

THRIFTY OIL CO.

September 22, 2010

O.106473

Mr. Paresh Khatri
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Local #RO0000004
RWQCB #01-1478

RE: **Former Thrifty Oil Co. Station #049**
3400 San Pablo Avenue
Oakland, CA 94612

RECEIVED
11:49 am, Sep 28, 2010
Alameda County
Environmental Health

Verification Sampling and Downgradient Investigation Workplan

Dear Mr. Khatri:

In a letter dated August 26, 2010, regarding former Thrifty Oil Co. (Thrifty) Station #049 located at 3400 San Pablo Avenue, Oakland, California (**Figure 1**), the Alameda County Health Care Services (ACHCS) requested that Thrifty submit a Verification Sampling and Downgradient Investigation Workplan (Workplan). In a subsequent telephone conversation on September 1, 2010 between Thrifty and ACHCS, Thrifty proposed the installation of one off-site groundwater and soil sample location and two on-site verification locations (**Figure 2**). On September 1, 2010, Thrifty sent an email to the ACHCS outlining the scope of work proposed during the September 1, 2010 telephone conversation and the schedule for proposed activities. This Workplan will supersede the *Revised Workplan for Additional Off-site Assessment* dated July 18, 2007 and the *Encroachment Permit Delays and Request for Revised Monitoring Well and Soil Boring Locations* dated September 27, 2007.

PREVIOUS SITE ASSESSMENT AND REMEDIATION ACTIVITIES

In July 1986, Groundwater Technology, Inc. drilled six soil borings (SB-1 through SB-3 and MW-1 through MW-3) to depths of 25 feet below ground surface (bgs), and completed three of the borings as groundwater monitoring wells (MW-1 through MW-3). Groundwater was encountered at approximately 10 feet bgs during drilling. Laboratory results of soil samples indicated a maximum concentration of 67 mg/Kg TPHg, as found in boring SB-1 at 9 feet bgs. TPHg concentrations in groundwater samples ranged from 2,100 µg/L (MW-3) to 93,700 µg/L (MW-2).

In December 1986, Woodward-Clyde Consultants advanced four borings to 15 feet bgs and converted all of the borings to groundwater monitoring wells (MW-4 through MW-7). Laboratory analysis of soil samples indicated up to 1,200 mg/Kg TPHg and 12 mg/Kg benzene, as detected in a sample collected from MW-4 at 6.75 feet bgs. Laboratory analysis of groundwater samples indicated up to 97 mg/L TPHg and 2.6 mg/L benzene, as detected in a sample from well MW-4. Free product was observed in wells MW-1 and MW-4 during groundwater sampling activities. Free product was subsequently removed by hand-bailing.



In September 1987, Hydrotech Consultants, Inc. drilled five soil borings (B-1 through B-5) to depths of 16 feet bgs (with exception of boring B-4, which was abandoned at 4 feet bgs due to the present of underground vent lines). The vent lines were not damaged. TPH was detected in a soil sample from B-2 at 5 feet bgs which contained 3,600 mg/Kg TPH, and the remaining soil samples were non-detect.

In December 1988, Thrifty started free product recovery and groundwater monitoring activities. Free product was extracted from wells MW-1 and MW-4 by hand bailing.

In October 1989, WCC installed a six-inch diameter recovery well (RW-1). A total fluids ejector pump system was placed in the recovery well. The system pumps extracted groundwater and floating product through the oil/water separator, then to a holding tank, and finally through a pair of activated carbon filters to remove the dissolved hydrocarbons before being discharged into the sanitary sewer. A discharge permit was obtained from East Bay Municipal Utility District (EBMUD) prior to discharging the treated water.

Site remedial activities were initiated in April 1991. The remediation equipment consisted of a Groundwater Treatment System using activated carbon, with groundwater extraction from recovery well RW-1.

In June 1997, Pacific Environmental Group, Inc. drilled ten 10-foot soil borings (TDD-1 through TDD-10) to depths of approximately 10 feet bgs. Results of soil sample analyses indicated up to 2,800 mg/Kg TPHg; 12 mg/Kg benzene; and 15 mg/Kg MTBE in TDD-4 at 5'.

