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GETTLER-RYAN INC.

ENVIRONMENTAL PROTECTION
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TRANSMITTAL

TO: Mr. Thomas F. Peacock
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

DATE: November 18, 1998
PROJ.#: 346462.01
SUBJECT: Work Plan
Chevron Station #9-0121
3026 Lakeshore Avenue
Oakland, California

FROM:
Todd A. Del Frate
Geologist
Gettler-Ryan Inc.
3164 Gold Camp Drive, Suite 240
Rancho Cordova, California 95670

- If bioparameters ist to determine if replacement wells are necessary. If " " " " then ~~wells existing wells isn't need to be replaced~~, Consider relocating MW-3 (See site plan) and
- Product is found in MW-2. Maybe MW-2A should be 4" dia well installed product removal become necessary

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	November 17, 1998	Work Plan Well Destruction and Installation

THESE ARE TRANSMITTED as checked below:

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COMMENTS:

At the request of Chevron Products Company (Chevron), we are forwarding you a copy of the above-referenced Work Plan. If you have questions, please call me in our Rancho Cordova office at (916) 631-1300.

c: Mr. Phil Briggs, Chevron Products Company

GETTLER-RYAN INC.

WORK PLAN FOR MONITORING WELL DESTRUCTION AND INSTALLATION

at

Chevron Service Station #9-0121
3026 Lakeshore Avenue
Oakland, California

Report No. 346462.01-1

Prepared for:

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Chevron Products Company
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Prepared by:

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Todd A. Del Frate
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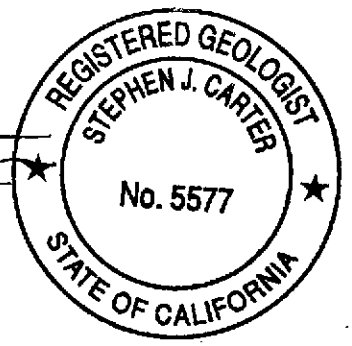

Stephen J. Carter
Senior Geologist
R.G. 5577

November 17, 1998

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GETTLER-RYAN INC.

WORK PLAN FOR MONITORING WELL DESTRUCTION AND INSTALLATION

at

Chevron Service Station #9-0121
3026 Lakeshore Avenue
Oakland, California

Report No. 346462.01-1

INTRODUCTION

At the request of Chevron Products Company (Chevron), Gettler-Ryan Inc. (GR) has prepared this Work Plan for Monitoring Well Destruction and Replacement at the subject site (Figure 1). The proposed scope of work includes: obtaining the necessary well installation permits from the Alameda County Health Care Services (ACHCS); preparing a site specific health and safety plan; destroying three groundwater monitoring wells; drilling and installing three replacement groundwater monitoring wells; developing and sampling the newly installed groundwater monitoring wells; surveying all wellhead elevations; coordinating Chevron's contractor to dispose of the soil cuttings; 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* and *California Underground Storage Tank Regulations, 1994*, the California Regional Water Quality Control Board (CRWQCB) *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites*, ACHCS and guidelines.

SITE DESCRIPTION

The site is an active retail gasoline station located at the southwest corner of Lakeshore Avenue and MacArthur Boulevard in Oakland, California. Current site facilities consist of

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an island marketer, five dispenser islands, and three gasoline grade underground storage tanks (USTs), and one diesel grade UST that share a common pit near the northwestern site boundary. Location of pertinent site features are shown on Figure 2.

SCOPE OF WORK

At the request of Chevron, GR proposes to destroy three 3/4-inch diameter groundwater monitoring wells (MW-2 through MW-4), and drill and install three replacement groundwater monitoring wells (MW-2A through MW-4A). Locations of the wells are shown on Figure 2. GR's Field Methods and Procedures are included in Appendix A. Well destruction and construction activities will be performed by Bay Area Exploration, Inc. (C57 #522125).

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

Task 1. Pre-field Activities

GR will prepare a site specific health and safety plan and obtain the necessary monitoring well destruction and installation permits from the ACHCS. Underground Service Alert (USA) will be notified a minimum of 48 hours in advance of the scheduled work. A private line locator will be contracted to locate on-site subsurface utilities.

