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March 30, 2016

Alameda County Environmental Health 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 Pilot Testing Workplan dated March 30, 2016.

I agree with the conclusions and recommendations presented in the referenced work plan. 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,

mm

Nicole Arceneaux Project Manager

Attachment: Pilot Testing Workplan



Prepared for: EMC San Ramon, CA Prepared by: AECOM Camarillo, CA 60490608-25.22 March 30, 2016

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

ACEH Case No. RO409 RWQCB Case No. 01-2474





Prepared for: EMC San Ramon, CA Prepared by: AECOM Carnarillo, CA 60490608-25.22 March 30, 2016

## Pilot Testing Workplan 76 Service Station No. 1156 (351645) 4276 MacArthur Boulevard Oakland, California

## ACEH Case No. RO409 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.

Riharl Q. Jones

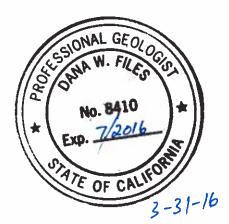
Richard Jones, PE Project Engineer



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Chad Roper, PhD Senior Project Manager

Dana Files, P.G. No. 8410 Project Geologist



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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 Pilot Testing Workplan for 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California (Alameda County Health Care Services Agency, Environmental Health Services, Environmental Protection [ACEH] Case Number [No.] RO409, San Francisco Regional Water Quality Control Board [RWQCB] Case No. 01-2474) (**Figure 1**) (site). This workplan has been prepared in response to the ACEH letter dated January 7, 2016 (**Appendix A**).

The following sections summarize the site background and test procedures for evaluating the potential effectiveness of multiphase extraction (MPE) to remediate hydrocarbon impacts at the site. None of the existing site wells are appropriate for MPE, so this workplan details the replacement of some existing site wells with longer-screened wells for MPE pilot testing and observation.

The objective of site remediation is to reduce the concentrations of hydrocarbon impacts in soil and groundwater to below their low-threat closure criteria (California State Water Resources Control Board 2012). The pilot test results will help determine if MPE is a feasible remedial approach.

Per the ACEH letter, this workplan also addresses a vapor intrusion mitigation plan in coordination with the onsite convenience store expansion. Additionally, this workplan describes the abandonment of several soil vapor monitoring wells located in the footprint of the planned expansion.

#### 2.0 Site Background

#### 2.1 Site Description

The site is a 76-branded 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 situated in the northern portion of the site. An automotive service bay is present in the northern portion of the building, and a mini-mart/cashier area is located 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 2010a and 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 Surrounding Land 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.
- Northeast Single-family dwelling (3627 High Street) abuts the site.
- 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 to the southwest and west. 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 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, 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 (Morrow Surveying 2013). 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 northwest 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

Based on a review of boring logs prepared by previous consultants (Delta 2007, 2009, 2010a, 2010b), the site geology consists of unconsolidated deposits of sand and silt in a clay matrix, with some intermixed fine-to-medium-grained gravel. Clay is predominant in the upper lithology with sandy/silty clay and clayey sand units, between approximately 1 to 15 feet below grade 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). Soil borings advanced on-site since 2010 have indicated the presence of high-plasticity, fatty clays from 1 to 20 feet bgs (AECOM 2013a). Available boring logs are provided as **Appendix B**.

#### 2.5 Site Hydrogeology

Well construction details are presented in **Table 1**. Historical site assessments indicated the presence of a confined aquifer under hydrostatic pressure based on the initial depth to water during well installations. Soil observed during installation of monitoring wells MW-9A/B, MW-10A/B, and MW-11A/B was interpreted to be dry from approximately 11.5 to 16 feet bgs, at which point the soil appeared to be moist.

High-plasticity clays were observed for most soil borings from grade to total depth (15 to 20 feet bgs), which suggests a misinterpretation of static water during drilling activities. Following a review of historical boring logs, shallow depth to water was verified at several locations (SB-1, SB-4, SB-5, and SB-15), and almost all boring logs indicate high moisture content from approximately 5 feet bgs and deeper. Based on historical soil boring logs, and well installation in March 2013, AECOM concluded that the lithology beneath the site is relatively fine-grained; however, the aquifer is generally unconfined (AECOM 2013a).

Groundwater analytical data for 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 concentrations for the wells screened 10 to 15 feet bgs are the highest, horizontal migration appears to be impeded by the soil type, and the plume appears to be largely contained to the site boundaries. 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-gasoline range organics (TPH-GRO), benzene, and methyl t-butyl ether (MTBE) since installation in 2001. 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 2015a).

Groundwater samples have been analyzed for monitored natural attenuation (MNA) parameters including methane, nitrate, sulfate, ferrous iron, and dissolved manganese, to evaluate if natural attenuation by anaerobic biodegradation is occurring beneath the site. Based on the analytical results for MNA parameters, depleted concentrations of nitrate and sulfate (electron donors for anaerobic reduction) were observed for wells within the dissolved-phase hydrocarbon plume. Additionally, ferrous iron and dissolved manganese concentrations (byproducts of anaerobic reduction) are generally elevated for wells within the dissolved-phase hydrocarbon plume. Within the source area, methane (product of anaerobic hydrocarbon digestion) is also found to be elevated (AECOM 2015a). These geochemical trends are indicative of anaerobic biodegradation occurring within the dissolved-phase hydrocarbon plume.

#### 2.6 Extent of Petroleum Hydrocarbon Impacts to Soil

Soil boring samples collected from 1997 to date indicate that soil contamination from benzene, toluene, ethylbenzene, total xylenes (BTEX) is largely confined to the upper 15 feet of the unsaturated zone. Maximum historical concentrations of benzene (7.8 milligrams per kilogram [mg/kg]) and toluene (51 mg/kg) were detected at location SB-2 at 8.5 feet bgs. Maximum concentrations of ethylbenzene and total xylenes were at location B1/MW-1 in 1999 (110 and 470 mg/kg, respectively) (Delta 2009). The maximum MTBE concentration detected in soil was 7.9 mg/kg at MW-11B at 19 feet bgs (2013) (AECOM 2013a). These concentrations comply with low-threat closure criteria for soils with commercial/industrial land uses.

#### 2.7 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 destroyed 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 2015a). A summary of current groundwater data is provided in **Tables 2** and **3**.

#### 2.8 History of Remediation

Approximately 1,350 tons of soil was excavated and removed during the gasoline UST removal activities in 1998 (Delta 2007). In addition, approximately 4.6 tons of soil was overexcavated and removed during the underground waste-oil storage tank removal (Delta 2009).

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 (Delta 2009).

#### 3.0 **Pre-Field Activities**

#### 3.1 Health and Safety Plan

AECOM has prepared a site-specific Health and Safety Plan (HASP) which will be updated to address potential physical and chemical hazards associated with MPE pilot testing at the site and other health and safety considerations. Additionally, Job Safety Analyses (JSAs) will be prepared detailing mitigation of specifically identified hazards within the proposed scope of work. The HASP and JSAs will be reviewed and approved by AECOM Health and Safety Management and EMC. Site activities conducted by AECOM and subcontractors will be conducted in accordance and compliance with the approved HASP and JSAs.

#### 3.2 Permits

Air emissions would need to be permitted by Bay Area Air Quality Management District (BAAQMD). The pilot testing can be conducted by a subcontractor with a various locations permit from BAAQMD or a new permit can be obtained for portable equipment. The proposed remediation system location is within 1,000 feet of St. Lawrence O'Toole Catholic School (approximately 450 feet northeast) and would be subject to a public notice requirement.

Extracted water would need to be treated and discharged. A discharge permit could be obtained from East Bay Municipal Utilities District (EBMUD) for the purposes of dewatering during MPE pilot testing, and a sewer cleanout is available for a temporary connection to the publically owned treatment works. The current location of the sewer cleanout is accessible, but may be affected by expansion of the convenience store at the site. This workplan has assumed that the cleanout will be accessible for the temporary permitted discharge of liquids generated during pilot testing.

No other permits are required for the planned work.

#### 3.3 Well Replacement

Generally, remediation is conducted using wells 4 inches in diameter or greater. Monitoring wells MW-10S and MW-11S are of sufficient size to be considered potential remedial wells (**Table 1**). However, both these wells are screened across a relatively short interval of 6.5 to 10 feet bgs. This interval contacts very little of the presumed smear zone at the site. As more of the smear zone is contacted and de-watered, the expected mass recovery increases.