In March 1998, the four former USTs and associated piping were removed from the site and replaced with two double-walled USTs. Soil samples collected during tank removal activities indicated up to 7,900 mg/Kg TPHg, 65 mg/Kg benzene; and 40 mg/Kg MTBE. As an interim remedial action, approximately 1,093 tons of hydrocarbon-impacted soils were excavated and transported to TPS Technologies facility in Adelanto, California for treatment. Groundwater was encountered at 7 feet bgs during excavation. Groundwater sample analyses indicated TPHg concentrations ranging from 36,000 µg/L to 130,000 µg/L; benzene concentrations ranged from 650 µg/L to 4,900 µg/L, and MTBE concentrations ranged from 33,000 µg/L to 150,000 µg/L. The groundwater accumulated during the tank replacement was pumped out of the tank excavation pit into a 20,000 gallons Baker's tank, and the water was treated using the existing groundwater remediation system at the site. The total pit water treated during tank replacement was 7,000 gallons.

On December 9, 2002, Thrifty submitted a Workplan for Additional Site Assessment and System Upgrade, and an Addendum to the Workplan on February 28, 2003. In a letter dated June 24, 2003, the workplan and its addendum were subsequently approved by the Alameda County Health Care Agency (ACHCA).

On April 4, 2003, the system was shut off for upgrade activities. As of April 4, 2003, the system treated approximately 1,445,088 gallons of groundwater since start up (April 1991).

In 2004, Thrifty selected Advanced GeoEnvironmental (AGE) to conduct remedial system upgrade activities including; installation of a new treatment compound, installation of new piping, connection of piping to the replacement well network, and the operation and maintenance of the upgraded groundwater pump and treat system.

In January 2004, AGE abandoned wells MW-2, MW-4, and RW-1 and replaced them with wells MW-2R, MW-4R, and RW-1R. AGE also completed four (4) offsite soil borings (B-1 through B-4).

In a transmittal letter dated March 11, 2004, Thrifty submitted preliminary soil and groundwater data from the four offsite soil borings and onsite well replacement activities performed by AGE. On March 18, 2004, Thrifty, AGE, and the Alameda County Health Care Services (ACHCS) met at the site to discuss the location of offsite well MW-8 and the soil and groundwater data provided by Thrifty. In a letter dated March 19, 2004, the ACHCS requested that Thrifty prepare a workplan to address the offsite contamination detected during the January 2004 site assessment conducted by AGE. After further discussing the scope of work with the ACHCS in an e-mail dated April 27, 2004, Thrifty submitted a workplan to install one onsite and two offsite wells downgradient of the site. The ACHCS responded in an e-mail dated May 4, 2004, requesting additional borings to delineate the plume to the west and southwest of the site. Thrifty submitted a revised Workplan for Additional Offsite Assessment dated May 7, 2004 that included two additional borings to the southwest of the site.

In a letter dated May 17, 2004, the ACHCS approved the May 7, 2004, workplan with the request that additional borings be considered if soil and groundwater samples indicate significant hydrocarbon contamination. The ACHCS also suggested moving the location of onsite well MW-10 slightly to the west to be more downgradient of the Shell Station.

On June 21, 2004, the upgraded remediation system was restarted by AGE for continuous operation. The primary components of the upgraded system within the treatment compound consist of an air compressor, 500 gallon Poly settling tank, control panel, and three 200-pound granular activated carbon canisters. The upgraded system is extracting groundwater from extraction wells MW-2R, MW-4R, and RW-1R that are each equipped with downhole submersible pumps.

On November 2, 2004, AGE reported that the pump had been stolen from well MW-4R. Because well MW-4R was producing more water than well MW-2R, the pump from well MW-2R was removed and installed in well MW-4R. On February 25, 2005, a new pump was installed in well MW-4R and the existing pump was replaced in well MW-2R.

On January 12, 2005, system operations and maintenance duties were assumed by Earth Management Company (EMC) from AGE.

