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July 9, 2015

RECEIVED
By Alameda County Environmental Health 11:12 am, Jul 14, 2015

Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **76 Service Station No. 1156 (351645)**
4276 MacArthur Boulevard, Oakland, California

ACEH Case No. RO0000409
RWQCB Case No. 01-2474
GeoTracker Global ID T0600102279

I have reviewed the attached *Aquifer Test Report* dated July 14, 2015.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by AECOM, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13257(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Nicole Arceneaux
Project Manager

Attachment: *Aquifer Test Report*

Prepared for:
Chevron Environmental
Management Company
San Ramon, CA

Prepared by:
AECOM
Camarillo, CA
60343407
July 2015

Aquifer Test Report

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

ACEH Case No. RO0000409
RWQCB Case No. 01-2474

AECOM

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July 2015

Aquifer Test Report

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

ACEH Case No. RO0000409
RWQCB Case No. 01-2474

This document was prepared consistent with currently and generally accepted environmental consulting principles and practices. The material and data in this report were prepared under the supervision and direction of the undersigned.

Carmen Caceres-Schnell, PG
Project Geologist

Date stamped: 7-14-15

Chad Roper, PhD
Senior Project Manager

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1.0 Introduction

On behalf of Chevron Environmental Management Company's (EMC's) affiliate, Union Oil Company of California ("Union Oil")", AECOM is pleased to submit this Aquifer Test Report for 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California (Alameda County Health Care Services Agency, Environmental Health Services [ACEH] Case No. RO0000409, San Francisco Regional Water Quality Control Board [RWQCB] Case No. 01-2474) (**Figure 1**) (site). This Report has been prepared in response to the ACEH letter dated March 16, 2015 (**Appendix A**).

The following sections summarize the site background; pre-field activities; pump testing objectives, conditions, and results. The results include rates of groundwater produced from the site, calculations of hydraulic transmissivity and conductivity, and a discussion of observations regarding the radius of influence. Finally, the report makes recommendations for future efforts at the site.

2.0 Site Background

2.1 Site Description

The site is a 76 service station located at the northern corner of the intersection of MacArthur Boulevard and High Street within the city of Oakland, California (**Figure 1**). The station building is in the northern portion of the site. An automotive service bay is in the northern portion of the building and a mini-mart/cashier area is in the southern portion. Two dispenser islands are located on the southern portion of the site: one parallel to MacArthur Boulevard and one parallel to High Street. Previously prepared environmental documents (e.g., Delta Consultants [Delta] 2010a; 2010b) indicate that two 10,000-gallon gasoline underground storage tanks (USTs) are located in the southwestern portion of the site (**Figure 2**).

2.2 Site Vicinity Use

The site area consists of mixed commercial and residential development, with the following adjacent property uses (**Figure 2**):

- Northwest – The Oakland Veterinary Hospital (4258 MacArthur Boulevard) abuts the site to the northwest, beyond which is a pharmacy drug store.
- North and northeast – Single-family residences (4257 Masterson Street and 3627 High Street) abut the site to the north and northeast.
- East and southeast – High Street borders the site to the southeast, beyond which are a post office, apartment building (3618 to 3622 High Street), and commercial businesses (4300 to 4312 MacArthur Boulevard). Based on a review of the State Water Resources Control Board's GeoTracker database, a leaking underground storage tank (LUST) site was formerly located at 4300 MacArthur Boulevard – Chevron gasoline service station #93676 (Case No. 01-0371 which was closed in 1999).
- South – A vacant lot is located south of the site, beyond the intersection of MacArthur Boulevard and High Street. The GeoTracker database indicates that an open LUST case is located in this area, the former Robert's Tires facility, 4311-4333 MacArthur Boulevard (Case No. 01-3601).
- Southwest and west – MacArthur Boulevard borders the site to the southwest, beyond which are a vacant lot and commercial businesses. The GeoTracker database indicates that Shell gasoline service station #13-5701 (4255 MacArthur Boulevard) was formerly located at the vacant lot. There is an open LUST case (Case No. 01-1366) associated with the former Shell service station.

Site and neighboring property uses are not expected to change significantly in the near future. The vacant lots are not expected to be redeveloped without resolution of the open LUST cases.

2.3 Topography and Site Elevation

The site is located in a highly urbanized area of Oakland at the base of the San Leandro Hills. Based on site survey data (Morrow Surveying 2013), surface elevations at the site range from 179.42 feet above mean sea level (amsl) at MW-4B to 173.99 feet amsl at MW-2B. Observations during the area reconnaissance on March 15, 2012, further revealed that the elevation at the northeastern boundary of the site is noticeably higher than at MW-4B. Additionally, the elevation at MW-5 is 169.67 feet amsl.

MW-5 is located in the street in front of the Oakland Veterinary Hospital (adjacent to the northwestern portion of the site). To summarize, the southwestern portion of the site is at least 8 feet lower in elevation than the northeastern portion, and the western corner is approximately 4 feet lower in elevation than the southern corner.

2.4 Site Geology and Hydrogeology

Based on a review of boring logs prepared by previous consultants, the site geology consists of unconsolidated deposits of sand and silt in a clay matrix, with some intermixed fine-to-medium-grained gravel (Delta 2007; 2008; 2009a; 2009b; 2010a; 2010b). Clay is predominant in the upper lithology with sandy/silty clay and clayey sand units, between approximately 1 to 15 feet below ground surface (bgs). The clay is underlain by clay interbedded with sandy clay, clayey sand, silty sands, and some gravelly sandy clay observed to the maximum depth explored (50.5 feet bgs). Recent soil borings advanced on-site have indicated the presence of high-plasticity, fatty clays from 1 to 20 feet bgs (AECOM 2014a).

Select well construction details are presented in **Table 1**. These wells were selected because they were used in the aquifer testing. Historical site assessments concluded that there was a confined aquifer under hydrostatic pressure below the site based on the initial depth to water during well installations. Similarly, previous assessments determined that discontinuous water-bearing zones may exist within the stratified clay matrices. More recent observations, including the installation of six discreetly screened monitoring wells in March 2013, indicate that these two conclusions appear to be inaccurate. These inaccuracies were further evidenced by shallow monitoring wells (MW-9A/B, MW-10A/B, and MW-11A/B) exhibiting a hydraulic head consistent with those installed to 25 feet bgs, and that recharge (although slow) did occur after purging in 2013 (AECOM 2013). The current understanding is that groundwater is continuous and unconfined.

During the most recent groundwater monitoring event, conducted on January 27, 2015, the static groundwater elevation ranged from 163.66 feet amsl (MW-10A) to 173.24 feet amsl (MW-4B). The depth to groundwater ranged from 1.96 (MW-5) to 10.82 (MW-10A) feet below the top of well casings. Groundwater elevations observed during the January 27, 2015, event are consistent with the predominant historical groundwater flow at the site, which has been to the west (with variations to the southwest) at an average gradient of approximately 0.06 feet per foot.

2.5 Extent of Petroleum Hydrocarbon Impacts to Groundwater

Groundwater monitoring from 1999 to 2010 included monitoring of MW-1, MW-2, MW-3, and MW-4. These wells were screened from 5 to 25 feet bgs. In 2010, these wells were abandoned and replaced with monitoring wells screened from 20 to 25 feet bgs located near the former well locations. Differences in groundwater concentrations at the same well locations (but different screen intervals) indicate significant impediments to vertical contaminant transport (AECOM 2013).