The proposed MPE pilot test will be conducted in the area of elevated dissolved-phase benzene concentrations in the vicinity of wells MW-10A and MW-10B. To give the pilot test the greatest opportunity to succeed, a new proposed MPE extraction well, MW-12, will be installed so that the screen interval spans the entire smear zone. The proposed location for MW-12 is shown on **Figure 2**. The proposed screen interval for MW-12 will be 5 to 20 feet bgs with a 3-foot-long blank casing from 20 to 23 feet bgs. The blank casing section will be used to position a submersible pump during MPE pilot testing. An additional 1-inch-diameter casing will be installed in MW-12 and screened from 18 to 20 feet bgs. This additional casing will be used to verify complete dewatering of MW-12 during MPE pilot testing.

The installation of MPE extraction well MW-12 is proposed to replace 2-inch-diameter wells MW-10A and MW-10B as well as 4-inch-diameter well MW-10S. With agency approval, these wells will be

destroyed in accordance with California Well Standards 74-81 and 74-90 and under the conditions of permits to be obtained from the local oversight agency.

Wells used to observe MPE are most effective when they are screened across the same depths as the extraction well. To achieve this, three 2-inch-diameter piezometer wells (PZ-1 through PZ-3) with screen intervals from approximately 5 to 20 feet bgs (with some variation based on compensating for the grade at the site), matching MPE pilot test extraction well MW-12, will be installed and will be located 5, 10, and 20 feet from MW-12. The proposed locations for these wells are shown on **Figure 2**. The three 2-inch-diameter piezometer wells will be abandoned following completion of the MPE pilot test.

## 4.0 Pilot Test Activities

AECOM's "Remedial Technology Screening and Work Plan for Site Assessment" (AECOM 2014), 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 based on the extraction of soil vapor or groundwater from the site. In their letter dated October 24, 2014, ACEH disagreed with the conclusion that MPE was infeasible at the site and requested a pilot workplan for remediation. Following aquifer testing (AECOM 2015b) and an additional feasibility study (AECOM 2015c), ACEH reiterated their request for pilot testing and specified MPE in their letter dated January 7, 2016 (**Appendix A**).

The MPE pilot test will be conducted to evaluate MPE feasibility. Feasibility will be based upon determining the degree of dewatering possible, acquisition of drawdown data to determine radius of influence (ROI), air/water yields necessary to achieve needed drawdown, and volatile organic compound (VOC) mass removal rates. The goal of remedial activities is to achieve groundwater hydrocarbon concentrations consistent with Low Threat Case Closure.

#### 4.1 Baseline Data Collection

A manual water level meter will be used to collect baseline depth to water measurements prior to starting the MPE system. In addition, VOC concentrations will be measured using a portable lower explosive limit (LEL) meter such as a RKI® Eagle. Vapor samples for LEL measurements will be collected using a portable vapor sample pump and Tedlar® bags. Extraction well VOC concentrations will be collected on the pressure side of the extraction blower. LEL measurements will be collected at the extraction well manifold and on the system influent/effluent.

Initial well vapor samples will also be collected from the extraction well for laboratory analysis. Samples will be collected in Tedlar® bags using an air-tight vacuum sample box or using Summa® canisters to eliminate sample contact with ambient air and/or sampling equipment. Samples will be analyzed for BTEX and MTBE using Environmental Protection Agency (EPA) Method TO-15. Samples will also be analyzed for TPH-GRO using EPA Method TO-3-modified (TO-3M).

Groundwater from on-site wells is also planned to be sampled prior to conducting the MPE pilot test. The groundwater samples will be analyzed in accordance with current semiannual monitoring at the site which requires analysis by a State of California-certified laboratory for the following constituents:

- TPH-GRO by leaking underground fuel tank-gas chromatography/mass spectrometry (GC/MS) method;
- BTEX by EPA Method 8260B; and
- Fuel oxygenate compounds; MTBE, t-amyl methyl ether (TAME),tertiary butyl alcohol, diisopropyl ether (DIPE), ethyl t-butyl ether (ETBE), 1,2-dibromoethane (EDB), and 1,2-dichloroethane (EDC) using EPA Method 8260B.

#### 4.2 Test Setup

Proposed monitoring well MW-12 will be utilized as the extraction well for the MPE pilot test. The extraction well will be equipped to measure vacuum at the wellhead. A submersible pump will be located at the bottom of MW-12 for dewatering. A transducer will be located in the vadose zone of the extraction well to measure vacuum. The additional 1-inch-diameter casing will be used to measure water levels periodically during the test to verify complete dewatering of the 4-inch-diameter extraction well. Three 2-inch-diameter piezometer wells located 5, 10, and 20 feet from MW-12 will be used as observation wells to measure subsurface vacuum and drawdown. Pressure transducers will be installed in each observation piezometer well to record drawdown. Pressure transducers will also be located in the vadose zone of each observation well to record casing vacuum during the test. As vacuum increases in the piezometer wells, the reduction in pressure measured by the submerged transducers will be interpreted as water table drawdown. Casing vacuum measurement is necessary as a reference to correct the water level. In addition, the observation wellheads will be configured with magnehelic gauges to measure vacuum.

The extraction well flow rate and VOC concentrations will be measured at the MPE system inlet. Vacuums will be measured using portable magnehelic gauges. Well flow will be measured using a hot-wire anemometer, such as TSI® Velocicalc. Extraction well VOC concentrations and oxygen content will be monitored using a LEL meter, calibrated to hexane, and a portable vapor analyzer provided by the subcontractor. All equipment will be field-calibrated each day of use.

#### 4.3 Multiphase Extraction Test Equipment

Mobile MPE pilot test equipment will be brought to the site capable of extracting and treating both soil vapor and groundwater. Discharges to both the air and the sanitary sewer will be permitted by the appropriate agencies (BAAQMD and EBMUD respectively). The MPE pilot test will be conducted using a vapor extraction blower capable of generating a vacuum of at least 18 inches of mercury and with a volume capacity of at least 300 standard cubic feet per minute. The maximum available vacuum will be measured prior to commencing the MPE pilot test.

Groundwater extraction capacity should be in excess of 10 gallons per minute, although less is expected at this site. Groundwater extraction will be achieved by both a downwell pump in the extraction well, and any condensate or other water extracted via vacuum.

#### 4.4 Pilot Test Duration and Data Collection Frequency

The MPE pilot test will continue long enough to define steady-state dewatering, but not to exceed a period of 72 hours. The rate of change of observation well water levels will be used as a criterion to determine test shutdown.

During the first few hours of the pilot test, extraction well vacuum, extraction well drawdown, observation well vacuum, extraction well flow rate, system vacuum, extraction well VOC concentrations, and groundwater production rate will be monitored every 15 minutes. Following this initial period, hourly monitoring will be conducted. Less frequent monitoring will be conducted during overnight operation.

Pressure transducers located in each of the observation wells to record pressures above and below groundwater will record data continuously throughout the duration of the pilot test. The transducer data will be used to evaluate drawdown during the test. Additional wells may be monitored during testing either using transducers or manual groundwater elevation measurements.

#### 4.5 Waste Generation

Any liquid waste generated by groundwater extraction and/or knockout water will be treated and sampled prior to discharge in a manner compliant with the discharge permit. The groundwater production rate will be measured using a flow totalizer.

#### 4.6 Result Criteria

Several performance objectives determined from pilot testing are imperative for successful implementation of MPE technology going forward. Final evaluation of the feasibility of any technology for remediation at an EMC site rests with their Remedial System Review Team (RSRT). However, the following criteria are general guidelines for discontinued testing, and a failing result on any of these criteria will be reported to the RSRT as a failed test:

- 1. Feasible groundwater extraction rates to achieve smear zone drawdown
  - a. Groundwater extraction rates needed to maintain the open screen interval in MW-12 will determine water treatment and disposal costs. Treatment approaches will be compared on the basis of their cost/benefit and excessive treatment and disposal costs for MPE may lead to the selection of another approach.
- 2. Feasible vacuum ROI
  - a. The vacuum ROI will be measured in nearby wells. The ROI is defined as the distance at which 1 percent of the applied vacuum is observed.
  - b. If the vacuum ROI is less than 5 feet, then MPE will be considered infeasible and may lead to the selection of another approach.
- 3. Favorable mass recovery rates, casing vacuums, and air flow rates
  - a. Mass recovery in the MPE system should be greater than 25 pounds per day.
  - b. Casing vacuum should reach at least 8 to 12 inches of mercury.
  - c. Air flow rates are a function of the lithology from which the soil vapor is drawn. If these rates are too low, not only will the mass removed be limited, but it indicates that the lithology has too little pore space for effective mass removal.