On May 18, 2007, ACHCS sent a letter to Thrifty with technical comments regarding: the dissolved hydrocarbon plume characterization; proposed soil boring installation and soil sampling; well installation and development; preferential pathway study; soil and groundwater chemical analysis; and site conceptual model development. ACHCS requested the preparation of a Revised Workplan for Soil and Groundwater Investigation with Revised Site Conceptual Model and Updated Preferential Pathway Study and a Soil and Groundwater Investigation Report.

On July 18, 2007, Thrifty submitted a *Revised Workplan for Additional Off-Site Assessment* (Workplan). The Workplan proposed three offsite soil borings, three offsite groundwater wells and one onsite groundwater well. The Workplan also proposed completing a revised preferential pathway study and revised site conceptual model. On August 7, 2007 the Alameda County Health Care Services Agency (ACHCS) provided approval for the Workplan.

In a letter dated August 7, 2007, ACHCS requested that Thrifty Oil Co. (Thrifty) provide an explanation for the inconsistent groundwater monitoring data observed in the analytical results of groundwater samples collected during the first and second quarter of 2007. On August 21, 2007 Thrifty submitted an *Explanation*

of *Fluctuating Dissolved-Phase Hydrocarbon Concentrations* in response to the August 7, 2007 ACHCS letter.

On August 8, 2007 Thrifty contacted the City of Oakland and requested an encroachment permit application package for the proposed offsite groundwater well locations on San Pablo Avenue, Oakland.

Thrifty's legal representatives have had numerous communications City of Oakland Attorneys office regarding encroachment permit requirements but to date no agreement has been reached and Thrifty no longer proposes to install offsite groundwater monitoring wells on San Pablo Avenue.

On September 13, 2007 Equipoise (EQC) on behalf of Thrifty submitted a *Request for Extension* letter to the ACHCS. EQC had submitted requests to both the DWR and ACPW for production well information needed for the Revised Preferential Pathway Study. As of September 13, 2007 EQC had not received a response from either agency a therefore requested that the ACHCS provide an extension of the due date of the requested report.

On September 27, 2007, Thrifty submitted an "Encroachment Permit Delays and Request for Revised Well and Soil Borings Locations" letter to the ACHCS. The letter indicated that Thrifty was still negotiating with the City of Oakland regarding the encroachment permits for the wells proposed in San Pablo Avenue, Oakland, but requested that the ACHCS consider revised well locations (which were proposed on private property).

On November 6, 2007, ACHCS sent a letter to Thrifty responding to Thrifty's September 27, 2007 letter and indicated that moving the monitoring wells MW-8, MW-9, and MW-11 to adjacent private properties was acceptable provided the new locations of the monitoring wells are as close as practicable to the sidewalk at each location.

On November 13, 2007, EQC submitted the Revised Preferential Pathway Study (PPS) which discussed the results of the nearby well survey.

Thrifty and EQC identified and contacted the property owners for the three proposed offsite well locations (MW-8, MW-9 and MW-11). Site access agreements were sent via certified mail to each property owner on December 7, 2007.

On January 9, 2008, Thrifty sent an Access Agreement Progress Report to the ACHCS requesting the agencies assistance in obtaining access from the adjacent property owners. In response to Thrifty's request, Steven Plunkett of the ACHCS concurrently sent letters dated January 31, 2008 to the adjacent property owners requesting that they execute the access agreements sent by Thrifty; otherwise they could potentially be responsible for the cost of environmental assessments on their properties.

On February 12, 2008, Thrifty received an executed access agreement from the Vern Lenberg LLC (executed by Mr. Vernon Coleman) for the property located at 3431 San Pablo Avenue, Oakland, California.

The access agreement Thrifty sent to the Moriah Christian Fellowship Baptist Church, Inc located at 3354 San Pablo Avenue Oakland, CA 94608 (the Church), was returned to Thrifty on March 14, 2008. It appears that the post office attempted delivery the package on 12/13/07 and 3/8/08, and finally returned it to Thrifty with a "final notice" and "unable to forward" stamps on the front of the package.

