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TRANSMITTAL

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

DATE: July 23, 2003
PROJECT NO. 140158.6
SUBJECT: ConocoPhillips Station No. 4625, Oakland

FROM: Jeremy Smith

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	7/23/03	Work Plan for Limited Subsurface Investigation

THESE ARE TRANSMITTED as checked below:

- ☒ For review and comment
- ☐ As Requested
- ☐ For Approval
- ☐ Approved as submitted
- ☐ Approved as noted
- ☐ Returned for corrections
- ☐ For your files
- ☒ For your use
- ☐ As noted below

COMMENTS:
Mr. Hwang-
ConocoPhillips is currently working to obtain offsite access for the proposed wells. Upon the completion of the access agreement, Alameda County will be notified with the proposed schedule for the completion of the wells.

Signed: _____

COPIES TO: Dave DeWitt - ConocoPhillips
76 Broadway, Sacramento, CA 95818

GETTLER-RYAN INC.

WORK PLAN FOR LIMITED SUBSURFACE INVESTIGATION

at

ConocoPhillips (76) Service Station No. 4625
3070 Fruitvale Avenue
Oakland, California

Report No. 140158.06

Prepared for:

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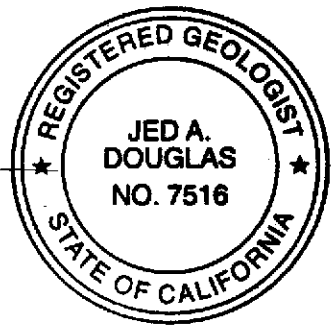

July 23, 2003

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at

ConocoPhillips (76) Service Station No. 4625
3070 Fruitvale Avenue
Oakland, California

Report No. 140158.06

INTRODUCTION

At the request of ConocoPhililps, Gettler-Ryan Inc. (GR), has prepared this Work Plan for the installation of three groundwater monitoring wells to further evaluate soil and groundwater conditions downgradient of the site. This work is proposed to acquire lateral delineation of soil and groundwater impacted by petroleum hydrocarbons. The proposed work includes:

- updating the site safety plan;
- obtaining the required drilling and encroachment permits;
- installing three offsite groundwater monitoring wells;
- collecting and submitting selected soil and groundwater samples for chemical analyses;
- surveying the wellhead elevations;
- arranging for ConocoPhillips contractors to dispose of the waste materials; and
- preparing a report presenting the observations associated with the above scope of work.

The scope of work described in this report is intended to comply with the California Code of Regulations, Title 23, Division 3, Chapter 16, *Underground Tank Regulations*, the California Regional Water Quality Control Board (RWQCB) *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites*, and Alameda County Health Care Services Agency (ACHCSA) guidelines.

SITE DESCRIPTION

General

The site is currently an active service station located on the southeast corner of Fruitvale Avenue and School Street in Oakland, California (Figure 1). Local topography is southwestern sloping at an elevation of approximately 136 to 139 feet above mean sea level. The current site facilities include a station building with two automotive service bays equipped with hydraulic lifts, four dispenser islands and two canopies, two 12,000-gallon double-wall fiberglass gasoline underground storage tanks (USTs), and one above ground

waste-oil tank. Six groundwater monitoring wells and one UST observation well are present at the site. Locations of the pertinent site features are shown on Figure 2.

Geology and Hydrogeology

The site is located on the western flank of the Oakland Hills in an area underlain by Holocene age alluvium. The alluvial deposits are composed of unconsolidated, moderately sorted, permeable silt with coarse sand and gravel. The northwest trending Hayward fault is located approximately 1,500 feet northeast of the site (Helley, 1979). The nearest surface waters are Sausal Creek, located approximately 500 feet west of the site, and Peralta Creek, located 2,300 feet southeast of the site. Additionally, East Bay Municipal Utility District's Central Reservoir is located approximately 1,300 feet west of the site.

In general, subsurface soils are composed of clay and silt to depths of approximately 9 to 19 feet below ground surface (bgs), underlain by gravel with varying amounts of clay and sand to depths of approximately 18 to 22 feet bgs, which in turn is underlain by clay and silt to 25 feet bgs, the maximum depth explored. The exception was well boring MW-1, in which only clay was encountered to 25 feet bgs.