Task 2. Well Destruction

GR will drill out wells MW-2 through MW-4 one-foot past the installed well casing using 8-inch diameter hollow-stem auger to remove the annular seal, sand pack, and well casing. Each boring will be backfilled to ground surface with neat cement containing approximately 5% bentonite powder using a tremie pipe and pump. All well head construction materials will be removed, and the upper 0.5-foot of each boring will be finished to surface grade with concrete to complete the well destruction.

Task 3. Well Installation

GR will install three groundwater monitoring wells (MW-2A through MW-4A) at the locations shown on Figure 2. These wells will replace and be located adjacent to former wells MW-2 through MW-4. Based on monitoring data from wells MW-2 through MW-4, groundwater should be encountered between 5 and 8 feet bgs. A GR geologist will monitor the drilling activities and prepare a log of each boring. Well borings will be drilled with 8-inch diameter hollow-stem augers to approximately 18

feet bgs. Soil samples for description and possible chemical analysis will be obtained from each boring at five-foot intervals, as a minimum. Sample handling 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 unsaturated soil sample will be collected from above groundwater in each boring and submitted for chemical analysis as described in Task 5.

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. Screening data will be recorded on the boring logs.

Groundwater monitoring wells will be constructed with 2-inch diameter Schedule 40 polyvinyl chloride (PVC) well casing and 0.02-inch machine slotted well screen, as shown on the Proposed Well Construction Detail (Figure 3). The wells will be constructed with 15 feet well screen (3 to 18 feet bgs). Actual screen intervals will depend on the groundwater depth and lithologic conditions encountered during drilling.

Drill cuttings will be stored at the site pending receipt of chemical analytical data for disposal. The drill cuttings will be stockpiled on and covered with plastic sheeting. Soil samples from the drill cuttings will be collected for disposal characterization as described in Task 5. GR will arrange for Chevron's contractor Integrated Wastestream Management (IWM) to properly dispose of the drill cuttings. Steam cleaning rinsate waste water will be transported by IWM to McKittrick Waste Management in McKittrick, California.

Task 4. Well Development and Sampling

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, a groundwater sample will be collected. Groundwater removed from the well during development and sampling will be transported by IWM to McKittrick Waste Management. Groundwater samples will be analyzed as described in Task 5. Development and groundwater sampling procedures are described in Appendix A.

Task 5. Wellhead Survey

Following installation, the elevations of each top of well casing will be surveyed to MSL by Virgil Chavez Land Surveying (PLS #6323). Horizontal coordinates will also be measured and reported.

Task 6. Laboratory Analyses

Soil and groundwater samples will be submitted for chemical analysis by Sequoia Analytical (ELAP #1610) in Redwood City, California. Selected soil and groundwater samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), for gasoline constituents benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tert-butyl ether (MTBE), and for Total Petroleum Hydrocarbons as diesel (TPHd). A minimum of two soil samples from the well borings will also be analyzed for physical parameters that include: moisture content, total organic carbon, specific gravity, percent porosity, void ratio, saturation ratio, and dry density. The sample collected from the drill cuttings will be analyzed for TPHg, BTEX, and TPHd.