In early May 2008, executed access agreements were received by Thrifty from Mr. Jack Tse and Mr. and Mrs. Kelvin Tse and on May 19, 2008 Thrifty executed the agreements and mailed copies back to the respective parties.

On June 25, 2008, Steven Plunkett of the ACHCS contacted Simon Tregurtha (a Thrifty representative) via the telephone and stated he had recently been in contact with a representative of the Church regarding the placement of a groundwater monitoring well on their property. Steven Plunkett said that the Church representative had indicated they would be reviewing the access agreement and would return a signed copy to Thrifty in the near future.

On April 22, 2008 Thrifty submitted the *Workplan for Five Bi-Weekly 24-Hour Mobile Dual Phase Extraction Events*. The Workplan proposed conducting five bi-weekly 24-hour mobile DPE events as an interim remedial action in order to supplement current groundwater pump-and-treat operations, accelerate the remediation of the groundwater and soil contamination at the site, and expedite case closure. Historical groundwater analytical data indicates a decreasing trend in dissolved-phase hydrocarbon concentrations at the site with the plume currently being limited to the area of wells MW-2R, MW-4R, and RW-1R. Thrifty proposed using onsite wells MW-2R, MW-4R, and RW-1R as simultaneous extraction points, and wells MW-1, MW-3, and MW-7 as observation wells.

On September 19, 2008, Simon Tregurtha contacted Steven Plunkett via the telephone and stated that Thrifty has not received an executed access agreement from the Church. Mr. Plunkett stated that he was going to enlist the help of the local fire department to convince the Church of the need to sign the access agreement. During the conversation, Mr. Tregurtha expressed his concern that the hydrocarbon plume associated with the adjacent Shell station has migrated into the subsurface soils and groundwater of Thrifty Station #049 property. This same concern was expressed in the Second Quarter 2008, Third Quarter 2008, Fourth Quarter 2008, First Quarter 2009, Second Quarter 2009, and Second Semester 2009 Groundwater Status Report's. Thrifty respectively requested that the ACHCS direct Shell to take measures to mitigate the southern migration of their hydrocarbon plume.

In a letter, dated July 29, 2008 the ACHCS stated that they did not agree with the scope of work proposed in Thrifty's Workplan and directed Thrifty to submit a *Feasibility Study and Corrective Action Plan (FS/CAP)*. Thrifty submitted the FS/CAP on September 25, 2008. The FS/CAP proposed conducting a 5 consecutive day (24hours/day) MPE event.

In the Fourth Quarter 2008 Status Report dated January 12, 2009, Thrifty stated that 60-days had elapsed since the FS/CAP was submitted and therefore it was approved by default. Thrifty indicated that it would proceed with the implementation of the FS/CAP under the "60-day rule."

In a letter dated July 22, 2009, the ACHCS indicated that groundwater monitoring was to be completed at the site on a semi-annual basis in accordance with California State Water Resources Board Resolution No. 2009-0042. In accordance with California State Water Resources Board Resolution No. 2009-0042, Thrifty now conducts the groundwater monitoring, sampling and reporting for the site during the Second and Fourth Quarters only.

On February 9, 2010, Thrifty submitted a *Notification to Proceed with the Proposed 5 Consecutive Day (24-hour/Day) Multi-Phase Extraction Event* letter (the Letter). In the Letter, Thrifty indicated that they would proceed with implementation of the MPE event under the "60-day rule" since more than 60-days had passed

since the September 25, 2008 FS/CAP had been submitted.

From March 22 through 26, 2010, CalClean Inc. completed the 5 Consecutive Day MPE (HVDPE) event. The FS/CAP proposed conducting the MPE event using three onsite wells MW-2R, MW-4R, and RW-1R which are equipped with downhole pumps and an SVE unit supplied by CalClean. During the HVDPE event, the downhole pumps were removed from wells MW-2R, MW-4R, and RW-1R and downhole stingers were used to extract the groundwater. During the mobile 5-day HVDPE event, approximately 12,840 gallons of groundwater and 510.40 pounds of hydrocarbons (as vapor) were removed. The hydrocarbon removal rate over the 5-days was approximately 4.25 pounds per hour. The treated groundwater was pumped to the onsite sewer system in accordance with an East Bay Municipal Utility District discharge permit # 50244452. The details of the 5-day HVDPE event were presented in the *Continuous 30-Day Mobil High Vacuum Dual-Phase Extraction Report and Workplan to Conduct a Continuous 30-Day Mobile High Vacuum Dual-Phase Extraction Event* report (Workplan) submitted on April 21, 2010.