#### 5.0 Pilot Testing Report and Future Operation

Upon completion of field activities, a report will be submitted to ACEH documenting the findings of the MPE pilot testing. The report will include field observations, laboratory results, conclusions, and recommendations for further action. The report will be prepared under the supervision of and signed by a California Professional Geologist or Engineer.

The MPE pilot test described in this workplan is intended to collect data to help determine if MPE is feasible for the remediation of this site and to close the data gaps identified in the feasibility study (AECOM 2015c). Vacuum ROI is considered a data gap at the site. Due to the clay soils, the vacuum ROI is expected to be limited, but testing should be able to determine if the ROI is greater than the minimum 5 feet considered necessary for MPE feasibility. Hydrocarbon mass removal rates using MPE are considered a data gap. High hydrocarbon concentrations and low vapor flow rates are expected which would result in a low mass removal rate. Pilot testing should determine if the mass removal rates are greater or less than the minimum 25 pounds per day for MPE feasibility.

The feasibility study indicated that mobile MPE events alone were not considered likely to be sufficient to remediate the site and that longer term operation of a fixed MPE system would likely be necessary. As such, it is considered unlikely that any long-term changes will result from pilot testing. The goal of remedial activities is to achieve groundwater hydrocarbon concentrations consistent with low -threat case closure criteria. Pilot testing will provide data for the evaluation of the cost versus benefit of a fixed MPE system at the site.

## 6.0 Vapor Intrusion Mitigation Planning

The property owner at this site has informed AECOM of his intention to expand his convenience store. Per discussions with the owner, the expansion includes eliminating the service bays and waste-oil aboveground storage tank and expanding the footprint of the building to approximately 5 feet from the property boundary shared with the Oakland Veterinary Hospital (Goswamy, pers. comm., 2015). Soil vapor investigations in the area of the proposed expansion indicated that soil vapor hydrocarbon concentrations were above soil vapor screening levels (AECOM 2013b). As a precautionary measure, based on screening criteria in California Department of Toxic Substances Control (DTSC) 2011 Vapor Intrusion Mitigation Guidance, a passive sub-slab venting (SSV) system and sub-slab liner are recommended for this location. A SSV system is designed to function by venting sub-slab soil vapor or providing a pathway to allow soil vapor to migrate to the exterior of the building rather than entering a building (DTSC 2011).

Additionally, the footprint of the expanded convenience store would render several existing soil vapor monitoring wells inaccessible. On this basis, SVW-1, SVW-2, SV-5, SVW-5, and SV-6 will be destroyed. These soil vapor monitoring wells consist of quarter-inch Teflon tubing connecting to a screen with a maximum depth of 6 feet bgs. These wells will be destroyed via the following steps per DTSC guidance.

### 7.0 References

AECOM. 2013a (April 22). Report on Limited Site Assessment, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California.

——. 2013b (May 21). Report on Vapor Intrusion Investigation, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California

———. 2014 (March 5). Remedial Technology Screening and Work Plan for Site Assessment. 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California.

——. 2015a (July 25). Semi-Annual Groundwater Monitoring Report, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California.

——. 2015b (July 14). Aquifer Test Report, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California.

——. 2015c (November 9). Feasibility Study, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California.

California Department of Toxic Substances Control (DTSC). 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. October.

California State Water Resources Control Board. 2012. Leaking Underground Fuel Tank Guidance Manual. September.

Delta. 2007 (December 28). Site Investigation Report, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California, dated December 28.

——. 2009 (January 26). Initial Site Conceptual Model for 4276 MacArthur Boulevard, Oakland, California.

——. 2010a (March 1). Work Plan for Additional Assessment, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California.

——. 2010b (October 21). Additional Assessment Report, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California.

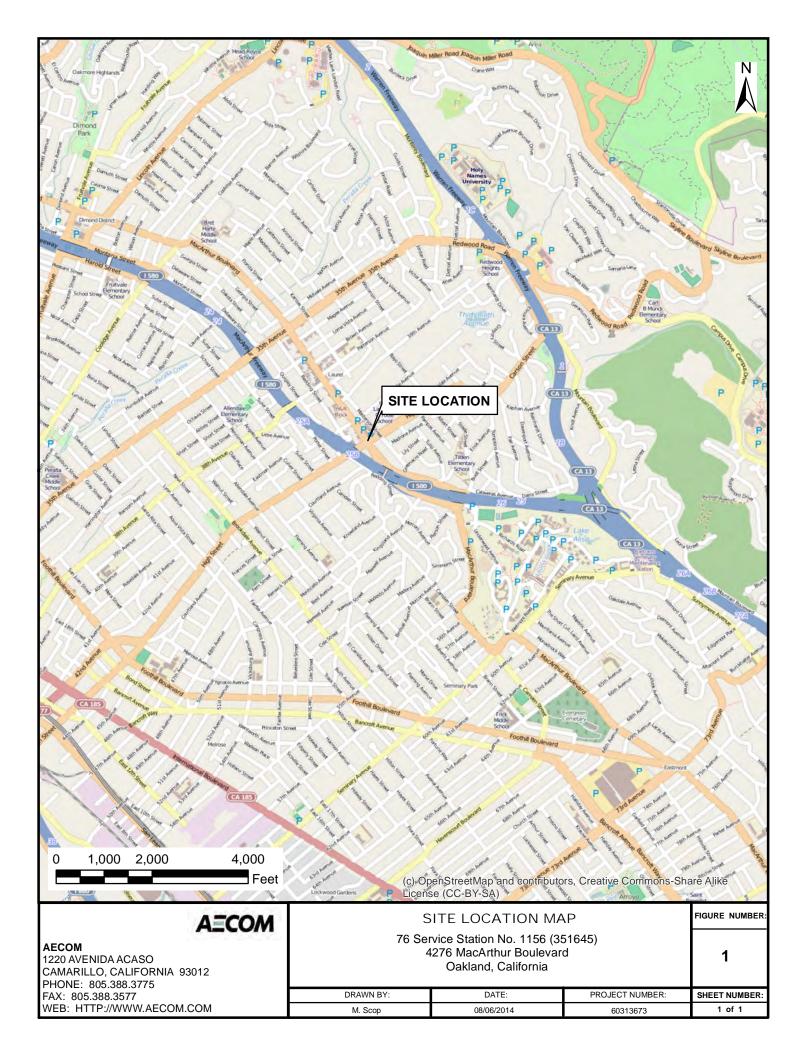
Goswamy, Rajan. Property owner 4276 MacArthur Boulevard, Oakland, CA. October 15, 2015. Email to Chad Roper regarding construction plans at the site

