologic conditions, GR expects to encounter groundwater at approximately 10 feet bgs. Soil samples for description and possible chemical analysis will be obtained from the borings at five-foot intervals, as a minimum. A GR geologist will monitor the drilling activities and prepare a log of each well boring. 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 as described in Task 5.

The groundwater monitoring wells will be constructed with 2-inch diameter Schedule 40 polyvinyl chloride (PVC) well casing and 0.01-inch machine slotted well screen, as shown on the Proposed Well Construction Detail (Figure 3). The wells will be constructed with 15 feet of screen from approximately 10 to 25 feet bgs. The actual screen interval will depend on the groundwater depth and lithologic conditions encountered during drilling.

Soil from each sampled interval will be screened in the field for the presence of volatile organic compounds 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.

Drill cuttings will be stored at the site pending receipt of chemical analytical data. The drill cuttings will be stockpiled on and covered with plastic sheeting pending disposal. Soil samples from the drill cuttings will be collected for disposal characterization as described in Appendix A. Steam cleaning rinsate wastewater will be stored on site in properly labeled drums pending disposal.

Task 3 Well Development and Sampling

The newly installed groundwater monitoring wells will be developed after being allowed to stand a minimum of 72 hours following completion. During development, the clarity of the discharged well water and selected groundwater parameters (pH, temperature, conductivity) will be monitored. When the clarity of the discharge water runs clear and the groundwater parameters have stabilized, groundwater samples will be collected. Groundwater samples will be analyzed as described in Task 5. Development and groundwater sampling procedures are described in Appendix A.

Task 4 Wellhead Survey

Following installation, the elevation of the top of each well casing will be surveyed to MSL by a California licensed surveyor. Horizontal coordinates will also be measured.

Task .5 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, benzene, toluene, ethylbenzene, and xylenes (BTEX), and MtBE by DHS LUFT Methods. In addition, groundwater samples will be analyzed for tert-amyl methyl ether (TAME) by EPA Method 8260. The drill cuttings stockpile sample will be analyzed for TPHg, BTEX, and MtBE, by DHS LUFT Methods, and for total lead by EPA Method 6010.

Task 6. Report Preparation

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

PROJECT STAFF

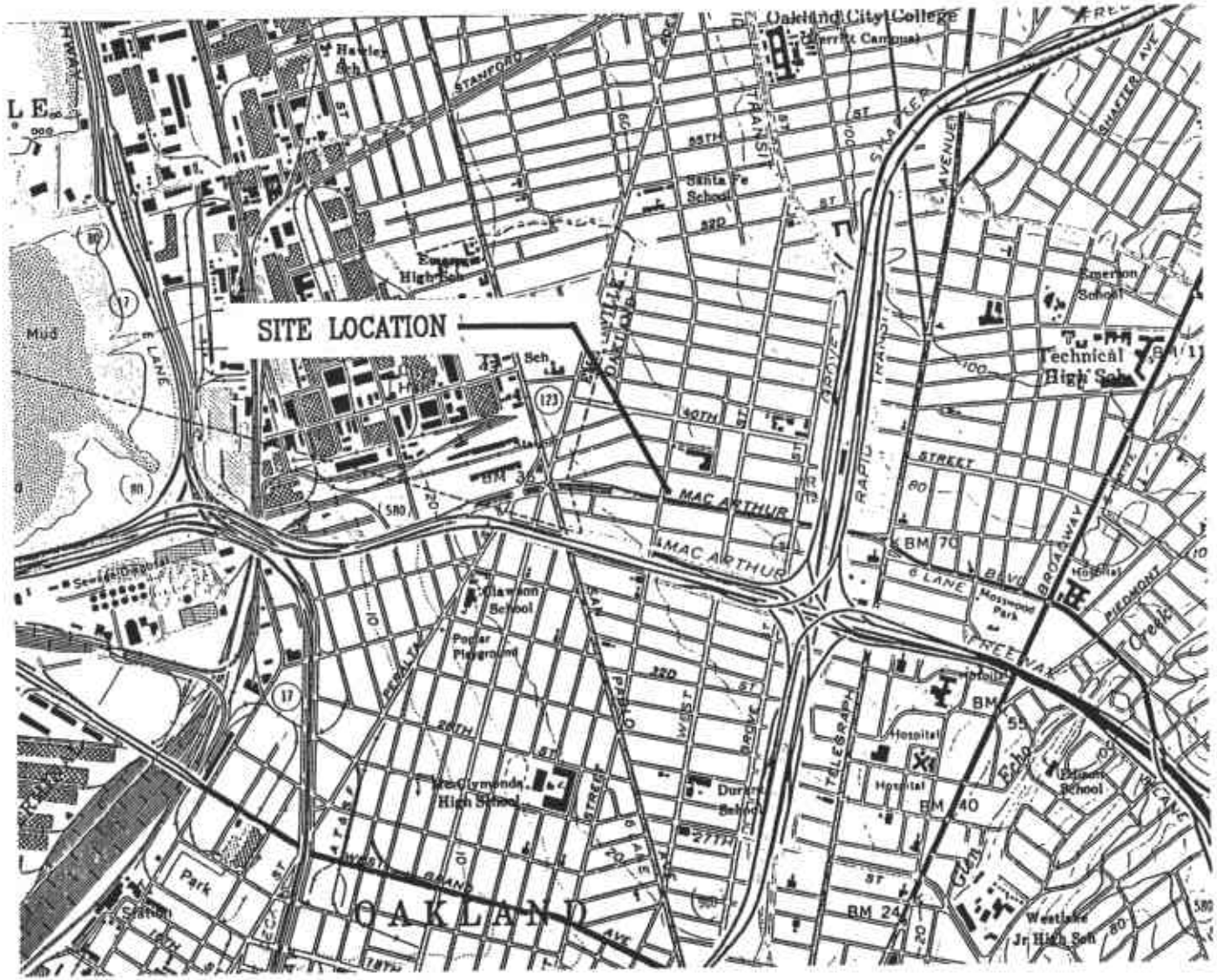
Mr. David W. Herzog, a Registered Geologist in the State of California (R.G. No. 7211), will provide technical oversight and review of the work. Mr. Greg Gurss, Senior Project Manager, will supervise implementation of field and office operations. GR employs a staff of geologists, engineers, and technicians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