From August 4 through September 4, 2010, CalClean Inc. completed the 30 Consecutive Day MPE (HVDPE) event in accordance with the April 21, 2010 Workplan. Wells MW-2R, MW-4R, and RW-1R were used as extraction wells. During the mobile 30-day HVDPE event, approximately 12,869 gallons of groundwater and 1,613.97 pounds of hydrocarbons (as vapor) were removed. The hydrocarbon removal rate over the 30-days was approximately 2.24 pounds per hour. The treated groundwater was pumped to the onsite sewer system in accordance with an East Bay Municipal Utility District discharge permit # 50244452. A report summarizing the results of the mobile 5-day HVDPE event will be submitted by the end of September 2010.

The groundwater remediation system has pumped and treated a cumulative total of 2,473,746 gallons of groundwater as of June 9, 2010.

Ongoing environmental activities at the site include the continued operation of the groundwater remediation system, semi-annual groundwater monitoring, sampling, and submitting semi-annual reports to the Agency.

PROPOSED SITE ASSESSMENT ACTIVITIES

In response to the ACHCS letter dated August 26, 2010, Thrifty proposes installing two onsite verification soil borings (SB-1 and SB-2) and one off-site groundwater/soil sample location (SB-3).

Proposed Onsite Verification Soil Borings

One of the soil borings (SB-1) will be installed immediately south of the existing dispenser islands and the second onsite verification soil boring (SB-2) will be installed just southwest and downgradient of groundwater well MW-4R and the former USTs (**Figure 2**). The soil borings will be advanced to a maximum depth of 20 feet bgs, with soil samples collected at 5-foot intervals using a direct-push rig. The purpose of the onsite soil borings is to characterize the current sub-surface soil conditions in the contamination source areas (the dispenser islands and former USTs).

Proposed Offsite Verification Soil/Groundwater Sample Location

One groundwater/soil sample location (SB-3) will be installed on private property located at the south corner of Linden Street and San Pablo Avenue (**Figure 2**). SB-3 boring will be advanced to a maximum depth of 20 feet bgs, with soil samples collected at 5-foot intervals and a non-purge groundwater sample collected at first encountered groundwater using a direct-push rig. The purpose of the offsite soil/groundwater sample boring is to characterize the current downgradient sub-surface soil conditions and to define the downgradient limit of

the dissolved-phase contamination plume.

Pre-field Activities

The location of offsite groundwater/soil sample location SB-3 has been proposed within the boundary of the property located at 3315 San Pablo Avenue, Oakland, CA (**Figure 2**). Thrifty obtained an access agreement from the owners of the above-mentioned property (Mr. Jack Chi Tse, Mr. Kevin Y Tse and Ms. Linda Y Tse) on May 13, 2008 and will provide the owners 10-days notification prior to conducting the drilling.

Prior to conducting the work, a site specific Health and Safety Plan (HSP) will be prepared and submitted to the ACHCS for approval at least 1 week prior to conducting any field work. The field activities will conform to the approved HSP. The HSP will be onsite during any field work.

Prior to drilling, soil boring permits will be obtained from the ACHCS. The boring/well locations will be properly marked and Underground Service Alert and the ACHCS will be notified of the scheduled field activities. A geophysical survey will be conducted to clear each borehole in order to protect underground utilities.

Boring Installations

A C-57 licensed drilling contractor will install the 3 proposed soil borings (SB-1, SB-2, and SB-3) to approximately 20-foot bgs using a direct-push drilling rig equipped with 1-1/2 inch steel push rods. The initial 5 feet of each boring will be advanced with a hand auger and/or post hole digger to reduce the possibility of damaging underground utilities. Upon completion, the soil boring locations will be backfilled with bentonite chips and sealed to match existing surface conditions.