Task 7. Report Preparation

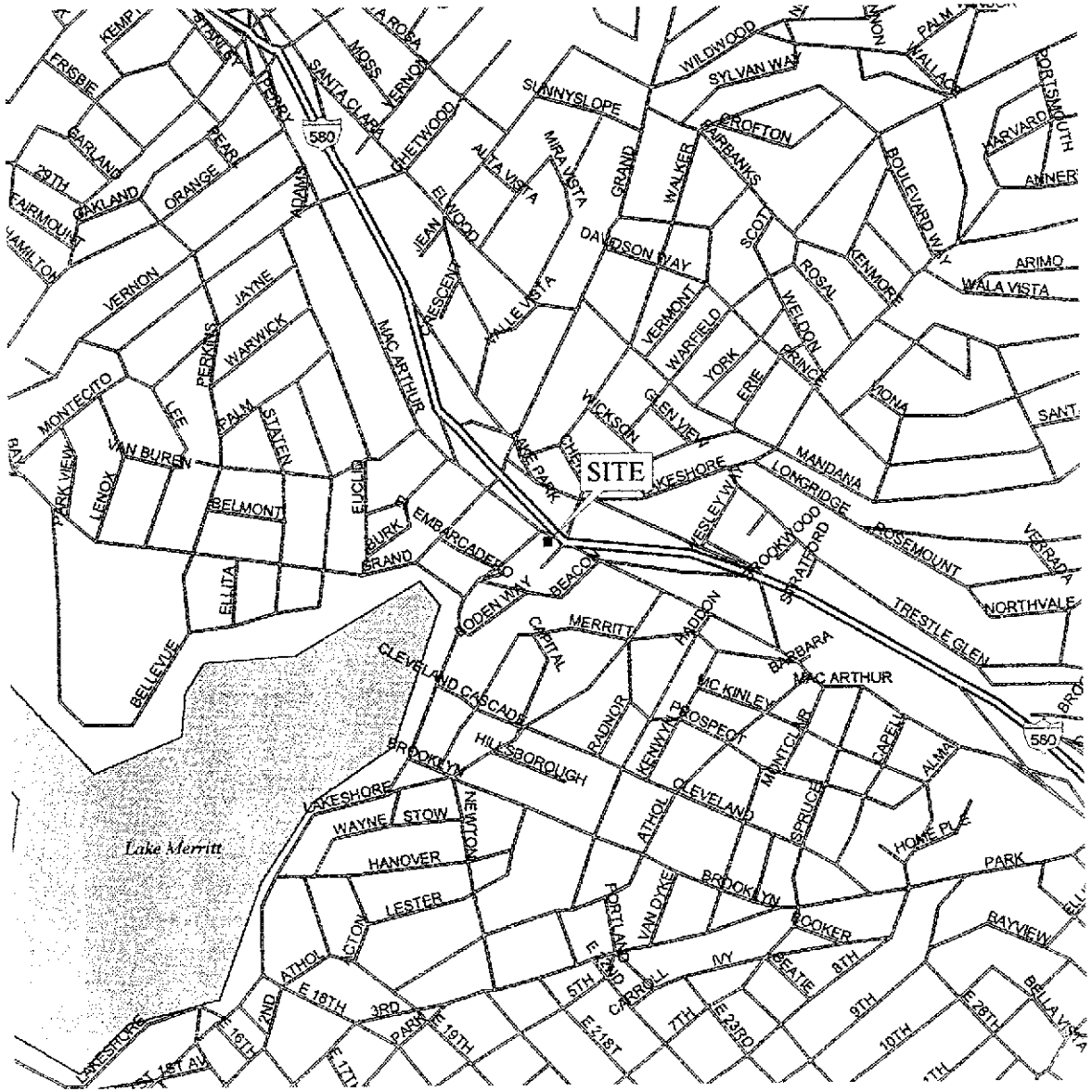
Following receipt and analysis of all data, a report will be prepared which summarizes the procedures and findings associated with this investigation. This report will be submitted to Chevron for their use and distribution.

PROJECT STAFF

Mr. Stephen J. Carter, a Registered Geologist in the State of California (R.G. No. 5577), 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: Street Atlas USA, Delorme (1995).

FIGURE 1

Gettler - Ryan Inc.

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VICINITY MAP
Chevron Service Station No. 9-0121
3026 Lakeshore Avenue
Oakland, California