SCHEDULE

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

REFERENCE

Gettler-Ryan Inc. October 31, 2000, Environmental Investigation Report for Chevron Service Station No. 9-2029, 890 MacArthur Boulevard, Oakland, California, Job No. 346503.01.



Base Map: USGS Topographic Map

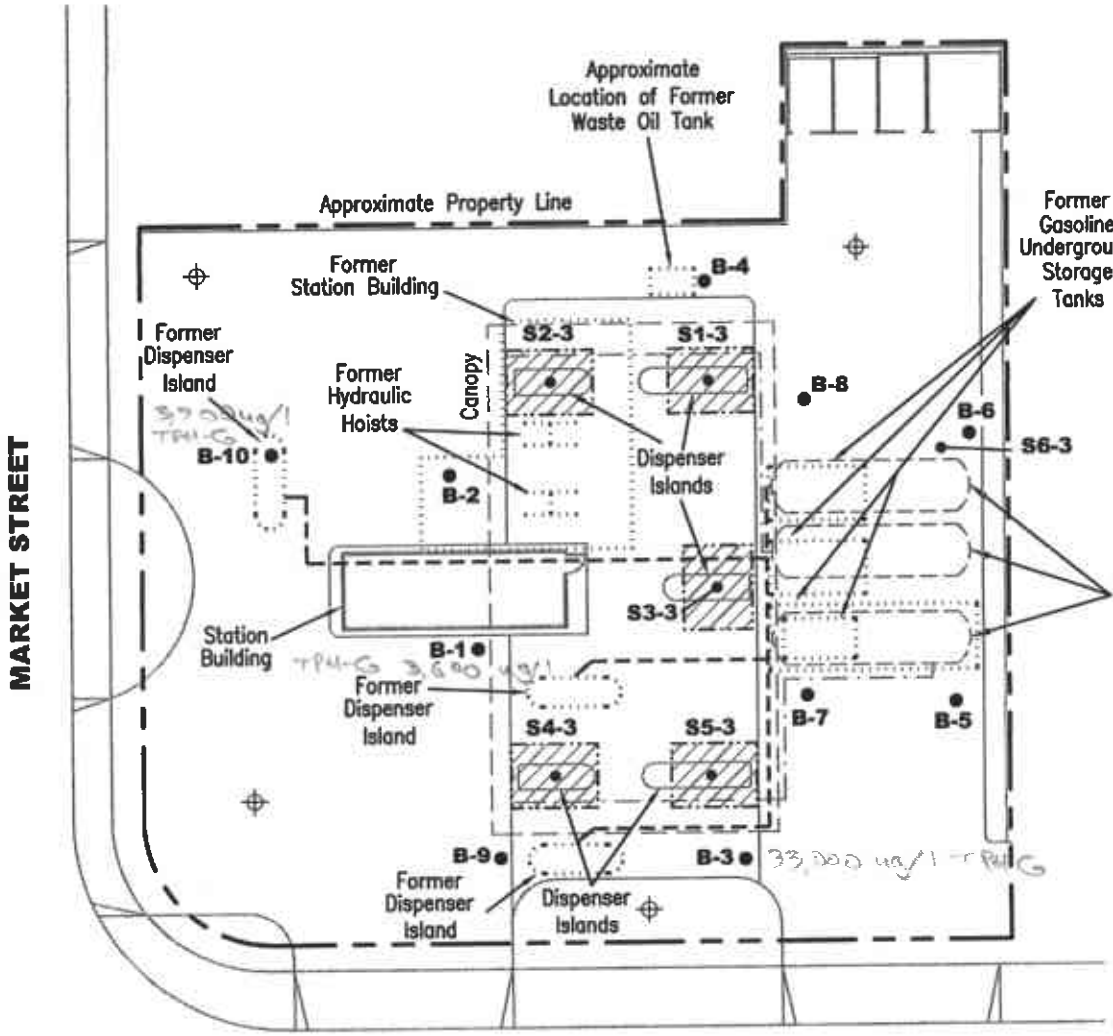
FIGURE 1

Gettler - Ryan Inc.

6747 Sierra Ct., Suite J
Dublin, CA 94568
(510) 551-7555

VICINITY MAP
Chevron Service Station No. 9-2029
880 West MacArthur Boulevard
Oakland, California

JOB NUMBER | REVIEWED BY | DATE | REVISED DATE



EXPLANATION

- B-4 — Soil boring
- S1-3 — Soil sample location
- Excavation (1997)
- Product line trenching
- Former product line trenching
- Proposed groundwater monitoring well

N

0 30

Scale in Feet