Soil Sample Collection and Analysis

Soil samples will be collected for laboratory analysis at 5-foot intervals with additional samples collected based upon PID readings and the presence or hydrocarbon staining or odor. The ends of the least disturbed intact tube from each sample interval will be lined with Teflon™ sheets, capped, and sealed. Each sample will then be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. The samples will remain chilled until relinquished to a state-certified analytical laboratory. Strict chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are signed over to the laboratory. Soil contained in the remainder of the acetate liners will be screened for volatile organic compounds using a hand held photo-ionization detector (PID) and recorded on the boring log. Soil types, PID readings, and other pertinent geologic data will be recorded on the boring log. The samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes (BTEX), and selected oxygenated compounds (including methyl tert butyl ether [MTBE] and tert-butyl alcohol [TBA]) by EPA Methods 8015M and 8260B.

Groundwater Sample Collection and Analysis

A non-purge groundwater sample will be collected from SB-3 boring at first encountered groundwater. All equipment used during sampling will be washed with non-phosphate base detergent then rinsed with clean potable water followed by deionized water. New and dedicated disposable bailers will be utilized to collect groundwater samples. Strict chain-of-custody protocols will be followed during sampling according to state and local regulatory requirements. The groundwater sample will be delivered in a chilled state following strict Chain-of-Custody procedures to a state certified laboratory. The sample will be analyzed for TPHg, BTEX, and selected oxygenated compounds (including MTBE and TBA) by EPA Methods 8015M and 8260B.

Waste Disposal

All generated drill cuttings and waste water will be stored onsite in properly labeled DOT-approved 55 gallon drums pending their proper disposal.

All field work will be performed under the supervision of a California Professional Geologist or Professional Engineer.

Report Preparation

A report will be prepared in full compliance with regulatory requirements and will include at a minimum, a summary of field activities, a detailed site history; geology, topography, and hydrogeology; historical groundwater and soil data; soil and groundwater isoconcentration maps with historic and current data for TPHg, benzene and MTBE; groundwater elevation map; two detailed cross sections. The report will also contain conclusions and recommendations for future assessment or case closure, if appropriate.

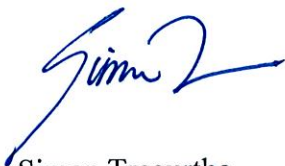
Proposed Schedule

Following your approval, Thrifty will select a consultant to supervise the scope of work proposed in the Workplan. Thrifty estimates that the site assessment field activities will be completed within 60-days of your approval with the final report being submitted 45-days following the receipt of laboratory results.

Should you have any questions regarding this workplan, please contact or the undersigned at (562) 921-3581, Ext. 390 (Chris) or 260 (Simon).

I declare, under penalty of perjury, that the information and/or recommendations contained in this document are true and correct to the best of my knowledge.