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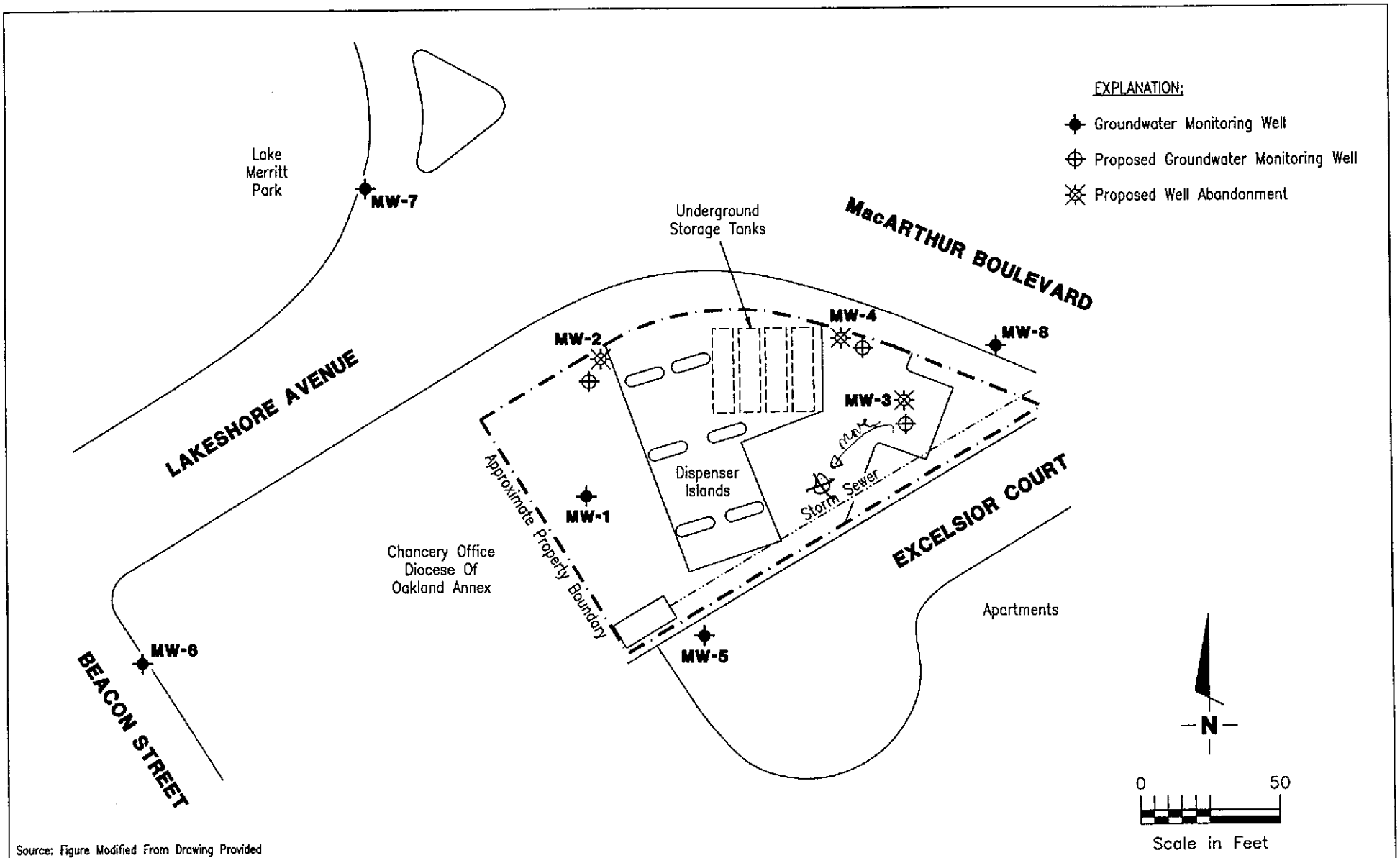

Source: Figure Modified From Drawing Provided By RRM Engineering.