Groundwater analytical data (MW-9A/B, MW-10A/B/S, and MW-11A/B/S) indicate a non-uniform vertical distribution of groundwater impacts, likely due to the fine-grained nature of the subsurface soil. Although hydrocarbon concentrations for wells screened from 10 to 15 feet bgs are the highest, horizontal migration appears to be impeded by the soil type, as the plume appears to be largely contained to the site boundaries (AECOM 2014A). Off-site, downgradient wells (MW-5 and MW-7) are screened from 5 to 25 feet bgs. Both wells have exhibited a declining trend for total petroleum hydrocarbons (TPH) as gasoline (TPHg), benzene, and methyl t-butyl ether (MTBE) since installation in 2001, suggesting that plume migration from the site is not occurring and that the plume is stable or declining. In addition, the vertical migration of hydrocarbons appears to be limited. Impacts for deep-screened wells (20 to 25 feet

bgs) are as much as four orders of magnitude less than those observed for the shallow-screened wells (10 to 15 feet bgs) (AECOM 2013).

2.6 History of Remediation

Approximately 1,350 tons of soil was excavated and removed during the gasoline UST removal activities in 1998 (Environmental Resolutions, Inc. 1998). In addition, approximately 4.6 tons of soil was overexcavated and removed during the waste-oil tank removal.

Overpurging events were conducted at as many as three wells from 2001 to 2004 (MW-1, TP-1, and MW-7). Approximately 476,015 gallons of water was removed during that period. From available historical data, 1,590 gallons was extracted from MW-7 with the remainder being extracted from TP-1 and MW-1 (AECOM 2013).

3.0 Pre-Field Activities

3.1 Health and Safety Plan

AECOM updated the existing site-specific Health and Safety Plan (HASP) to address potential physical and chemical hazards associated with aquifer testing. Additionally, Job Safety Analyses (JSAs) were prepared detailing mitigation of specifically identified hazards within the proposed scope of work. The HASP and JSAs were reviewed and approved by AECOM Health and Safety Management and EMC. Site activities conducted by AECOM and subcontractors were conducted in accordance and compliance with the approved HASP and JSAs. Copies of the HASP and JSAs are available upon request.

3.2 Permits

Groundwater extracted during the pump test was collected into a vehicle-mounted tank and has been disposed by Gettler-Ryan, Inc. All transport and disposal activities were conducted under Gettler-Ryan, Inc.'s permits.

4.0 Test Objectives and Conditions

AECOM's Remedial Technology Screening and Work Plan for Site Assessment (AECOM 2014b) stated that "Based on the heterogeneity and fine-grained nature of the soil encountered at the depths of highest petroleum impacts, MPE is likely not a feasible technology." Fine-grained, low-permeability soils are expected to limit the effectiveness of any remedial approach involving the extraction of soil vapor or groundwater from the site. In their letter dated November 19, 2014, ACEH disagreed with the conclusion that MPE was infeasible at the site and requested a work plan for evaluation of remedial technologies. These factors led AECOM to propose aquifer testing.

4.1 Objective

The pump test was conducted to evaluate the feasibility of dewatering the smear zone at this site. This pump test evaluated water production from site wells MW-1B and MW-3B and the effect that extraction had on the depth to water in nearby wells.

4.2 Well Configuration

Groundwater levels in the wells used for extraction and observation were monitored between May 5 and 18, 2015. Groundwater extraction activities were conducted on May 8 (MW-1B) and May 15 (MW-3B), 2015. Groundwater extraction was conducted from MW-1B and MW-3B individually during separate extraction events. In each location, the extraction pump depth was set at the bottom of the screened interval (approximately 25 feet bgs). The extraction wells were each equipped with a pressure transducer below the pumps to measure drawdown. Well screen intervals, construction details, initial depths to water, and initial water elevations are provided on **Table 1**. Well locations are provided on **Figure 2**.

Observations wells MW-10A, MW-10B, and MW-10S were measured as being 6, 12, and 21 feet, respectively, from extraction well MW-1B. Drawdown was measured in these wells while water was extracted from MW-1B. MW-11A, MW-11B, and MW-11S were used as observation wells when extraction was taking place from MW-3B. MW-11A is 24 feet from MW-3B. MW-11B is 29 feet from MW-3B. MW-11S is 24 feet from MW-3B. Observation wells were equipped with a data logging pressure transducers, which recorded changes in depth to water during extraction. Transducer measurements were confirmed with manual depth to water readings while pumping was occurring. The transducer in MW-11A failed to record data during the test so only MW-11B and MW-11S data are presented.

5.0 Results

A constant-rate pumping test was performed on well MW-1B, and the resulting changes in water levels were monitored in observation wells MW-10A, MW-10B, and MW-10S. A second constant-rate pumping test was performed on well MW-3B, and changes in water levels were monitored in observation wells MW-11S and MW-11B. Level-logger measurements from pump testing at MW-1B and MW-3B are presented in **Figure 3** and **Figure 4**, respectively.

For the constant-rate tests, groundwater was pumped from MW-1B and MW-3B for approximately 450 to 480 minutes each (7.5 to 8 hours) before the pump was shutoff and the water level in each well was allowed to recover. Water levels in the pumping wells and the observation wells were measured and recorded using Solinst™ Level Logger Gold pressure transducers/data loggers.

5.1 Water Production

As indicated in the field notes (**Attachment B**), the pumping rate from MW-1B was 1.5 gallons per minute initially, and the well produced 400 gallons in 420 minutes (the last volume measurement from the graduated tank before the tank was filled). The average pumping rate was 0.95 gallons per minute. This resulted in a rapid draw down (**Figure 3**) of 9 feet and a maximum draw down just over 10 feet.

Pumping from MW-3B was intended to fully dewater the well; therefore, the pump was operated intermittently. Over 8 hours of operation, 150 gallons of water was produced, indicating an average pumping rate of 0.3125 gallons per minute and a resulting maximum drawdown of approximately 13 feet (**Figure 4**).

5.2 Transmissivity and Conductivity Estimates

Non-steady state or transient analytical methods were used to evaluate the water level data. Data was analyzed using the Cooper-Jacobs (1946) method for confined aquifers. Aquifer characteristics such as transmissivity and hydraulic conductivity were derived using manual calculations of the well recovery data from MW-1B and MW-3B. The analyses and calculations used to determine estimates of aquifer characteristics are plotted on **Figure 5** and **Figure 6**, respectively. The data from the pump test revealed the following characteristics about the aquifer beneath the site:

- Aquifer Transmissivity:
  - Ranged from 19.4 to 26.7 to square feet per day, which equates to 146.7 to 201.1 gallons per day per foot.
- Hydraulic Conductivity ranged from 3.75×10^{-4} centimeters per second to 5.03×10^{-4} centimeters per second.

The calculated hydraulic conductivity values for MW-1B and MW-3B were compared to typical hydraulic conductivity values that are characteristic of unconsolidated native soils as defined in Bear (1972) and Driscoll (1986). The hydraulic conductivity values at MW-1B and MW-3B are characteristic of soils ranging from silt to layered clays.