During historical drilling activities, groundwater was typically encountered at approximately 10.5 to 19 feet bgs, except for well boring MW-1, where groundwater was not encountered. Groundwater typically first occurred in a gravel or clayey gravel which ranged in depth from approximately 9 to 15 feet bgs, except in well boring MW-2 where groundwater was encountered in the clay several feet above the gravel zone. During the most recent groundwater monitoring and sampling event conducted at the site on May 3, 2003, depth to groundwater in the six monitoring wells was between 5.88 and 8.23 feet below top of casing. Groundwater flow direction was reported to be toward the southwest at a calculated gradient of approximately 0.03 to 0.08 ft/ft.

PREVIOUS ENVIRONMENTAL WORK

In April and May of 1998, the gasoline USTs, product piping and dispensers were removed and replaced. Four soil samples were collected from the sidewalls of the former gasoline UST pit at a depth of approximately 8.5 feet bgs. Concentrations of Total Petroleum Hydrocarbons as gasoline (TPHg) in the soil samples ranged from 44 to 1,700 parts per million (ppm), benzene concentrations ranged from 0.16 to 17 ppm, and methyl tertiary butyl ether (MtBE) concentrations ranged from not detected (ND) to 16 ppm. Eight soil samples were collected from beneath the former product dispensers at a depth of approximately 4 feet bgs. Concentrations of TPHg in the soil samples ranged from ND to 660 ppm, benzene concentrations ranged from ND to 5.1 ppm, and MtBE concentrations ranged from ND to 150 ppm.

A 550-gallon waste oil UST and associated piping was also removed in May of 1998. One soil sample was collected from beneath the former waste oil UST at a depth of approximately 8.5 feet bgs. TPHg was detected in the soil sample at 820 ppm, benzene was detected at 2.7 ppm, Total Petroleum Hydrocarbons as diesel (TPHd) was detected at 200 ppm, Total Oil and Grease (TOG) was detected at 56 ppm, elevated concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals were also reported. One soil sample was also collected from beneath the piping at a depth of approximately 2 feet bgs. The sample was reported as all ND except for TPHd at 1.5 ppm, and background concentrations of metals.

A total of approximately 1,166 tons of soil was overexcavated and transported from the site to the Forward Inc. landfill in Manteca, California. Additionally, 40,000 gallons of groundwater was pumped from the UST pit and transported to the Tosco refinery in Rodeo, California for treatment and disposal. A conductor casing was installed in the backfill during installation of the replacement gasoline USTs. The waste oil tank was replaced with an above ground tank.

In April of 2000, four groundwater monitoring wells were installed at the site (MW-1 through MW-4). MtBE was not detected in any of the soil samples analyzed from the four well borings. TPHg and BTEX were not detected in any of the soil samples analyzed from well borings MW-1 or MW-4. However, TPHg and BTEX were detected in shallow soil samples collected from well borings MW-2 and MW-3 at the following concentrations: MW-2 contained TPHg at 1,600 ppm and benzene at 5.1 ppm; MW-3 contained TPHg at 79 ppm and benzene at 0.031 ppm. Low concentrations of TPHd were detected in the soil samples analyzed from boring MW-3 at concentrations ranging from 1.3 to 8.4 ppm.

On November 20, 2002, four on-site soil borings (B-1, B-2, MW-5, and MW-6) were installed at the site. Borings MW-5 and MW-6 were completed as monitoring wells to a total depth of 25 feet bgs. Soil sample B-1-S(8), contained concentrations of benzene at 0.22 ppm and MtBE at 0.93 ppm. Soil samples B-2-S(11), MW-5-S(10) and MW-6-S(10) contained TPHg and benzene at concentrations ranging from 190 to 1,300 ppm, and 4.2 to 11 ppm, respectively. Soil sample MW-6-S(10) contained MtBE at 0.39 ppm. Grab groundwater collected from B-1 and B-2 contained TPHg at concentrations of 190,000 and 17,000 parts per billion (ppb), benzene at 19,000 and 1,600 ppb, and MtBE at 57,000 and 240 ppb, respectively.