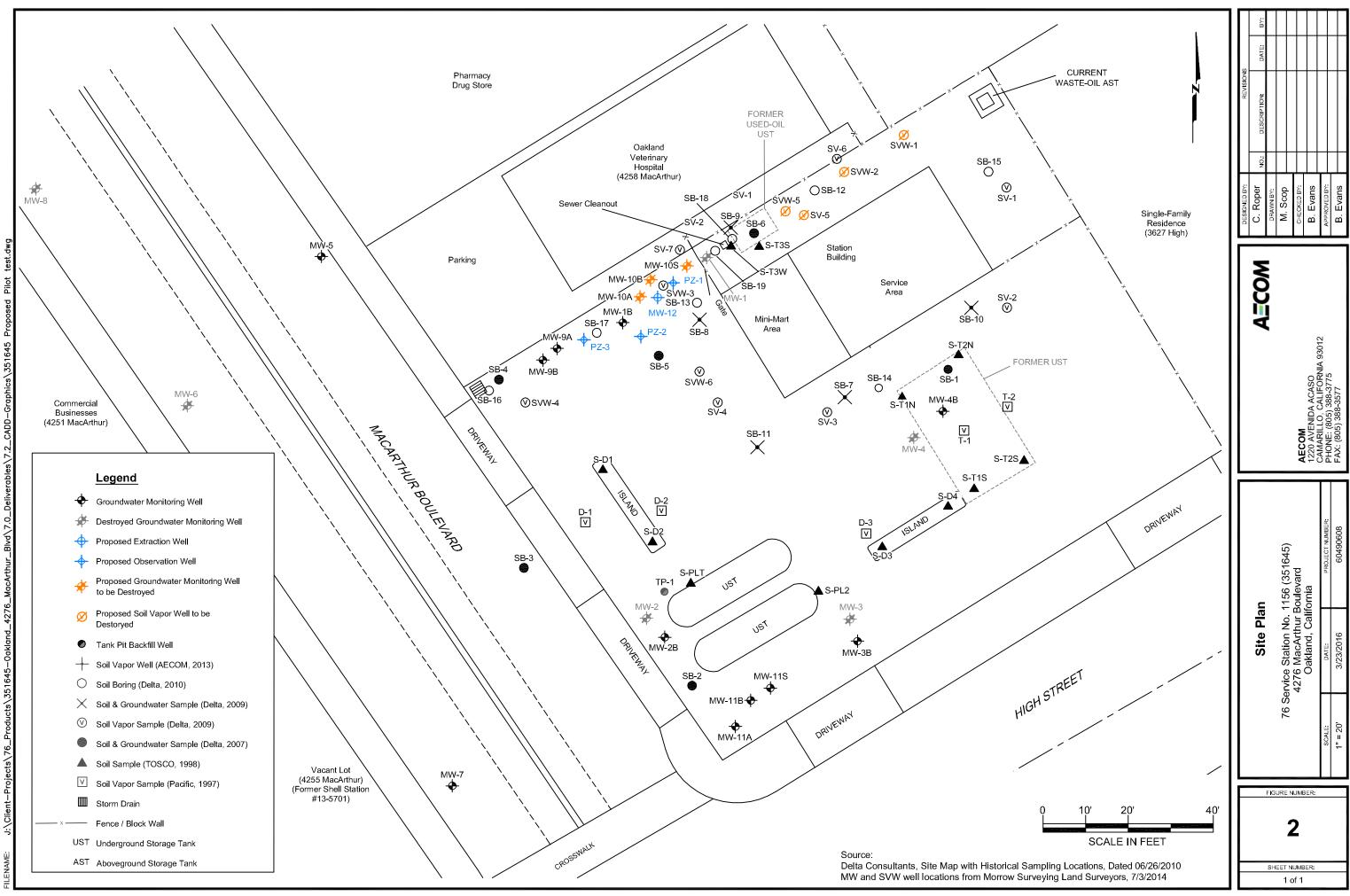
Morrow Surveying. 2013 (April 8). Monitoring well survey maps prepared by Morrow Surveying, 1255 Starboard Drive, West Sacramento, California 95691. Prepared for AECOM.

#### 8.0 Limitations

This report has been prepared for ACEH on behalf of EMC and pertains to 76 Service Station No. 1156 (351645), 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** 





Tables

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

Well ID	Well Installation	Casing Diameter	Boring Depth	Screen Interval	Screen Size	Filter Pack	Bentonite Seal	Grout Interval
	Date	(in.)	(ft. bgs)	(ft. bgs)	(in.)	(ft. bgs)	(ft. bgs)	(ft. bgs)
MW-1*	7/16/1999	2	26.5	5-25	0.01	4-26.5	3-4	0-3
MW-1B	8/17/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-2*	7/16/1999	2	26.5	5-25	0.01	4-26.5	3-4	0-3
MW-2B	8/16/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-3*	7/16/1999	2	31.5	5-25	0.01	4-27	3-4; 27-31.5	0-3
MW-3B	8/16/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-4*	7/16/1999	2	26.5	5-25	0.01	4-26.5	3-4	0-3
MW-4B	8/13/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-5	8/29/2001	2	25	5-25	0.02	4-25	3-4	0.5-3
MW-6	8/29/2001	2	25	5-25	0.02	4-25	3-4	0.5-3
MW-7	8/29/2001	2	25	5-25	0.02	4-25	3-4	0.5-3
MW-8	10/30/2007	2	25	15-25	0.01	13-25	11-13	1-11
MW-9A	3/18/2013	2	15	10-15	0.02	8-15	1.5-8	1-1.5
MW-9B	3/18/2013	2	20	15-20	0.02	13-20	1.5-13	1-1.5
MW-10A	3/18/2013	2	15	10-15	0.02	8-15	1.5-8	1-1.5
MW-10B	3/18/2013	2	20	15-20	0.02	13-20	1.5-13	1-1.5
MW-10S	6/12/2014	4	10	6.5-10	0.02	3.5-10	1-3.5	n/a
MW-11A	3/19/2013	2	15	10-15	0.02	8-15	1.5-8	1-1.5
MW-11B	3/19/2013	2	20	15-20	0.02	13-20	1.5-13	1-1.5
MW-11S	6/11/2014	4	10	6.5-10	0.02	3.5-10	1-3.5	n/a

Notes:

\* = Destroyed and replaced with "B" well in 2010

ft. bgs = Feet below ground surface

ID = Identification

in. = Inches

n/a = Not available

# Table 2Current Groundwater Monitoring Data and Analytical Results76 Service Station No. 1156 (351645)4276 MacArthur BoulevardOakland, California

WELL ID	DATE SAMPLED	TOC* (ft)	DTW (ft)	LNAPL THICKNESS (ft)	GWE* (ft)	OIL AND GREASE (µg/L)	TPH-DRO W/SGC (µg/L)	TPH-GRO (µg/L)	B (µg/L)	Т (µg/L)	E (µg/L)	Χ (μg/L)	COMMENTS
MW-1B	1/20/2016	174.06	5.86	0	168.20		ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-2B	1/20/2016	173.55	4.91	0	168.64		ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-3B	1/20/2016	177.77	5.18	0	172.59		240	4,700	160	52	230	80	
MW-4B	1/20/2016	179.07	5.14	0	173.93		ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-5	1/20/2016	169.18	1.42	0	167.76		ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-7	1/20/2016	172.11	6.48	0	165.63		ND<40	130	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-9A	1/20/2016	173.01	8.47	0	164.54		360	7,700	2,400	17	53	14	
MW-9B	1/20/2016	172.78	4.72	0	168.06		ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-10A	1/20/2016	174.48	8.63	0	165.85		990	30,000	9,100	200	960	1,000	
MW-10B	1/20/2016	174.62	6.43	0	168.19		300	7,800	1,600	60	240	270	
MW-10S	1/20/2016	175.57	6.13	0	169.44	ND<5,000	ND<40	200	5.6	ND<0.30	15	ND<0.60	
MW-11A	1/20/2016	175.37	4.28	0	171.09		930	68,000	10,000	5,500	1,500	11,000	
MW-11B	1/20/2016	174.65	7.71	0	166.94		780	35,000	9,400	1,600	880	2,300	
MW-11S	1/20/2016	176.09	3.23	0	172.86		ND<40	270	2.6	0.47	1.4	0.86	
QA	1/20/2016							ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	

#### NOTES:

\* TOC and GWE are in feet above mean sea level

Oil and grease analyzed by Environmental Protection Agency (EPA) Method 1664A HEM

TPH-DRO with SGC analyzed by EPA Method 8015B/TPHd

TPH-GRO analyzed by EPA Method 8015B

BTEX analyzed by EPA Method 8020

µg/L = Micrograms per liter

-- = Not available/not sampled

B = Benzene

DTW = Depth to water below TOC

E = Ethylbenzene

ft = Feet

GWE = Groundwater elevation

ID = Identification

LNAPL = Light non-aqueous phase liquid

ND<# = Analyte not detected at or above indicated practical quantitation limit

Q1 = 1st quarter

QA = Trip blank

T = Toluene

TOC = Top of casing

TPH-DRO W/SGC = Total petroleum hydrocarbons-diesel range organics with silica gel cleanup

TPH-GRO = Total petroleum hydrocarbons-gasoline range organics

X = Total xylenes

# Table 3Current Groundwater Analytical Results - Oxygenate Compounds76 Service Station No. 1156 (351645)4276 MacArthur BoulevardOakland, California