Source: Figure modified from drawing provided by RRM engineering contracting firm.

FIGURE 2

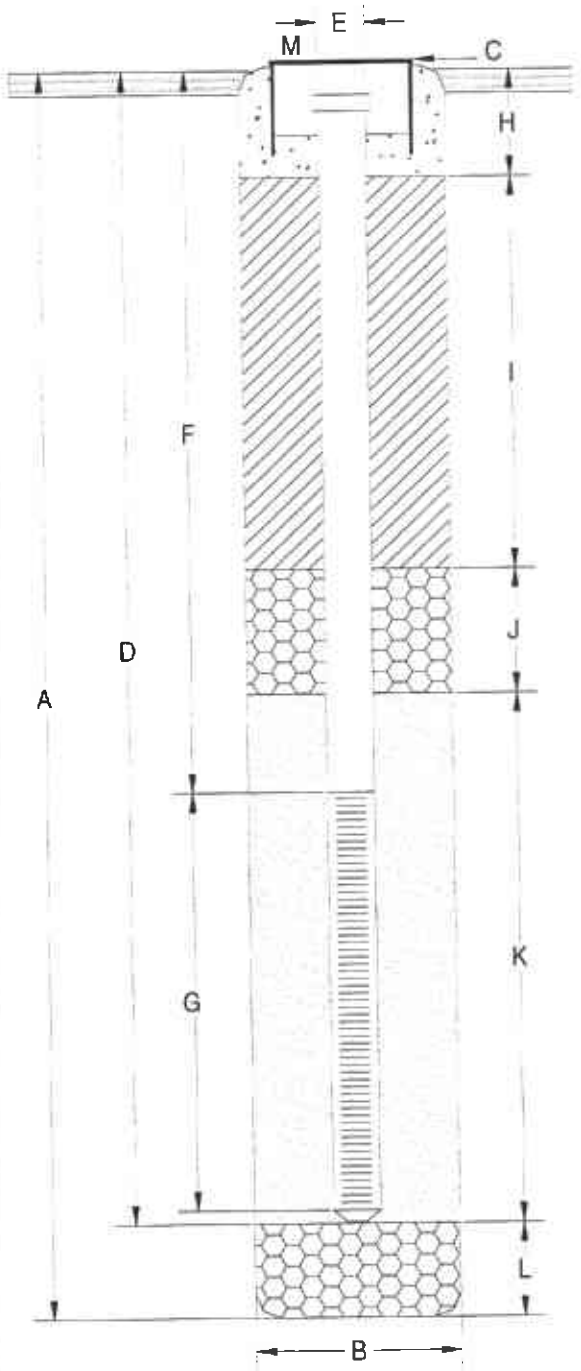
GETTLER - RYAN INC.
6747 Sierra Ct., Suite J
Dublin, CA 94568 (925) 551-7555

SITE PLAN
Chevron Service Station No. 9-2029
890 West MacArthur Boulevard
Oakland, California

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
346503		10/01	

FILE NAME: P:\ENVIRO\CHEVRON\9-2029\A00-9-2029.DWG | Layout Tab: Work Plan 10-01

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 25 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow Stem Auger

C Top of Casing Elevation ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project-Datum

D Casing Length 25 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 10 ft.