Groundwater samples from wells MW-3 and MW-4 have been ND for TPHg, BTEX and MtBE since quarterly sampling began in May of 2000. Groundwater samples from MW-1 have contained low concentrations of MtBE ranging from 3.4 to 26 ppb. MW-2 initially contained high concentrations of TPHg and benzene, both of which have recently decreased by up to two orders of magnitude. MtBE has not been identified in MW-2. MW-5 and MW-6 have contained concentrations of TPHg up to 33,000 ppb, benzene up to 2,400 ppb, and MtBE up to 1,500 ppb since their installation in November 2002. It is GR's understanding that as of January of 2001, ConocoPhillips no longer delivers fuel containing MtBE to service stations in northern California.

SCOPE OF WORK

GR proposes to install three groundwater monitoring wells at the locations shown on Figure 2. Soil and groundwater samples will be collected from the borings and newly installed wells to characterize the lateral extent of hydrocarbon-impacted soil and groundwater downgradient of the site.

To perform this scope of work, GR proposes the following specific tasks:

Task 1. Pre-Field Activities

Update the site-specific safety plan and obtain the necessary drilling and encroachment permits from Alameda County Public Works Agency and the City of Oakland. Notify Underground Service Alert (USA) least 48 hours prior to initiating work. A private subsurface utility locator will inspect each proposed location for buried utilities.

Task 2. Groundwater Monitoring Well Installation

Three groundwater monitoring wells will be installed at the locations shown on Figure 2 by a California licensed driller. Locations of the wells are tentative and may require relocation based on subsurface utilities. A GR geologist will monitor the drilling activities, collect soil samples for chemical analyses, describe the encountered soil, and prepare a log of each boring. The borings will be drilled with eight-inch-diameter hollow-stem augers, to a depth of approximately 25 feet bgs.

Groundwater monitoring wells will be constructed of 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). Groundwater is anticipated to be encountered at approximately 10 feet bgs. The proposed wells will be constructed with approximately fifteen feet of screen within the saturated zone and five feet of screen extending above first encountered groundwater.

Soil samples for description and possible chemical analysis will be obtained from each boring at five-foot intervals, as a minimum. Soil samples will be collected with a split-spoon sampler fitted with clean brass or stainless steel sample rings. 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 from each boring will be 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. Field screening procedures are described in Appendix A. Screening data will be recorded on the boring log.

Drill cuttings will be stored at the site pending receipt of chemical analytical data and disposal options. Stockpiled cuttings will be placed on and covered with plastic sheeting. Four soil samples of the drill cuttings will be collected for disposal characterization as described in Appendix A. These samples will be submitted to the laboratory for compositing into one sample, and then analyzed as described in Task 5. Steam cleaning rinsate wastewater will be stored at the site in properly labeled drums pending disposal.

Task 3. Wellhead Survey

The elevations of the vault boxes and the top of the PVC casings of the conductor casing and newly installed wells will be surveyed to mean sea level by a California licensed surveyor. The surveyor will also obtain the horizontal coordinates of the newly installed wells by global positioning system (GPS).

Task 4. Well Development and Sampling

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

Task 5. Laboratory Analyses

Soil and groundwater samples will be submitted for chemical analysis by a California state-certified Hazardous Material Testing Laboratory. Selected soil samples and the groundwater samples from the newly installed wells will be analyzed for TPHg, BTEX, MtBE and the fuel oxygenates tertiary butyl alcohol (TBA), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) by Environmental Protection Agency (EPA) Method 8260B. The soil stockpile sample will also be analyzed for total lead by EPA Method 6010.

Task 6. Report Preparation

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

PROJECT STAFF

Mr. Jed A. Douglas, a Registered Geologist in the State of California (R.G. No. 7516) will provide technical oversight and review of the work. Mr. David Vossler, Project Manager, will supervise implementation of the 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. It is anticipated that acquisition of an encroachment permit from the City of Oakland may take in excess of six months.