WELL ID	DATE	MTBE	ТВА	ETHANOL	EDB	EDC	DIPE	ETBE	TAME
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1B	1/20/2016	14	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-2B	1/20/2016	3.8	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-3B	1/20/2016	8.9	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-4B	1/20/2016	1.7	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-5	1/20/2016	2.2	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-7	1/20/2016	120	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-9A	1/20/2016	16	1,300	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-9B	1/20/2016	4.1	ND<10	ND<250	ND<0.50	1.1	ND<0.50	ND<0.50	ND<0.50
MW-10A	1/20/2016	320	ND<50	ND<1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
MW-10B	1/20/2016	51	ND<10	ND<250	ND<0.50	36	ND<0.50	ND<0.50	ND<0.50
MW-10S	1/20/2016	4.4	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-11A	1/20/2016	2,400	ND<500	ND<12,000	ND<25	ND<25	ND<25	ND<25	ND<25
MW-11B	1/20/2016	1,900	ND<250	ND<6,200	ND<12	ND<12	ND<12	ND<12	ND<12
MW-11S	1/20/2016	2.5	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
QA	1/20/2016	ND<0.50							

#### NOTES:

Oxygenate compounds analyzed by Environmental Protection Agency Method 8260B

 $\mu$ g/L = Micrograms per liter

-- = Not sampled

DIPE = Diisopropyl ether

EDB = 1,2-dibromoethane

EDC = 1,2-dichloroethane

ETBE = Ethyl t-butyl ether

ID = Identification

MTBE = Methyl t-butyl ether

ND<# = Analyte not detected at or above indicated practical quantitation limit

QA = Trip blank

TAME = t-amyl methyl ether

TBA = t-butyl alcohol

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

January 7, 2016

Nicole Arceneaux Ed Ralston Chevron Environmental Management Company Phillips 66 Company 6101 Bollinger Canyon Road 76 Broadway San Ramon, CA 94583 Sacramento, CA 95818 (Sent via E-mail to: nicole.arceneaux@Chevron.com)

(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: Feasibility Study Review 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 abovereferenced site, including the documents entitled, "Feasibility Study, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California," dated November 10, 2015 (Feasibility Study Report). Based on our review of the Feasibility Study Report, we have the following technical comments. We request that you address the technical comments and submit the reports requested below.

#### **TECHNICAL COMMENTS**

- 1. Feasibility Study Report Conclusions and Recommendations. The Feasibility Study Report concludes that multi-phase extraction (MPE) may be a feasible remedial technology; however, the general feasibility of MPE could not be evaluated due to several data gaps. The use of a fixed MPE system was considered unfavorable due to several operational limitations for the site. The operation and monitoring of a mobile MPE system could be used to close data gaps but was not considered because it was assumed that mobile MPE would not produce lasting changes to groundwater concentrations. As a result, monitored natural attenuation was recommended for the site. In order to address data gaps regarding the use of MPE and to evaluate MPE as a remedial alternative for the site, we request that you submit a Work Plan for an MPE pilot test along the northwest property boundary.
- 2. Convenience Store Expansion. Appendix B of the FS Report provides proposed plans to expand the convenience store approximately 10 feet to the northwest. The expansion will cover the area where soil vapor samples SVW-2 and SVW-5 were collected. Total petroleum hydrocarbons as gasoline were detected in soil gas from SVW-2 and SVW-5 at concentrations of 37,000,000 and 240,000,000 micrograms per cubic meter (µg/m<sup>3</sup>), respectively. Benzene was detected in soil gas from SVW-2 and SVW-5 at concentrations of 59,000 and 870,000 micrograms per cubic meter (µg/m<sup>3</sup>). The concentrations of TPHg and benzene detected in SVW-2 and SVW-5 exceed Environmental Screening Levels for commercial land use by several orders of magnitude. In the Work Plan requested below,

Responsible Parties RO0000409 January 7, 2016 Page 2

please describe the mitigation measures that will be used to prevent potential vapor intrusion for the convenience store expansion.

**3. Groundwater Sampling.** Groundwater monitoring is to be continued on a semiannual basis. Please present the results in the reports requested below.

#### 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:

- March 31, 2016 Pilot Test Work Plan File to be named: WP\_R\_yyyy-mm-dd RO409
- April 12, 2016 Semi-Annual Groundwater Monitoring 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 <u>jerry.wickham@acgov.org</u>. Online case files are available for review at the following website: <u>http://www.acgov.org/aceh/index.htm</u>. 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: Maureen Dorsey, Oakland Veterinary Clinic, 4258 MacArthur Boulevard, Oakland, CA 94619

Responsible Parties RO0000409 January 7, 2016 Page 3

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

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

#### 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 SWRCB visit the 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.

	REVISION DATE: May 15, 2014
Alameda County Environmental Cleanup	ISSUE DATE: July 5, 2005
Oversight Programs (LOP and SLIC)	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 <u>do not</u> 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.
- <u>Do not</u> 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 <u>will not</u> 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:

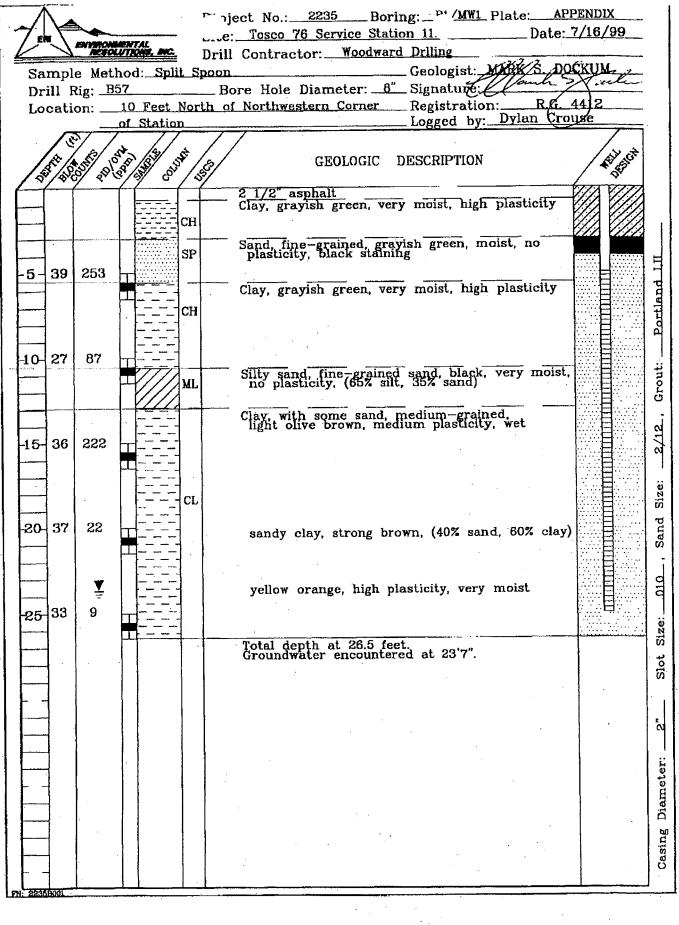
RO#\_Report Name\_Year-Month-Date (e.g., RO#5555\_WorkPlan\_2005-06-14)

#### **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 <u>deh.loptoxic@acgov.org</u>
  - 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 <a href="http://alcoftp1.acgov.org">http://alcoftp1.acgov.org</a>
    - (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 <u>deh.loptoxic@acgov.org</u> 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