5.3 Radius of Influence

After 7.5 hours of pumping on MW-1B, the maximum drawdown in observation wells MW-10A, MW-10B, and MW-10S were plotted in an attempt to estimate the radius of influence for dewatering. As can be seen in **Figure 3**, minimal drawdown (less than [< 2 feet) was observed in MW-10A when pumping was occurring at MW-1B. Although these wells are screened in different depth intervals (MW-1B is screened from 20 to 25 feet bgs, and MW-10A is screened from 10 to 15 feet bgs), the minimal dewatering in a well located only 6 feet from the extraction would indicate a very small radius of influence. MW-10B, in contrast, had a drawdown of approximately 7 feet (approximately 70 percent of the drawdown in MW-1B). Dewatering 12 feet from extraction well MW-1B in excess of that observed 6 feet away is an indication of heterogeneity in the surrounding lithology. MW-10S did not appear to be significantly influenced by pumping in MW-1B. The differences between these wells is partially explained by their different screen intervals (MW-10B is screened from 15 to 20 feet bgs, and MW-10S is screened from 6.5 to 10 feet bgs), but also may be due to varying permeability in layers of the interbedded clays observed at the site.

For the pump test on MW-3B, drawdown in observation wells MW-11S and MW-11B were plotted on **Figure 4**. For this test, the closest observation wells were 24 feet and 29 feet from the extraction well (MW-11S and MW-11B respectively). In MW-11S, there was no influence from the pump test detected. The influence observed in MW-11B was minimal (<2 feet). Transducer data were not collected from MW-11A due to failure of the data logger. Manual readings at MW-11A showed no change over the course of pumping (**Attachment B**). Well MW-11A is located 24 feet from MW-3B. Therefore, results indicate that the radius of influence indicated is <24 feet.

5.4 Assumptions and Uncertainties

All analytical methods for the analysis of pumping test data require simplifying assumptions in order for the analytical methods to be applicable. These assumptions do not invalidate the results, but put limits on the application of the results because they assume an “ideal aquifer”. The Cooper-Jacobs (1946) method is based on the following assumptions:

- The aquifer has infinite areal extent;
- The aquifer is homogeneous, isotropic, and of uniform thickness;
- The pumping wells are fully penetrating;
- The aquifer is confined;
- Flow is constant; and
- Well storage is negligible.

Subsurface data show that the aquifer is relatively heterogeneous and thickness is variable. Thus, the aquifer hydraulic properties are approximations.

6.0 Recommendations

Results from aquifer testing were considered inconclusive in regard to stated objective of determining the feasibility of dewatering the smear zone at the site. Although pumping rates (<1.5 gallons per minute) indicated that some localized dewatering is feasible, inconsistent de-watering in observation wells indicates heterogeneity in site soil that could make uniform dewatering infeasible. On the basis of the testing conducted for this report, AECOM makes the following recommendations:

- Without relatively uniform dewatering of the smear zone, the effectiveness of extraction-based remedial technologies would be expected to be limited due to preferential flow and mass transfer limited conditions outside of the preferential flow path(s). On this basis, AECOM does not recommend implementing a remedial approach at this time.
- Overall, more data are needed to develop an effective remedial approach for this site. AECOM recommends the preparation of a feasibility study. Although a remedial technology screening was submitted in March 2014, the proposed feasibility study would be expected to evaluate several technologies in greater detail and incorporate site-specific data including that collected in this pump test. The feasibility study would also be expected to identify data gaps related to the implementation of any remedial approach considered feasible.

7.0 References

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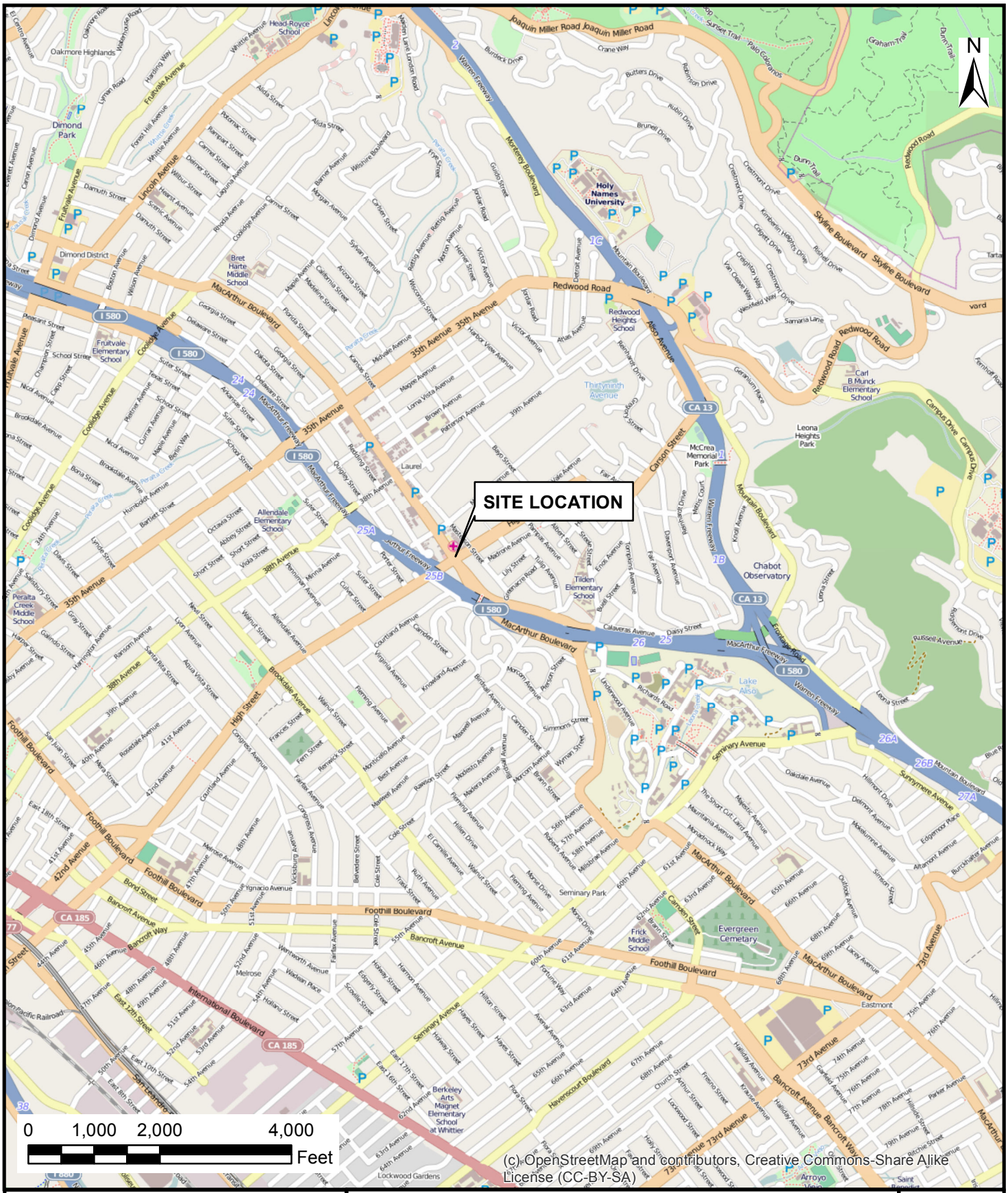
8.0 Limitations

This report has been prepared for ACEH on behalf of AECOM's client, EMC, and pertains to 76 Service Station No. 1156 (351645), located at 4276 MacArthur Boulevard, Oakland, California. In performing professional services, AECOM has applied present engineering and scientific judgment and used a level of effort consistent with the standard of practice measured on the date of the work and in the locale of the site for similar type studies. AECOM does not guarantee the accuracy or completeness of data collected by previous consultants. AECOM makes no warranty, express or implied, concerning any of the materials or services furnished. The analyses and interpretations in this report have been developed based on review of existing information pertaining to the site and review of analytical results.