Respectfully submitted,



Simon Tregurtha
Project Manager



Larry Higinbotham
Registered Geologist



Chris Panaitescu
General Manager
Environmental Affairs

cc: BP West Coast Products LLC, Mr. John Skance
File

FIGURES

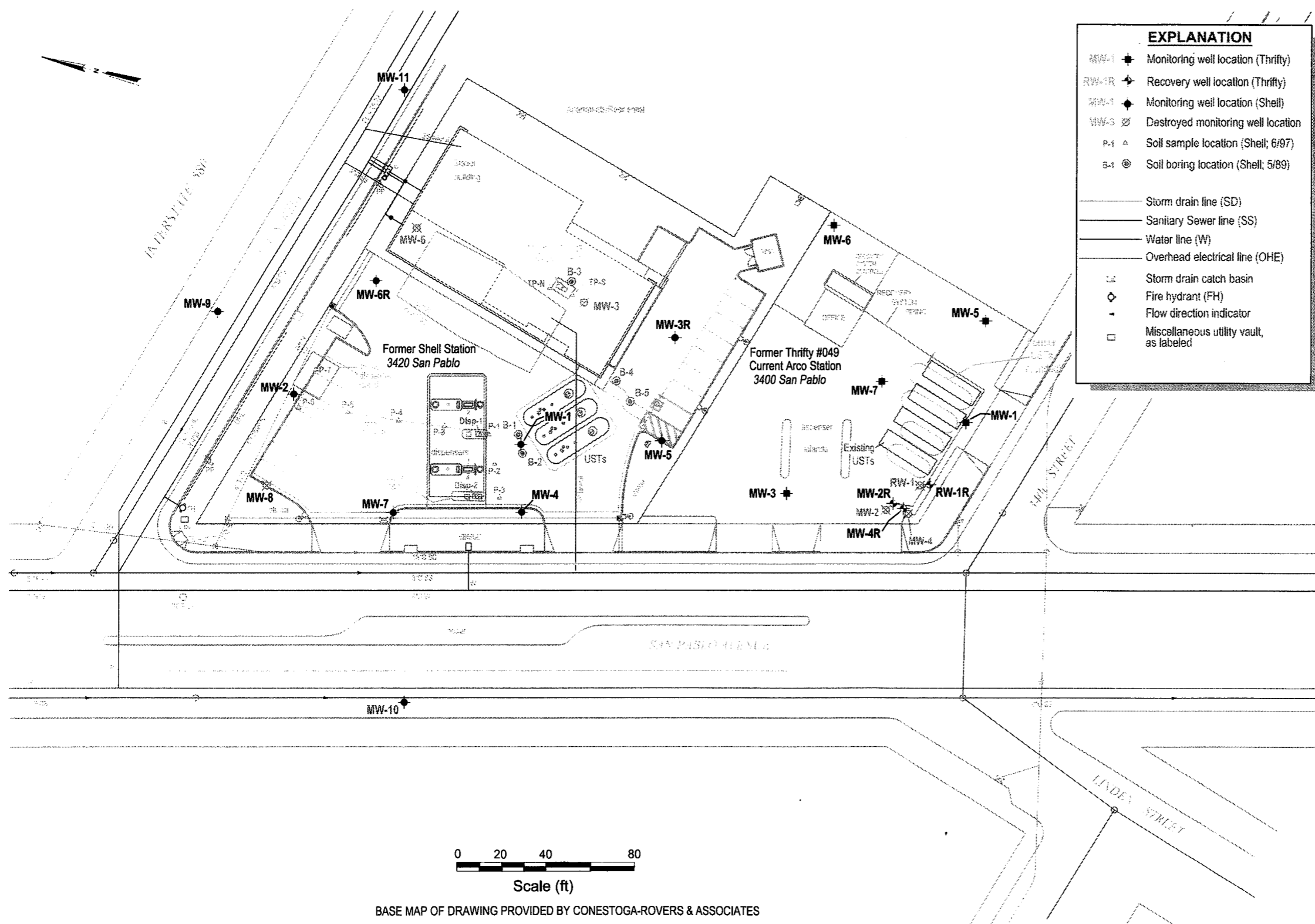


FIGURE: **1**
 REVISION NO: **0**
 DATE: **06/07**

SITE PLAN
 Thrifty Service Station #049
 3400 San Pablo Avenue
 Oakland, California