REFERENCES

Gettler-Ryan Inc., 2003, Groundwater Monitoring and Sampling Report, Second Quarter - Event of May 3, 2003, Tosco (76) Service Station #4625, 3070 Fruitvale Avenue, Oakland, California, dated June 10, 2003.

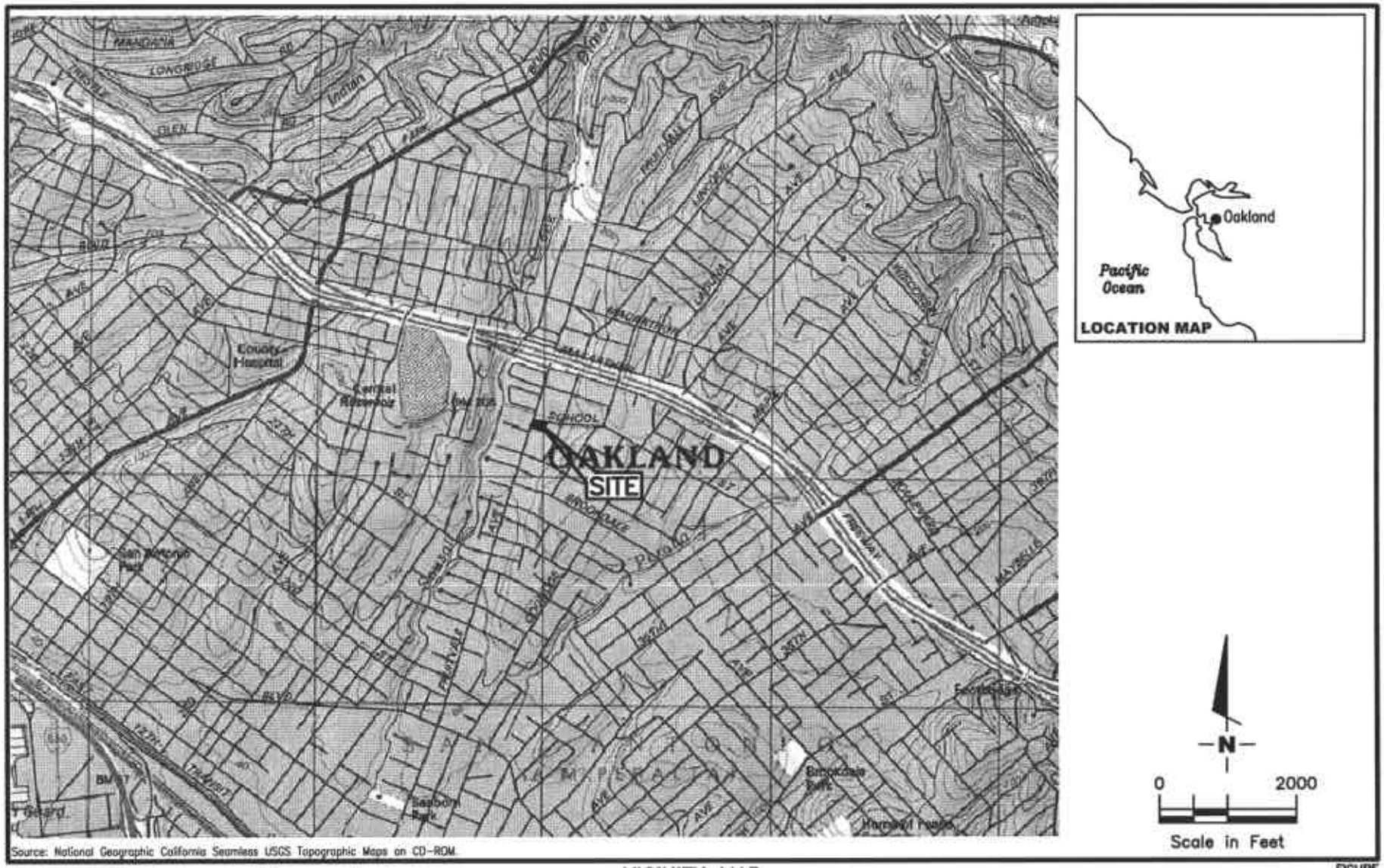
..., 2003, Soil Boring and Groundwater Monitoring Well Installation Report, Tosco (76) Service Station No. 4625, 3070 Fruitvale Avenue, Oakland, California, dated May 14, 2003.