Figures



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CAMARILLO, CALIFORNIA 93012
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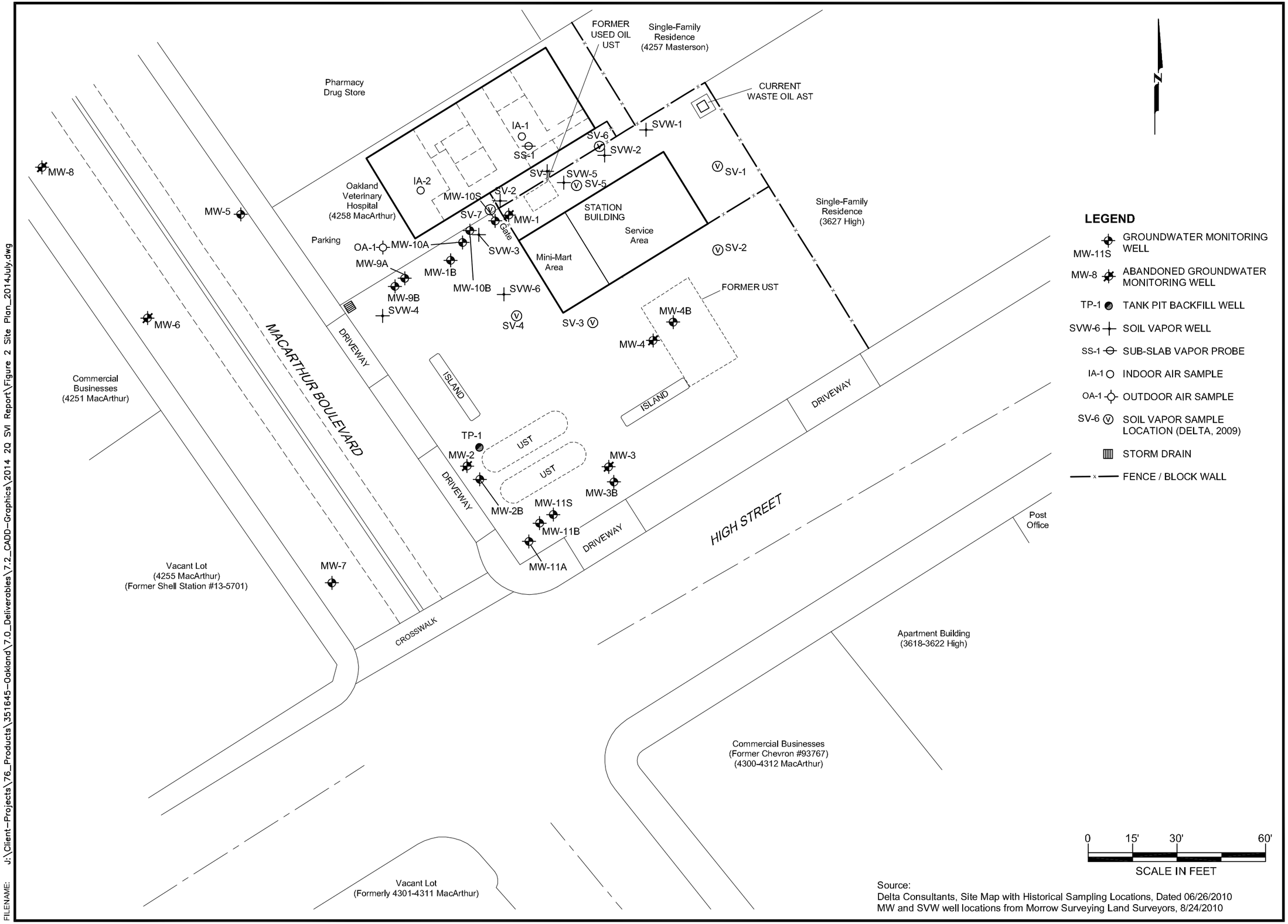
WEB: HTTP://WWW.AECOM.COM

SITE LOCATION MAP

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

FIGURE NUMBER:
1

DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
M. Scop	02/10/2014	60313673	1 of 1



Source:
Delta Consultants, Site Map with Historical Sampling Locations, Dated 06/26/2010
MW and SVW well locations from Morrow Surveying Land Surveyors, 8/24/2010

REVISIONS			
NO:	DESCRIPTION:	DATE:	BY:

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
C. Roper	M. Scop	C. Roper	B. Evans

AECOM
1220 AVENIDA ACASO
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SITE PLAN WITH WELL LOCATIONS AND SVI LOCATIONS