**Boring Logs** 

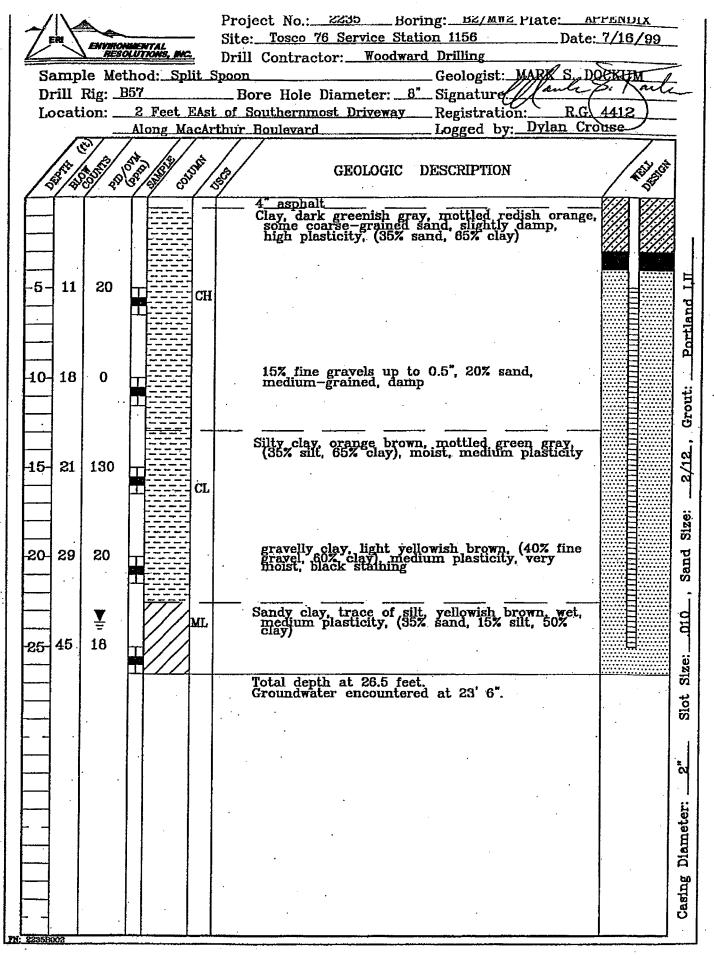


	Project No:	C101156		Clier	nt:	COP	Boring/Well No: MW-1B
	Logged By:	Alan Bueh	ler		ition:	Oakland	Page 1 of 2
	Driller:	Gregg Dri			e Drille		
Delta	Drilling Method:		-	Hole	Diame		
	Sampling Metho	d;	Split Spo	oon Hole	Depth	: 25'	
Consultants	Casing Type:	Sch 40		Well	Diame	eter: 2"	
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gat the transport			6			Sana, 10 %, grave	in scrong oddr, ddinp
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	19	MW-1B -20			ÇL		clay with gravel, 30% sand, 10%
		-20	21		~	gravel, strong odd	
					CL		n sand, 25% sand, some odor,
— <b> </b>			22 —			damp	
	1		l			I	

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Delta Environmenta Consultants, Inc.	Sampling M Casing Type Slot Size: Gravel Pack	: Alan Buehl Gregg Dril thod: HAS Aethod: pe: Sch 40 0.02	ler ling Split Spoon X	Location: Date Drilleo Hole Diame Hole Depth Well Diame Well Depth First Water Static Water	d: 8/17/2010 eter: 8" : 25' eter: 2" : 25' Depth: 23.5' er Depth:	Boring/Well No: <b>MW-1B</b> Page 2 of 2
Backfill Casing United Mell Mell Water Level	Moisture Content PID Reading	(ppm) (ppm) Penetration (blows/6")	Northing: Ceeth (feet) Northing: Sau Recovery	Interval add Soil Type	Easting:	OLOGY / DESCRIPTION
		44 MW-1B -25	23     24       24     25       26     27       28     29       30     31       31     32       33     34	CL.	saturated, mild od	15% samp, mild odor, damp
			35       36       37       38       39       40       41       42       43       44			

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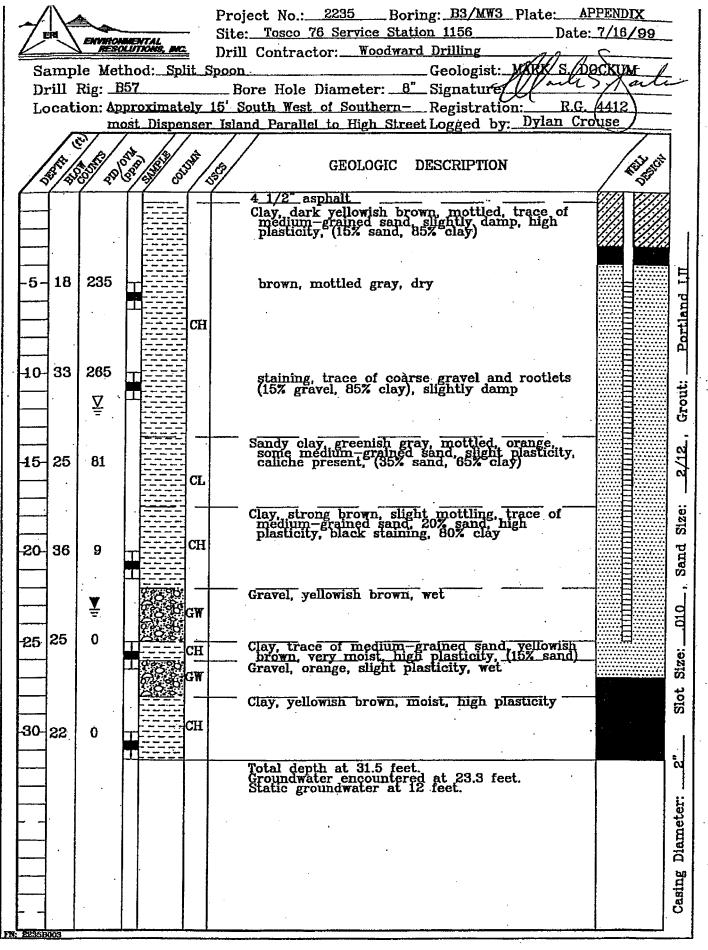
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Delt consultar			Method: ng Method: Type: re: Pack:	C101156 Alan Bueh Gregg Dri HAS 4: Split Spo Sch 40 0.02 2/12	lling	Date Hole Hole Well Well ▼ First ∑ Stati	tion: Drilled Diame Depth Diame Depth Water	ed: 8/16/2010 heter: 8" h: 25' heter: 2" h: 25'			
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			181	MW-2B -5			CL		ish lean clay with sand		
			0	MW-2B -10	9 10 11 12		СН	Greenish fat clay	, dense, damp, odor		
			120	MW-2B -15	13 — 14 — 15 — 16 — 17 —		CL	Green lean clay v damp, odor	with sand, 15% med-course san		
			8	MW-2B -20	18 — 19 — 20 — 21 — 22 —		CL	Dark borwn lean med sand, damp	clay with sand, 15% sand, fine , odor		

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Delta Environmental Consultants, Inc.	Project No: C101156 Logged By: Alan Buehle Driller: Gregg Drillin Drilling Method: HAS Sampling Method: Split S Casing Type: Sch 40 Slot Size: 0.02 Gravel Pack: 2/12 Elevation:	er Location: Oa ing Date Drilled: Hole Diameter Spoon Hole Depth: Well Diameter Well Depth: ¥ First Water De Static Water D	8/16/2010 r: 8" 25' r: 2" 25' epth: 23.5' Depth:
Backfill Casing Water Level	Moisture Content PID Reading (ppm) Penetration (blows/6")	Depth (feet) Recovery Second Interval	LITHOLOGY / DESCRIPTION
	190 MW-2B -25	CL m	rown lean clay with sand, 25% sand, some gravel, hild odor lack/brown mottled clay, damp, mild odor Total Depth = 25'

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Delt consulta			d By: : g Method: ing Method i Type: ze: Pack:	C101156 Alan Buehl Gregg Drill HAS d: Split Spo Sch 40 0.02 2/12	lling	Client: COP Location: Oakland Date Drilled: 8/16/2010 Hole Diameter: 8" Hole Depth: 25' Well Depth: 25' Well Depth: 25' First Water Depth: Static Water Depth: thing: Easting:			Boring/Well No: MW-3B Page 1 of 2
Well Completion gazing Casing Casing Casing Casing	Water Level	Moisture Content	6	Sample Identification	Depth (feet)	Sampl	Soil Type	LITH	HOLOGY / DESCRIPTION
			6	MW-3B			CL		with sand, some gravel, no odor
······				-5				odor	
			36	MW-3B -10	10 — 11 — 12 — 13 — 14 —		CH	Light brown/greer sand, 15% fine sa	n/black mottled lean clay with and, damp, mild odor
			790	MW-3B ~15	15 — 16 — 17 — 18 — 19 —		CL	Light brown/greer 20% fine-med sar	n mottled lean clay with sand, nd, damp, strong odor
			9		20 — 21 — 22 —		CH CL		ay, damp, mild odor clay with sand, 15% fine sand,