G Perforated Length 15 ft.
Perforated Interval from 10 to 25 ft.
Perforation Size 0.01 in.

H Surface Seal from 0 to 1 ft.
Seal Material Cement

I Backfill from 1 to 7 ft.
Backfill Material Neat Cement

J Seal from 7 to 9 ft.
Seal Material Bentonite

K Gravel Pack from 9 to 25 ft.
Pack Material #2/12 Sand

L Bottom Seal None ft.
Seal Material

M Water-resistent vault box, Locking well cap, and Lock

Note: Depths measured from initial ground surface.

FIGURE
3

GETTLER - RYAN, INC.
6747 Sierra Ct., Suite J
Dublin, CA 94567
(925) 551-7555

Chevron Service Station No. 9-2029
890 West MacArthur Boulevard
Oakland, California

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
DG92029G		10/18/01		

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 are collected from the soil boring with a split-barrel sampling device fitted with 2-inch-diameter, clean brass tube or stainless steel liners. The sampling device is driven approximately 18 inches with a 140-pound hammer falling 30 inches. The number of blows required to advance the sampler each successive 6 inches is recorded on the boring log. The encountered soils are described using the Unified Soil Classification System (ASTM 2488-84) and the Munsell Soil Color Chart.

After removal from the sampling device, soil samples for chemical analysis are covered on both ends with teflon sheeting or aluminum foil, 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 in part on:

a. depth relative to underground storage tanks and existing ground surface
b. depth relative to known or suspected groundwater
c. depth relative to areas of known hydrocarbon impact at the site
d. presence or absence of contaminant migration pathways
e. presence or absence of discoloration or staining
f. presence or absence of obvious gasoline hydrocarbon odors
g. 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 removing some soil from one of the sample tubes not retained for chemical analysis and immediately covering the end of the tube with a plastic cap. The PID probe is inserted into the headspace inside the tube through a hole in the plastic cap. 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.

Construction of Monitoring Wells

Monitoring wells are constructed in the exploratory soil borings with Schedule 40 polyvinyl chloride (PVC) casing. All joints are thread-joined; no glues, cements, or solvents are used in well construction. The screened interval is constructed of machine-slotted PVC well screen which generally extends from the total well depth to a point above the groundwater. An appropriately-sized sorted sand is placed in the annular space adjacent to the entire screened interval. A bentonite transition seal is placed in the annular space above the sand, and the remaining annular space is sealed with neat cement or cement grout.

Wellheads are protected with water-resistant traffic-rated vault boxes placed flush with the ground surface. The top of the well casing is sealed with a locking waterproof cap. A lock is placed on the well cap to prevent vandalism and unintentional introduction of materials into the well.

Measurement of Water Levels

The top of the newly-installed well casing is surveyed by a California-licensed Land Surveyor to mean sea level (MSL). Depth-to-groundwater in the well is measured from the top of the well casing with an electronic water-level indicator. Depth-to-groundwater is measured to the nearest 0.01-foot, and referenced to MSL.

Well Development and Sampling

The purpose of well development is to improve hydraulic communication between the well and the surrounding aquifer. Prior to development, each well is monitored for the presence of floating product and the depth-to-water is recorded. Wells are then developed by alternately surging the well with a vented surge block, then purging the well with a pump or bailer to remove accumulated sediments and draw groundwater into the well. Development continues until the groundwater parameters (temperature, pH, and conductivity) have stabilized.

Storing and Sampling of Drill Cuttings

Drill cuttings are stockpiled on and covered with plastic sheeting and samples are collected and analyzed for disposal classification on the basis of one composite sample per 100 cubic yards of soil. Stockpile samples are composed of four discrete soil samples, each collected from an arbitrary location on the stockpile. The four discrete samples are then composited in the laboratory prior to analysis.

Each discrete stockpile sample is collected by removing the upper 3 to 6 inches of soil, and them driving the stainless steel or brass sample tube into the stockpiled material with a hand, mallet, or drive sampler. The sample tubes are then covered on both ends with teflon sheeting or aluminum foil, capped, labeled, and placed 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. Stockpiled soils are covered with plastic sheeting after completion of sampling.