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

SCALE:	DATE:	PROJECT NUMBER:
1" = 30'	7/21/2014	60316610 - 04.05

FIGURE NUMBER:
2

SHEET NUMBER:
X

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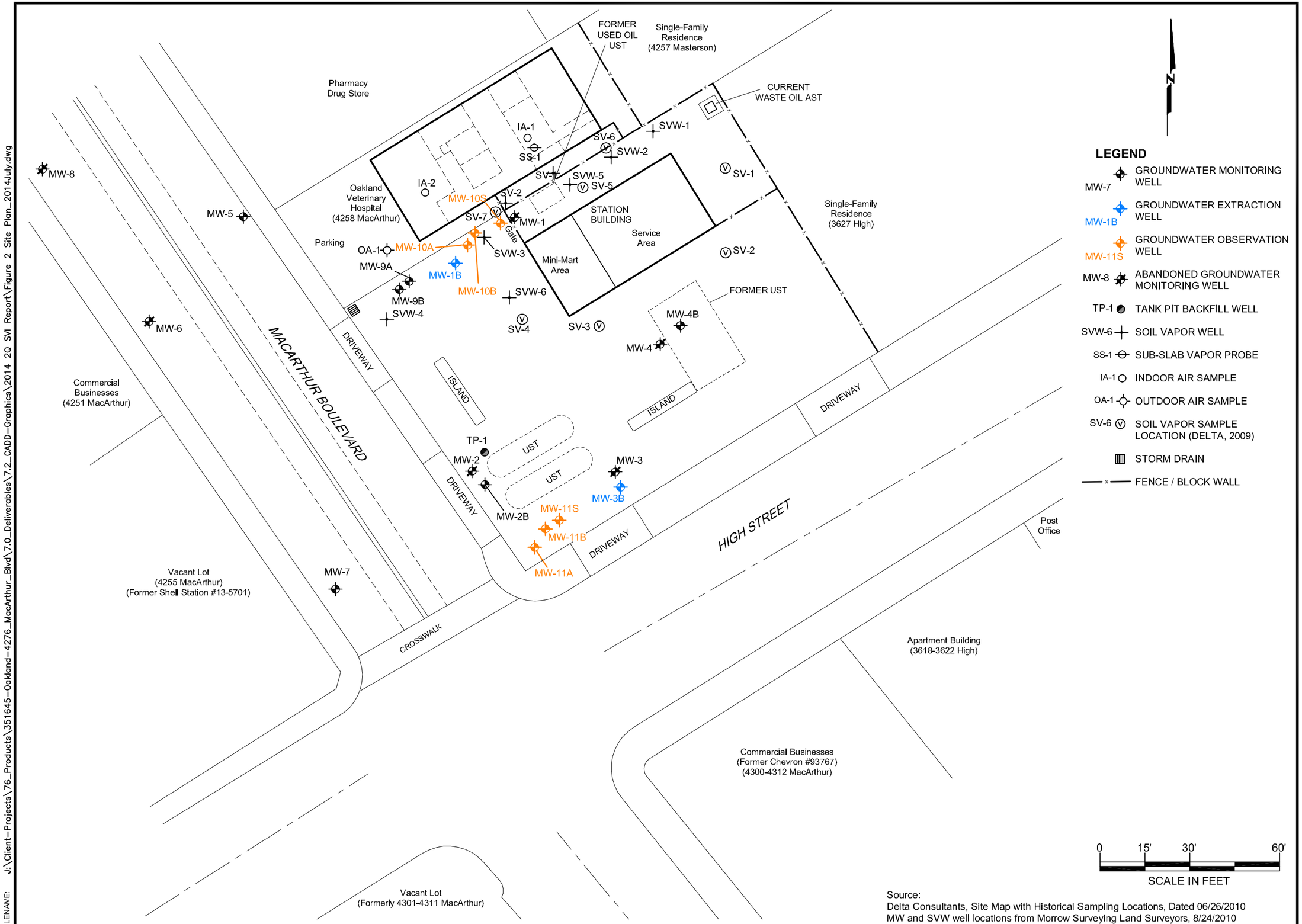

Source:
Delta Consultants, Site Map with Historical Sampling Locations, Dated 06/26/2010
MW and SVW well locations from Morrow Surveying Land Surveyors, 8/24/2010

REVISIONS			
NO.:	DESCRIPTION:	DATE:	BY:

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
C. Roper	M. Scop	C. Roper	C. Roper

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SITE PLAN

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

SCALE:	DATE:	PROJECT NUMBER:
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Figure 4. Change in Groundwater Elevation Data During Extraction from MW-3B

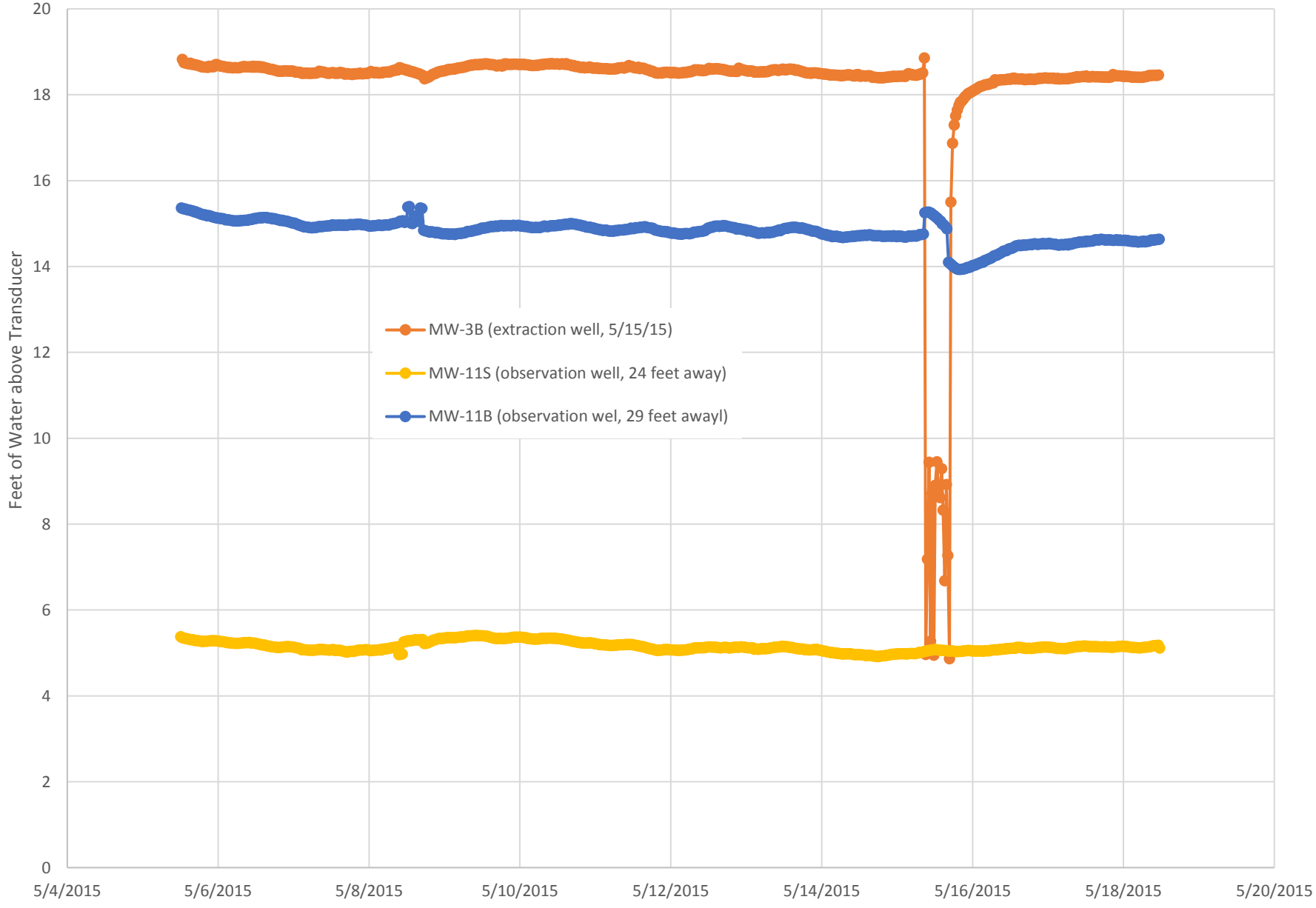
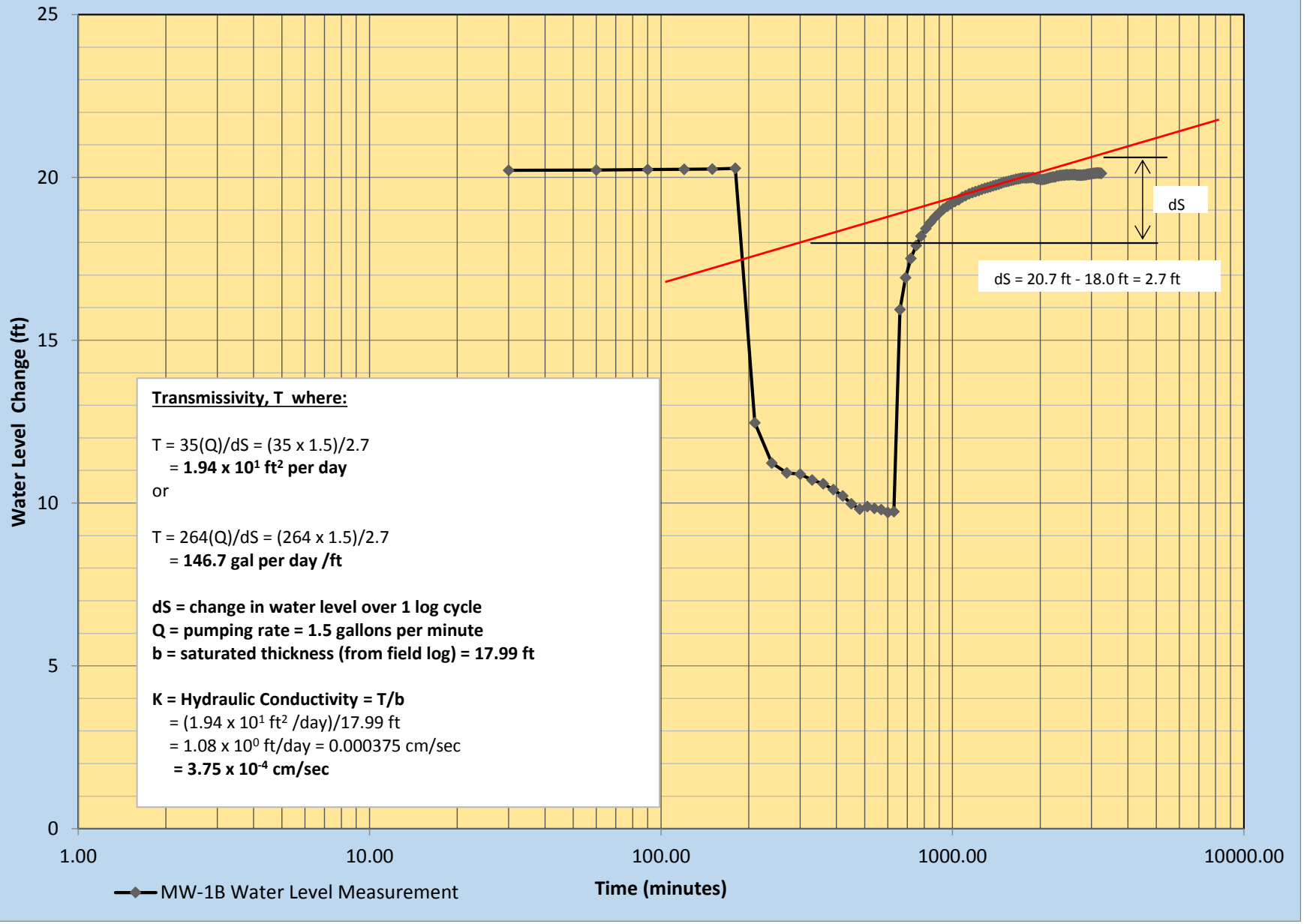