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			Projer	ct No:	C101156	<u> </u>		Client	nt:	COP	Boring/Well No: MW-3B
			Logge	ed By:	Alan Buehle					Oakland	Page 2 of 2
╵┍		4~	Driller		Gregg Drilli	ing			e Drillec		
L	Del	ld	Drillin	ng Metho		0.14.0.			Diame		
	vironm		Bambi	oling Met	ethod: : Sch 40	Split Spc	JON				
	consulta			Size:							
-	Inc.	,		el Pack:				First	Water	Depth: 23.5'	1
		i					$\Sigma$			er Depth:	
	Well	Τ	Elevat		T	Northing		<del></del>	(	Easting:	
Cor	mpletion	Water Level	la tr	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	I	mple	þe		
Backfill	Casing	ler l	Moisture Content	Rea	etra ows,	tr (1)	Recovery	Interval	Soil Type	LITH	HOLOGY / DESCRIPTION
Bac	Cas	Wat	žŪ		(bl/	Dep	lec	Inte	S I		
			<b>├</b> ──-1	<u> </u>	+		<u> </u> <sup>∞</sup>		·	<u> </u>	
		'	1 '	· /	1	23	E		i		
		'	1	'	1	24			i		
	'	1		15	MW-3B				CL	Light brown lean c sand, moist, very s	clay with sand, 30% fine-med
				1.2	-25	25 —			l L	Total Depth :	= 25'
		1				26	<b> </b>		i		
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Project No.: 2235 Boring: B4/MW4 Plate: APPENDIX Site: Tosco 76 Service Station 1156 Date: 7/16/99 ENVIRONMENTAL RESOLUTIONS Drill Contractor: Woodward Drilling Sample Method: Split Spoon .Geologist: Ct A Drill Rig: B57 \_Bore Hole Diameter: <u>8</u> Signature Location: 18 Feet North of Southernmost Dispenser R.G Registration Logged by: Dylan Crouse Island Parallel High Street 210 220 COLUM DESIGN **NELD** GEOLOGIC DESCRIPTION 15CE SER 4¥8) 4<u>1/2</u> asphalt Clay, greenish gray, mottled, orange slightly damp, high plasticity 17 309 -5-Portland 22 253 -10-Т CH Grout: trace of medium-grained sand, slightly moist 7 /12 19 -15-4 moist 2 Size: Sand 28 -20 4 brownish yellow, black staining, 20% gravel, 20% medium-grained sand, moist Т 010 <u>.</u> brown, mottled, olive yellow, moist, black staining 36 0 -25-Slze: ÷ Total depth at 26.5 feet. Groundwater encountered at 23.6 feet. Slot 3 **Diameter:** Casing

Delt Consulta		Project No: C101156 Logged By: Alan Buehler Driller: Gregg Drilling Drilling Method: HAS Sampling Method: Split Spoon Casing Type: Sch 40 Slot Size: 0.02 Gravel Pack: 2/12				Client: COP Location: Oakland Date Drilled: 8/13/2010 Hole Diameter: 8" Hole Depth: 25' Well Depth: 25' Well Depth: 25' ✓ First Water Depth: ✓ Static Water Depth: Ing: Easting:			Boring/Well No: MW-4B Page 1 of 2
Well Completion Gasing Casing Casing Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery Interval	Soil Type		IOLOGY / DESCRIPTION
					1 — 2 — 3 —		GC	Airknife to 5' Brown clayey grav	el with sand,
			2,1	MW-4B -5	4 — 5 — 6 — 7 —		SW-	Greenish gray wel	l with sand, cobbles up to 4" l graded sand with silt and . 20% gravel, no odor
			1401	MW-4B -10	8 —			Black well graded strong odor	sand with silt, 60% fine sand,
······································			19.5	MW-4B -15	12 — 13 — 14 — 15 — 16 —		CL	Brown/green mott sand, some odor	cled lean clay with sand, 15% fir
				MW-4B -20	17 — 18 — 19 — 20 — 21 — 22 —		CL	Brown/black mott med sand, some c	led sandy lean clay, 30% fine- odor

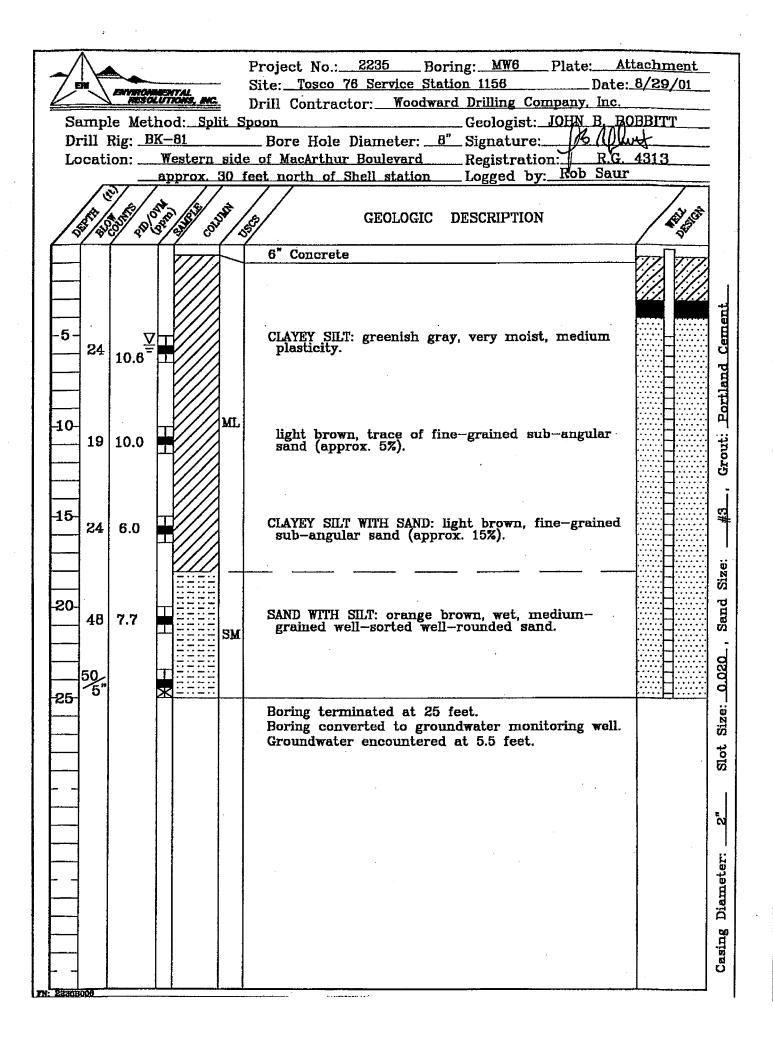
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			Alan Buehle	er			tion:		Page 2 of 2
	Driller		Gregg Drilli				Drilled		
Delta	Drilling						Diame		
	Sampl			Split Sp	oon				
Environmental			Sch 40				Diame		
Consultants,	Slot SI		0.02			Well	Depth	: 25'	
Inc.	Gravel	Pack:	2/12		T	First	Water	Depth: 23.5'	
					$\underline{\nabla}$	Stati	c Wate	er Depth:	-
Well	Elevati			Northing	): 			Easting:	
Backfill Casing Water Level	اي ي	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sa	mple	e		
	Moisture Content	pm	trat vs/t	1 (fe	εī	Interval	Soil Type	LITH	HOLOGY / DESCRIPTION
Backfill Casing Water L	ΩQ	ц ц с	plo	spt	Recovery	ten	Soil		· · · · · · · · · · · · · · · · · · ·
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11 × 11 × 11				24	<u>                                      </u>				
*****		19	MW-4B	-		1933 1933 1933	CL	Brown lean clay 1	0% fine-med sand, some odor
		19	-25	25	126298	1000	UL.	Total Depth	
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Num.				 					
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Project No.: 2235 Boring: <u>MW5</u> Plate: <u>Attachment</u> Site: Tosco 76 Service Station 1156 \_Date: <u>8/29/01</u> RESOLUTIONS. Drill Contractor: Woodward Drilling Company, Inc. Sample Method: Split Spoon Geologist: JOHN B. BOBBITT Drill Rig: <u>BK-81</u> Bore Hole Diameter: \_ 8"\_Signature:\_ 61 Location: <u>Eastern side of MacArthur Boulevard</u> R.G. 4313 Registration Logged by: Rob Saur approximately 40 feet north of site PID STA COLUM DEALLY ALCONT !! DESIG JEC -(E) GEOLOGIC DESCRIPTION 6" Concrete Portland Cement 5 CLAY WITH SAND AND TRACE OF GRAVEL: greenish gray, moist, high plasticity, fine-grained sand, fine-grained poorly-sorted subangular gravel. 8.3⊉ 23 CL -10 SANDY CLAY: orange brown, moist, low plasticity, 27 7.7 Grout: fine-grained sand. ដ -15 SANDY SILT: orange brown, moist, low plasticity, 57 11.2 fine-grained sand. Size: ML 20-30 Sand 0.020 light brown, wet. 38 7.7 -25 Boring Terminated at 25 feet. Size: Boring converted to groundwater monitoring well. Groundwater encountered at 6 feet. b 0 5 **N** Diameter: Casing