..., 2000, Limited Subsurface Investigation Report, Tosco (76) Service Station No. 4625, 3070 Fruitvale Avenue, Oakland, California, dated August 16, 2000.

...., 1998, Underground Storage Tank and Product Line Replacement Report for Tosco (Unocal) Service Station No. 4625, 3070 Fruitvale Avenue, Oakland, California, dated August 10, 1998.

United States Geologic Survey Topograpic Map, Oakland-East, 1980

Helley, E. J. and K. R. Lajoie, 1979, Flatland Deposits of the San Francisco Bay Region, California - Their Geology and Engineering Properties, and Their Importance to Comprehensive Planning: U.S. Geological Survey Professional Paper 943.



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

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VICINITY MAP
ConocoPhillips (76) Service Station #4625
3070 Fruitvale Avenue
Oakland, California

FIGURE
1

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
140158		12/02	

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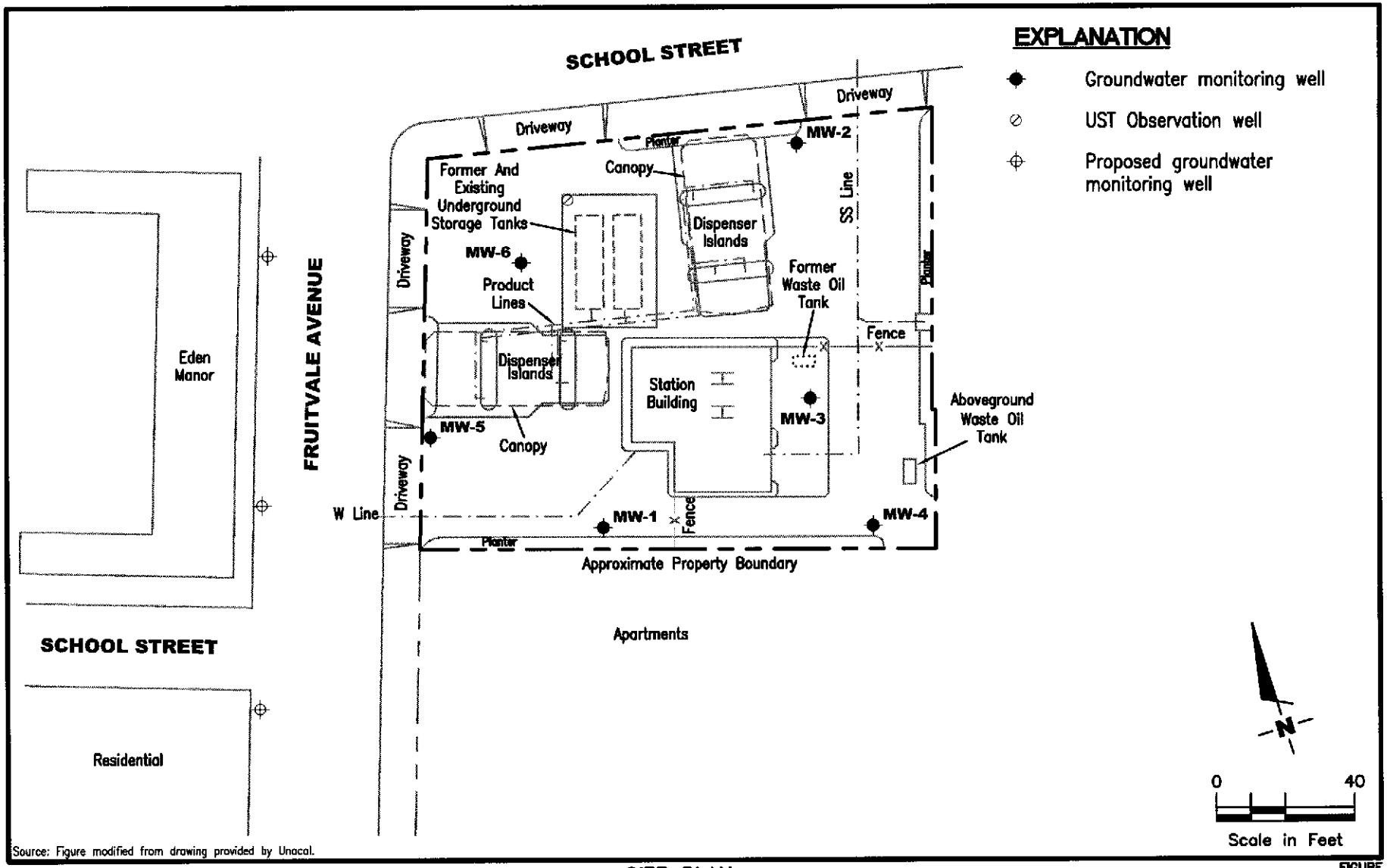