Figure 5. Time Drawdown and Recovery Plot for Extraction Well MW-1B



Transmissivity, T where:

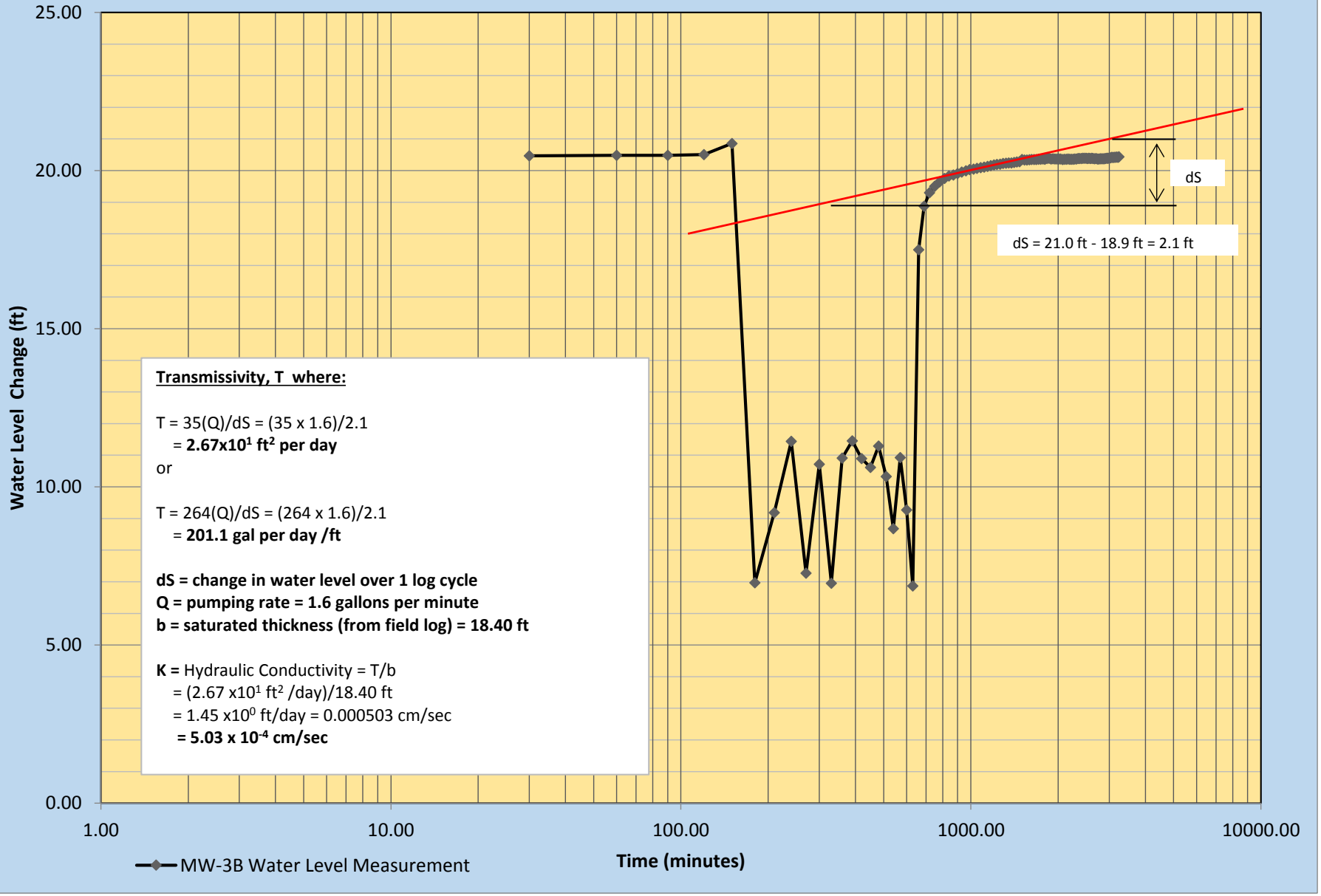
T = 35(Q)/dS = (35 x 1.5)/2.7
= **1.94 x 10^1 ft^2 per day**
or