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SITE PLAN
Chevron Service Station No. 9-0121
3026 Lakeshore Avenue
Oakland, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
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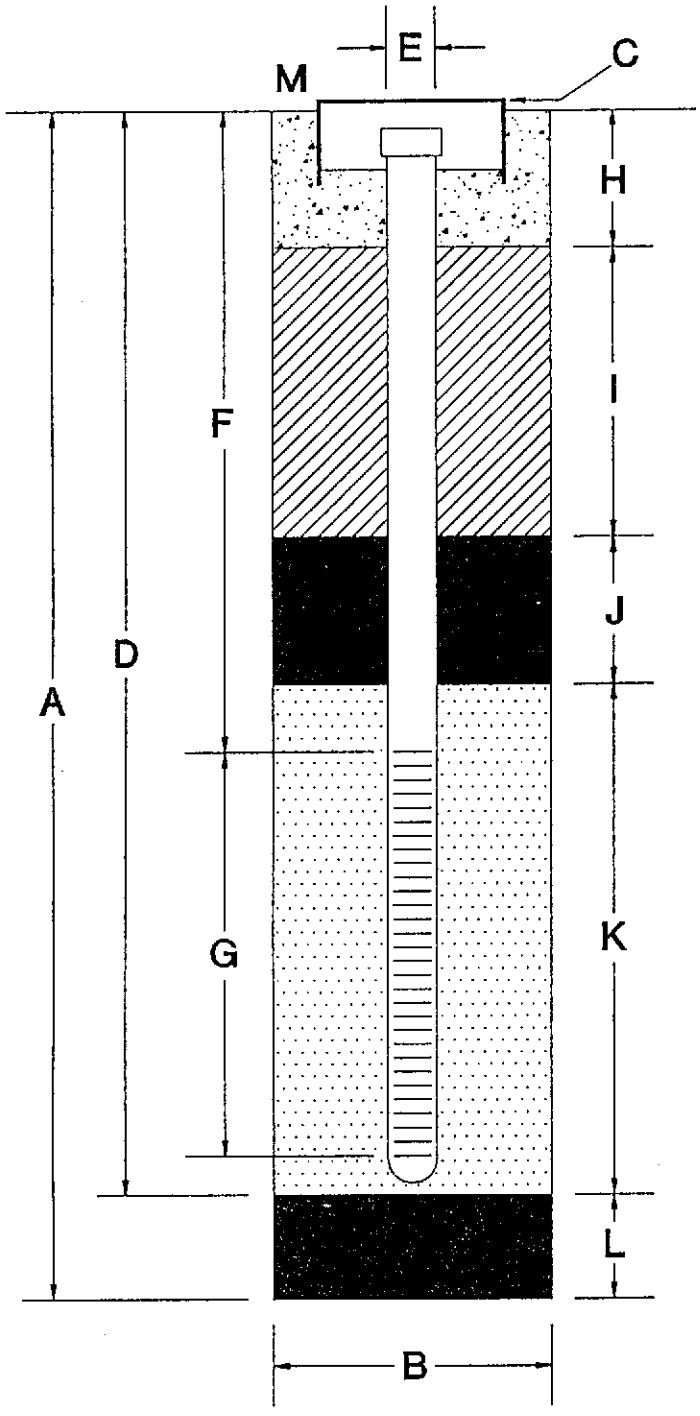
WELL CONSTRUCTION DETAIL



A Total Depth Of Boring 18 ft.

B Diameter Of Boring 8 in.
Drilling Method Hollow-stem auger

C Top Of Box Elevation _____ ft.
☐ Referenced To Mean Sea Level
☐ Referenced To Project Datum

D Casing Length 18 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth To Top Perforations 3 ft.

G Perforated Length 15 ft.
Perforated Interval From 3 to 18 ft.
Perforation Type Machine slotted
Perforation Size 0.02 in.

H Surface Seal From 0 to 0.5 ft.
Seal Material Concrete

I Backfill From 0.5 to 2.5 ft.
Backfill Material Neat Cement

J Seal From 2.5 to 3.0 ft.
Seal Material Bentonite

K Gravel Pack From 3.0 to 18 ft.
Pack Material Lonestar #3 sand

L Bottom Seal None ft.
Seal Material _____

M Traffic rated vault box, locking cap and lock.

PROPOSED WELL CONSTRUCTION
Chevron Station #9-0121
3026 Lakeshore Avenue
Oakland, California

Note: Depths Measured From Initial Ground Surface.

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Rancho Cordova, CA 95670

FIGURE 3

JOB NUMBER	REVIEWED BY	DATE	REVISION DATE
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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 (revised January 16, 1995) 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 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. A plastic cap is placed over the end of the sample tube that will not be saved for chemical analyses. The PID probe is placed through a hole in the cap, and the concentrations of organic vapors in the headspace between the plastic cap and the soil is recorded. PID screening results are recorded on the boring log 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 adjacent to the entire screened interval. A bentonite 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. After the wells have been developed, groundwater samples are collected. Well development and sampling is performed by Gettler-Ryan Inc. of Dublin, California.

Storing and Sampling of Drill Cuttings

Drill cuttings are stockpiled on plastic sheeting and samples are collected and analyzed 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.