BASE MAP OF DRAWING PROVIDED BY CONESTOGA-ROVERS & ASSOCIATES

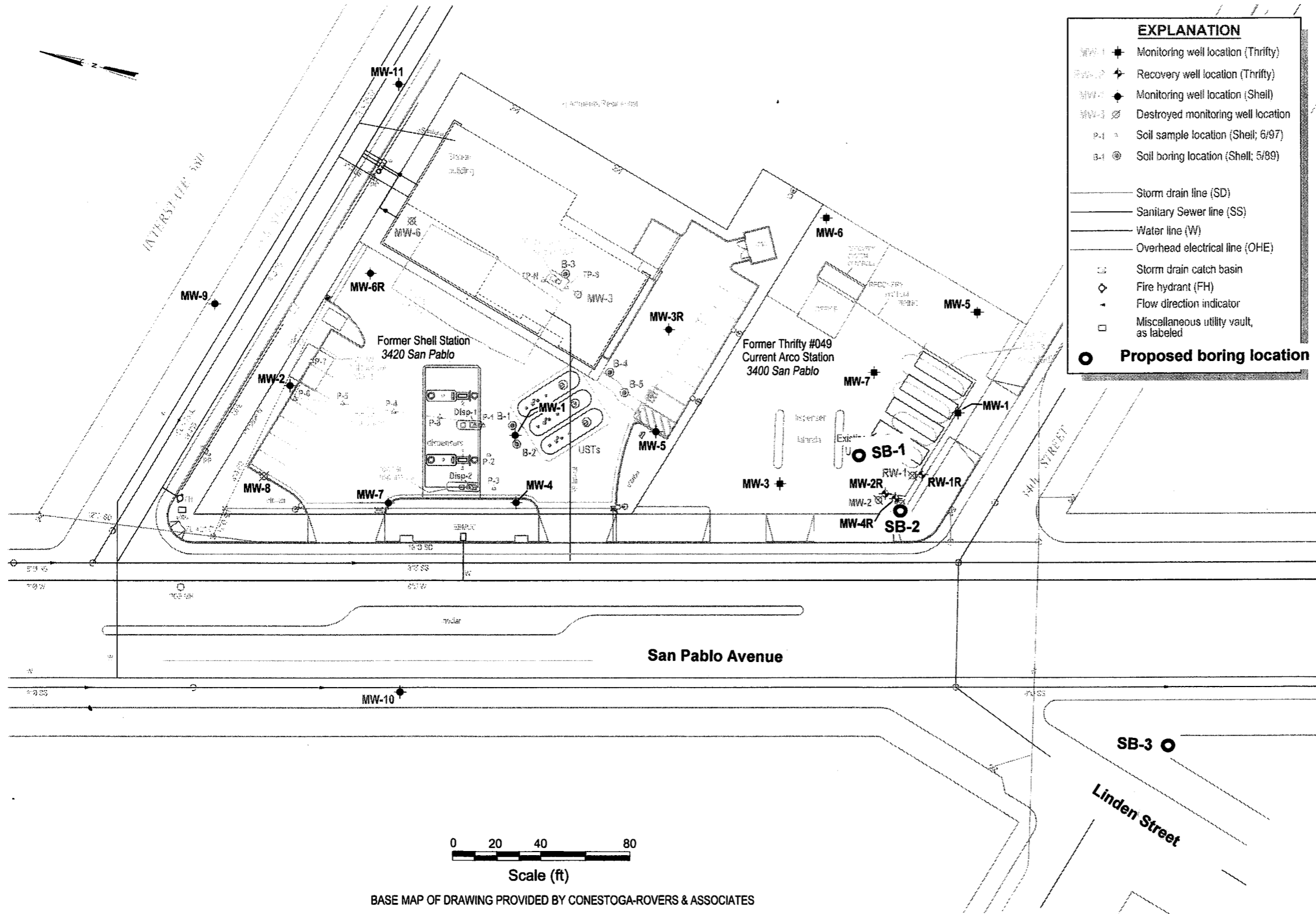
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FIGURE:

REVISION NO: 0

DATE: 06/07

SITE PLAN
Thrifty Service Station #049
3400 San Pablo Avenue
Oakland, California



EXPLANATION	
MW-1	Monitoring well location (Thrifty)
RW-1R	Recovery well location (Thrifty)
MW-2	Monitoring well location (Shell)
MW-3	Destroyed monitoring well location
P-1	Soil sample location (Shell; 6/97)
B-1	Soil boring location (Shell; 5/89)
— Storm drain line (SD)	
— Sanitary Sewer line (SS)	
— Water line (W)	
— Overhead electrical line (OHE)	
□	Storm drain catch basin
◇	Fire hydrant (FH)
▲	Flow direction indicator
□	Miscellaneous utility vault, as labeled
○	Proposed boring location

BASE MAP OF DRAWING PROVIDED BY CONESTOGA-ROVERS & ASSOCIATES