T = 264(Q)/dS = (264 x 1.5)/2.7
= **146.7 gal per day /ft**

dS = change in water level over 1 log cycle
Q = pumping rate = 1.5 gallons per minute
b = saturated thickness (from field log) = 17.99 ft

K = Hydraulic Conductivity = T/b
= (1.94 x 10^1 ft^2 /day)/17.99 ft
= 1.08 x 10^0 ft/day = 0.000375 cm/sec
= 3.75 x 10^{-4} cm/sec

Figure 6. Time Drawdown and Recovery Plot for Extraction Well MW-3B



Tables

Table 1
Selected Well Construction Details
76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

Well ID	Well Installation Date	Casing Diameter (inches)	TOC Elevation (feet amsl)	Boring Depth (feet bgs)	Screen Interval (feet bgs)	Filter Pack (feet bgs)	Bentonite Seal (feet bgs)	Initial Depth to Water (feet-TOC)	Initial Water Elevation (feet amsl)
MW-1B	8/17/2010	2	174.05	25	20-25	19-25	18-19	6.69	167.36
MW-3B	8/16/2010	2	177.77	25	20-25	19-25	18-19	6.19	171.58
MW-10A	3/18/2013	2	174.48	15	10-15	8-15	1.5-8	6.84	167.64
MW-10B	3/18/2013	2	174.62	20	15-20	13-20	1.5-13	7.17	167.45
MW-10S	6/12/2014	4	175.57	10	6.5-10	3.5-10	1-3.5	6.66	168.91
MW-11A	3/19/2013	2	175.37	15	10-15	8-15	1.5-8	4.90	170.47
MW-11B	3/19/2013	2	174.65	20	15-20	13-20	1.5-13	4.88	169.77
MW-11S	6/11/2014	4	176.27	10	6.5-10	3.5-10	1-3.5	4.88	171.39

Notes:

All screens are 0.02 inch slots

feet-TOC = Feet below top of well casing (manually read, data in **Appendix B**)

feet bgs = Feet below ground surface

feet amsl = Feet above mean sea level

ID = Identification

Appendix A

Agency Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

March 16, 2015

Nicole Arceneaux
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
(*Sent via E-mail to:* *nicole.arceneaux@Chevron.com*)

Ed Ralston
Phillips 66 Company
76 Broadway
Sacramento, CA 95818
(*Sent via E-mail to: Ed.C.Ralston@p66.com*)

Rajan Goswamy
4276 MacArthur Boulevard
Oakland, CA 94619
(Sent via E-mail to: rajgoswamy@sbcglobal.net)

Carole Quick and Lorraine Mudget
10214 SW Stuart Court
Portland, OR 97224-4304

Subject: Work Plan Approval for Fuel Leak Case No. RO0000409 and GeoTracker Global ID T0600102279, Unocal #1156, 4276 MacArthur Boulevard, Oakland, CA 94619

Dear Ms. Arceneaux, Mr. Ralston, Ms. Quick, Ms. Mudget, and Mr. Goswamy:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site, including the document entitled, "*Groundwater Pump Test Work Plan, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California*," dated January 30, 2015 (Work Plan). The Work Plan, which was prepared on your behalf by AECOM, presents plans to conduct aquifer tests by extracting groundwater from monitoring wells MW-1B and MW-3B. The proposed scope of work is acceptable and may be implemented as proposed. We request that you implement the Work Plan and present the results in the Aquifer Test Report requested below.

Alameda County Environmental Health (ACEH) staff has also reviewed the document entitled, "*Report on Second Sub-Slab, Indoor Air, and Outdoor Air Sampling and Vapor Intrusion Evaluation for the Oakland Veterinary Hospital Located at 4258 MacArthur Boulevard, Oakland, California*," dated February 27, 2015 (Vapor Intrusion Report). The Vapor Intrusion Report presents results from sub-slab and indoor air sampling conducted in January 2015. Based on these results and the results from sub-slab and indoor air sampling conducted in June 2014, the Vapor Intrusion Report concludes that the vapor intrusion pathway is not complete for the veterinary hospital at 4258 MacArthur Boulevard. No further sub-slab or indoor air sampling is recommended in the Vapor Intrusion Report. ACEH does not request further sampling for the veterinary hospital at this time but defers making comments on the Vapor Intrusion Report pending potential future changes to vapor intrusion guidance regarding sub-slab and indoor air sampling.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Jerry Wickham), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **April 7, 2015** – Semi-Annual Groundwater Monitoring Report
  File to be named: GWM_R_yyyy-mm-dd RO409

- **July 16, 2015** – Aquifer Test Report
  File to be named: GWM_R_yyyy-mm-dd RO409

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org. Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm. If your email address does not appear on the cover page of this notification, ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

Sincerely,

Jerry Wickham, California PG 3766, CEG 1177, and CHG 297
Senior Hazardous Materials Specialist

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032 2032 (*Sent via E-mail to: lgriffin@oaklandnet.com*)

Maureen Dorsey, Oakland Veterinary Clinic, 4258 MacArthur Boulevard, Oakland, CA 94619

Chad Roper, AECOM, 1220 Avenida Acaso, Camarillo, CA 93012 (*Sent via E-mail to: chad.roper@aecom.com*)

Perry Pineda, Shell Oil Products US, 20945 S. Wilmington Ave., Carson, CA 90810-1039 (*Sent via (Sent via E-mail to: perry.pineda@shell.com*)

Peter Schaefer, Conestoga-Rovers & Associates, 5900 Hollis Street, Suite A
Emeryville, CA 94608 (*Sent via E-mail to: pschaefer@craworld.com*)

Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)
GeoTracker, e-File

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** May 15, 2014
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

Appendix B

Field Data Sheets

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID:	MW-1B — Pine Part # 13621
Screen Interval (ft):	5-25'
Depth to Water (DTW)(ft):	6.71 — 5/5: Started @ 10:31am
Total Well Depth (ft):	24.70
Well Diameter (inch):	2" — Logger Serial #: 1032571
DTW After Purge (ft):	
Measurements Referenced to:	TOC
PID (ppm)	0.0

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped ~~(feet)~~	Remarks
5/5/15	1040	6.69	∅	After install
5/8/15	0900	6.70	∅	Before pumping MW-1B
5/8/15	0942	Start Pumping		~ 15gpm
5/8/15	1042	16.35	~ 90	
5/8/15	1142	16.65	~~150~~ 150	
	1244	16.91	~~320~~ 320	
	1342	17.26	~~280~~ 280	
	1443	17.45	~ 320	
	1543	17.51	~ 375	
	1643	17.63	~ 400	under 1 gpm
	1711	Tank full		
5/15/15	0825	6.81	∅	Prior to Pumping MW-3B
	0952	6.83		
	1054	6.84		
	1154	6.85		
	1252	6.85		
	1351	6.85		
	1449	6.87		
	1553	6.86		
5/18/15	1040	6.85		removal