Source: Figure modified from drawing provided by Unocal.

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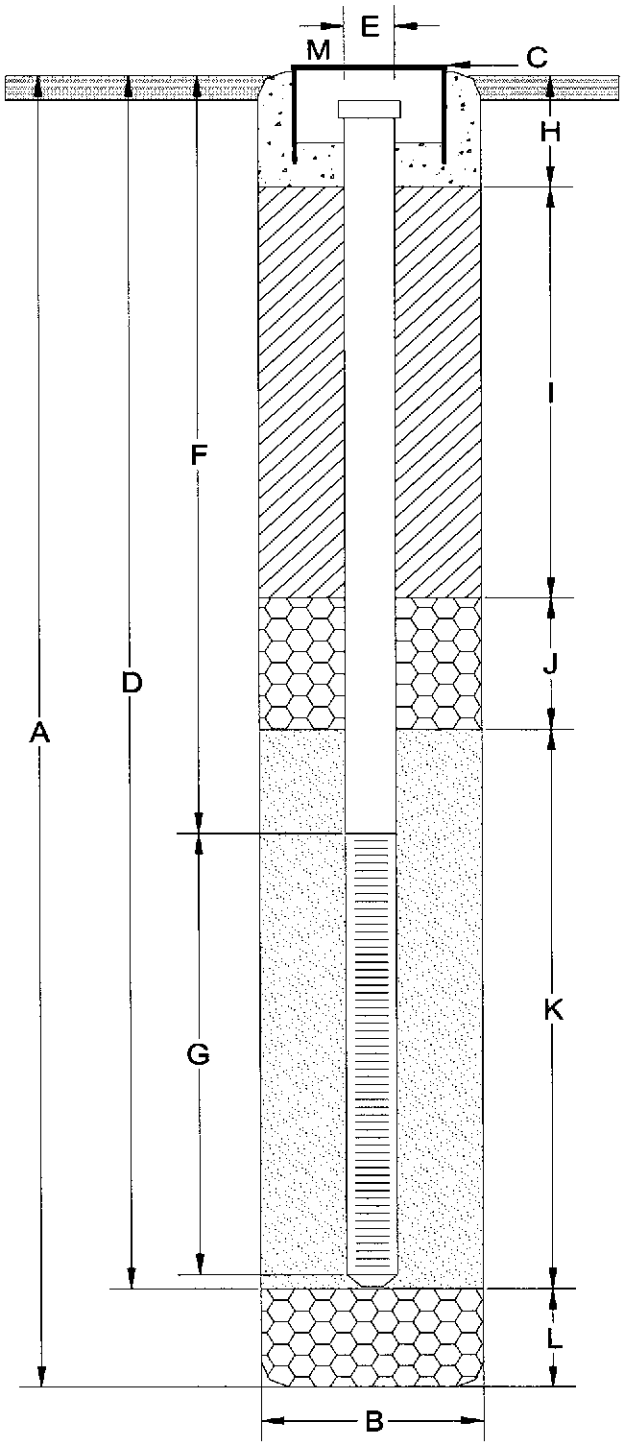
SITE PLAN
ConocoPhillips (76) Service Station #4625
3070 Fruitvale Avenue
Oakland, California

FIGURE
2

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
140158.06		7/03	

FILE NAME: P:\ENVIRO\CONOCOPHILLIPS-TOSCO\4625\AD0-4625.DWG | Layout Tab: Work Plan 7-03

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 To be surveyed ft.
[X] 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 5 ft.