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID:	MW-10A — Serial # 1060051
Screen Interval (ft):	10-15' — started 5/5/15 @ 1105
Depth to Water (DTW)(ft):	6.81
Total Well Depth (ft):	14.21
Well Diameter (inch):	2"
DTW After Purge (ft):	
Measurements Referenced to:	TOC
PID (ppm)	74.6

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
5-5-15	1100	6.72	~~0~~	After install
5-8-15	0906	6.84	~~0~~	Prior to pumping MW-1B
5-8-15	1044	6.92	~~90~~	
	1144	7.05	~~180~~	
	1246	7.22	~~270~~	
	1344	7.40	~~360~~	
	1447	7.59		
	1545	7.76		
↓	1645	7.96		
5/15/15	0828	6.95		Prior pumping MW-3B
	0953	6.95		
	1055	6.95		
	1155	6.95		
	1253	6.95		
	1352	6.95		
	1451	6.95		
↓	1556	6.95		
5/18/15	1016	6.99		@ removal

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID:	MW-10B — Serial #
Screen Interval (ft):	15-20' — started 5/5/15 @ 11:23 am
Depth to Water (DTW)(ft):	7.21
Total Well Depth (ft):	19.00 — Serial # 1046049
Well Diameter (inch):	2"
DTW After Purge (ft):	
Measurements Referenced to:	TOC
PID (ppm)	2,200

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
5-5-15	1116	7.17	Ø	After in
5-6-15	0909	7.25	Ø	Prior pumping MW-1B
	1046	12.85	~90	
	1145	13.38	~180	
	1249	13.75	~270	
	1346	14.10	~360	
	1448	14.27		
	1547	14.41		
↓	1547	14.55		
5/15/15	0830	7.37	Ø	Prior to pumping MW-3B
	0955	7.41		
	1057	7.39		
	1156	7.40		
	1254	7.40		
	1353	7.40		
	1452	7.41		
↓	1559	7.41		
5/18/15	1048	7.38		@ removal

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID:	MW-10S — Serial # 2029485
Screen Interval (ft):	6.5-10 — 5/5/15: Started @ 1135
Depth to Water (DTW)(ft):	6.74
Total Well Depth (ft):	10.1
Well Diameter (inch):	4"
DTW After Purge (ft):	
Measurements Referenced to:	TOC
PID (ppm)	0.0

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
5-5-15	1130	6.72	Ø	After install
5-8-15	0912	6.66	Ø	Prior pumping MW-1B
	1048	6.66	~90	
	1147	6.66	~180	
	1250	6.66	~270	
	1347	6.66	~360	
	1449	6.66		
	1548	6.66		
	1648	6.66		
5/15/15	0832	6.57	Ø	Prior to Pumping MW-3B
	0956	6.57		
	1058	6.57		
	1157	6.57		
	1255	6.57		
	1354	6.57		
	1453	6.56		
	1603	6.56		
5/18/15	1049	6.52		@ removal

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID: MW-3B	Serial # 1044483
Screen Interval (ft): 20-25'	5/5/15 : Started @ 1238
Depth to Water (DTW)(ft): 6.30	
Total Well Depth (ft): 24.70	
Well Diameter (inch): 2"	
DTW After Purge (ft):	
Measurements Referenced to: TOC	
PID (ppm) 1,093	

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
5/5/2015	1235	6.19	Ø	After install
5/8/15	0920	5.36	Ø	Prior pumping MW-3B
5/8/15	1053	6.43	~90	
	1149	6.45	~180	
	1252	6.49	~270	
	1349	6.52	~360	
	1451	6.56		
	1551	6.58		
	1650	6.60		
5/15/15	0840	6.48	Ø	Prior to Pumping MW-3B
5/15/15	0845	Begin Pumping		
	0847	DTW below pump / intermittent Pumping		
		Rate = < 0.5 gpm		
	1004	~ 30 gallons pumped		
	1147	~ 45 gallons pumped		
	1245	~ 70 gallons		
	1345	~ 85 "		
	1445	~ 95 "		
	1540	~ 110 "		
	1645	~ 150 "		
5/16/15	1120	6.60		before removing loggers

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID: MW-11A — Serial # 1034224
Screen Interval (ft): 10-15 — 5/5/15: Started @ 1211
Depth to Water (DTW)(ft): 5.04
Total Well Depth (ft): 15.71
Well Diameter (inch): 2"
DTW After Purge (ft):
Measurements Referenced to: TOC
PID (ppm) Over-range (>15,000)

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
5/5/15	1210	4.90	Ø	After install
5/8/15	930	4.56	Ø	Prior pumping MW-1B
	1056	4.54	~90	
	1153	4.45	~180	
	1255	4.40	~270	
	1352	4.38	~360	
	1455	4.38		
	1551	4.40		
	1653	4.44		
5/15/15	0836	4.74	Ø	Prior to Pumping MW-3B
	0948	4.72		
	1050	4.71		
	1150	4.72		
	1248	4.70		
	1348	4.70		
	1445	4.71		
	1546	4.71		
5/18/15	1131	4.77	before removing loggers	

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID: MW-11B — Serial # 1048076
Screen Interval (ft): 15-20 — 5/5/15: started @ 12:20
Depth to Water (DTW)(ft): 4.60
Total Well Depth (ft): 19.95
Well Diameter (inch): 2"
DTW After Purge (ft):
Measurements Referenced to: TOC
PID (ppm) 74.5

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
~~5/5/15~~	1220	4.88	Ø	After install
5/6/15	0927	4.70	Ø	Prior pumping MW-1B
	1054	4.70	~90	
	1151	4.68	~180	
	1253	4.66	~270	
	1354	4.67	~360	
	1454	4.70		
	1555	4.70		
↓	1652	4.74		
5/15/15	0838	4.84	Ø	Prior to Pumping MW-3B
	0949	4.85		
	1052	4.89		
	1152	4.96		
	1249	5.03		
	1349	5.10		
	1447	5.16		
↓	1549	5.23		
5/18/15	1132	4.91		@ removal

WATER LEVEL DATA SHEET
76 Service Station #1156 (Chevron Site #351645)

Well ID:	MW-11S — Serial # 1050342
Screen Interval (ft):	6.5-10' — 5/5/15: started @ 1202
Depth to Water (DTW)(ft):	~~3.90~~ 4.90
Total Well Depth (ft):	9.90
Well Diameter (inch):	4"
DTW After Purge (ft):	
Measurements Referenced to:	TOC
PID (ppm)	7.8

Date	Time (24 hrs)	Depth to Water (ft bgs)	Gallons Pumped (feet)	Remarks
5/5/15	1158	4.88	Ø	after install
5/8/15	425	4.99	Ø	Prior pumping MW-1B
↓	1057	4.99	~90	
	1152	4.99	~~~180~~	
	1256	4.98	~~~270~~	
	1351	4.99	~~360~~	
	1456	4.99		
	1552	4.99		
↓	1652	4.99		
5/15/15	0835	5.18	Ø	Prior to Pumping MW-3B
↓	0946	5.18		
	1048	5.18		
	1149	5.18		
	1246	5.19		
	1346	5.18		
	1444	5.19		
↓	1540	5.19		
5/18/15	1130	5.28	before removing logger	