G Perforated Length 20 ft.
Perforated Interval from 5 to 25 ft.
Perforation Size 0.02 in.

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

I Backfill from 1 to 2 ft.
Backfill Material Neat Cement

J Seal from 2 to 4 ft.
Seal Material Hydrated Bentonite

K Gravel Pack from 4 to 25 ft.
Pack Material Lonestar #3 Sand

L Bottom Seal NA ft.
Seal Material NA

M Traffic-rated, water resistant well box with locking expandable well plug with ConocoPhillips lock.

Note: Depths measured from initial ground surface.

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Proposed Well Construction Detail
ConocoPhillips (76) Station #4625
3070 Fruitvale Avenue
Oakland, California

FIGURE
3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE	REVISED DATE
140158.6	JAS	07/01/03		

APPENDIX A

GR FIELD METHODS AND PROCEDURES

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 of these plans contents 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

Exploratory 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 exploratory soil boring with a split-barrel sampler or other appropriate sampling device fitted with clean brass 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 soil is 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 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. 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 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.

Stockpile Sampling

Stockpile samples consist of four individual sample liners collected from each 100 cubic yards (yd^3) of stockpiled soil material. Four arbitrary points on the stockpiled material are chosen, and discrete soil sample is collected at each of these points. Each discrete stockpile sample is collected by removing the upper 3 to 6 inches of soil, and then driving the stainless steel or brass tube into the stockpiled material with a wooden mallet or hand driven soil sampling device. The sample tubes are then covered on both ends with teflon sheeting or aluminum foil, capped,

labeled, placed in the 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.

Construction of Monitoring Wells

Monitoring wells are constructed in the exploratory 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 cap. A lock is placed on the well cap to prevent vandalism and unintentional introduction of materials into the well.

Storing and Sampling of Drill Cuttings

Drill cuttings are stockpiled on plastic sheeting or stored in drums depending on site conditions and regulatory requirements. Stockpile samples are collected and analyzed on the basis of one composite sample per 50 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 then driving the stainless 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.

Wellhead Survey

The top of the newly-installed well casing is surveyed by a California-licensed Land Surveyor to mean sea level (MSL).

Well Development

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

Groundwater Monitoring and Sampling

Decontamination Procedures

All physical parameter measuring and sampling equipment are decontaminated prior to sample collection using Alconox or equivalent detergent followed by steam cleaning with deionized water. During field sampling, equipment placed in a well are decontaminated before purging or sampling the next well by cleaning with Alconox or equivalent detergent followed by steam cleaning with deionized water.

Water-Level Measurements

Prior to sampling each well, the static water level is measured using an electric sounder and/or calibrated portable oil-water interface probe. Both static water-level and separate-phase product thickness are measured to the nearest ±0.01 foot. The presence of separate-phase product is confirmed using a clean, acrylic or polyvinylchloride (PVC) bailer, measured to the nearest ±0.01 foot with a decimal scale tape. The monofilament line used to lower the bailer is replaced between borings with new line to preclude the possibility of cross-contamination. Field observations (e.g. product color, turbidity, water color, odors, etc.) are noted. Water-levels are measured in wells with known or suspected lowest dissolved chemical concentrations to the highest dissolved concentrations.

Sample Collection and Labeling

A temporary PVC screen is installed in the boring to facilitate a grab groundwater sample collection. Samples of groundwater are collected from the surface of the water in each well or boring using the teflon bailer or a pump. The water samples are then gently poured into laboratory-cleaned containers and sealed with teflon-lined caps, and inspected for air bubbles to check for headspace. The samples are then labeled by an adhesive label, noted in permanent ink, and promptly placed in an ice storage. A Chain-of-Custody Record is initiated and updated throughout handling of the samples, and accompanies the samples to the laboratory certified by the State of California for analyses requested.