Project No.: 2235 Boring: MW7 Plate: Attachment Site: Tosco 76 Service Station 1156 RESOLUTIONS, Drill Contractor: Woodward Drilling Company, Inc. Sample Method: Split Spoon Geologist: JOHN B. BOBBITT Drill Rig: <u>BK-81</u> Bore Hole Diameter: <u>8"</u> Signature: 16/11hut Location: Western side of MacArthur Boulevard Registration: R.G. 4313 Logged by: Rob Saur approx. 40 feet north of High Street 200 (apro) COLUM -DEP GEOLOGIC DESCRIPTION 6" Concrete Cemen 150 5" SANDY SILT: brown with bluish green mottling, moist, low plasticity, 40% fine-grained sand. 5 25 Portland -10-Grout: 36 236 ML -15 £3 35 8.9 light brown, wet. Size: 20 Sand 25 57 0.020 50 5" reddish brown, 30% medium-grained sand. 19.3 25 Boring terminated at 25 feet. Size: Boring converted to groundwater monitoring well. Groundwater encountered at 15 feet. Slot "N Diameter: Casing 22368007

<b></b>	Project	No: C10	1156151			Clier	nt: Con	ocoPh	illins		Well No; MW-8
			bitha Cro						acArthur Bouleva	rđ	Date Drilled: 10/30/07
	Driller:	Gregg D	Drilling &	Testing	I		0	akland	I, CA		Page 1 of 2
Delta	1 -	Method:				Hole	e Diame	eter: <b>8</b> '	•		
			d: Split S				e Depth		First Water		
Consultants	-		hedule 4	10 PVC			Diame		•	_	
	1	e: <b>0.01</b> (					Depth			⊻ =	Static Groundwater
	Gravel	Pack: #2 Elevatio		1	North		Water	Depth	Easting	*	- Selected for lab
		Lievatio	••		NOIC	inny			Lasting	_	analysis
Well		5	Ę		6			<b></b>			
Completion Static	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)		nple	Soil Type				
₩ater	oist(	Rea	tific	- -	l e	Zai	ب ۳		LITHO	LOGY /	DESCRIPTION
Water Level Casing Rackfill	žŬ	Ū,	den	Geb	Recovery	Interval	Ŝ				
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Well Box				_	- <u> </u>		1000000000000		Concrete = 6		
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			Air-Knife		+						
Neat Cement			Air	3—	1			• • • •			
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				4-				_			
				5_							
	moist	0.1	@ 5 9:46					CL			dium stiff; medium
			9:40	6		H					ss; some fine sand; sub round gravel;
				-					moist; no odo		
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	moist	0.2	@ 10* 9:51	-		<b> -</b> ]-					ttling; trace roots;
			9.51	11-	 	$\vdash$			Some Diack Sto	anning, s	light odor; (5,15,80)
				-	1933.0	<b>•</b>					
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				15	6.05.05.4						
	moist	0.2	@ 15*	-		1		CL			nge mottling; trace
			9:56	16—							ning; medium stiff; toughness; sand fine
						<b>–</b>			grain; moist;		
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	1			18-					· · · · · · · · · · · · · · · · · · ·		
	moist	0.2	@ 20*		_				Soft; medium		plasticity; low
			10:P37	- []	100000				toughness; (0	,30,70)	
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	Project No: C1	01156151	1	. · ·	Clien	t. Con	ocoPh	nillips	Well No: MW-8				
	Logged By: Ta							lacArthur Bouleva					
	Driller: Gregg						akiano		Page 2 of 2				
Delta	Drilling Method		-		Hole		ter: 8						
	Sampling Meth		Spoon		Hole	Depth	: 25'		∑ = First Water				
Consultants	Casing Type: S									ter: 2'			
	Slot Size: 0.01	.0"				Depth			👤 = Static Groundwater				
	Gravel Pack: #		····			Water	Depth						
	Elevat	on						* = Selected for lab					
Well		1		T	1				analysis				
Completion	Moisture Content PID Reading (ppm)	Sample Identification	et)	Sar	nple	ð							
Static	Moisture Content ID Readin (ppm)	nple	Depth (feet)	2	Ŧ	Soil Type		LITHO	LOGY / DESCRIPTION				
Water Level Cassin B	Con Con R	Sar	pt	Recovery	Intervał	lio							
Ca Ba	Id	Ide	ď	Rec	Int	0,	[						
$\nabla$			100										
			23										
			24—				SC		tan; orange mottling; medium				
			-						graded; loose; wet; no odor				
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			26					Total Depth	= 25 feet bgs				
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	Project No: C	101156151	Clie	ent: ConocoP	hilling	Boring No: SB-1				
	Logged By: T				MacArthur Blvd	Date Drilled: 11/6/07				
	Driller: Gregg			Oaklar		Page 1 of 2				
Delta	Drilling Metho	-	-	le Diameter: 4	•					
	Sampling Met			Hole Depth: <b>35'</b> $\Sigma$ = First Water						
Consultants	Casing Type:			Well Diameter: NA						
Constants	Slot Size: NA			Well Depth: NA						
	Gravel Pack:	A		First Water Depth: 4'						
	Eleva		Northing		Easting	* = Selected for lab				
				'		analysis				
Well		c	~ .		····					
Completion Static	Moisture Content PID Reading	Sample	Depth (feet) Samble ecovery nterval							
🗮 🖻 🛛 Water	Moisture Content (D Readin	L D D	Depth (f Recovery Interval	<u>}</u>	LITHO	DLOGY / DESCRIPTION				
Water U Service Barrier Barrier Barrier Level	l v°S g S	erte	ept ter v	Soil						
ů Ú		P	ŭ Å Ë							
					Asphalt - 6"					
				-		dium gravel; surrounded;				
en e			1			toughness; soft; moist; (45,5,50)				
		ല								
Veat Cement		Air-Knife	2		Fill; some clav: h	prown; gravel medium to coarse;				
at					· · · · · · · · · · · · · · · · · · ·	ne fine sand; moist				
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$\nabla$						· · · · · · · · · · · · · · · · · · ·				
			4		@ 4' large rocks;	subround; wet; trace fine sand				
			-		and clay; (90,5,5					
	wet 6.2		5	—	<u> </u>					
			c							
			6	CL	Lean clay; olive	green; some fine to medium sand;				
			7			tling; medium stiff; medium				
	wet   326	@ 7*				ghness; wet; strong odor				
		8:39	8		(0,30,70)					
			•							
	wet   165		9		Some black spece	5				
		8.42								
			10							
	wet 221				Some black and r	ed staining				
and the second sec		8:45	11							
· · · · · ·			12		Sand fine to med	ium grain (0,40,60)				
	wet 140									
· · · · · ·		8:48	13	SC		and with clay; brown; some				
				- Main		ing and gray staining; sand fine to				
,	wet 118		14			oft; loose; wet; strong odor				
		8:50			(0,70,30)					
	wet 133		15			· · · · · · · · · · · · · · · · · · ·				
	wet 133	@ 15 8:52	_ <del> </del> _ _∓							
		0:52	16		Ded bus 11					
-						prange and olive green mottling;				
	wet 419	@ 17	17		medium stiff; (0,					
	Wet   415	8:56				fine to medium sand; red brown				
		0.50	18	-		ling and black specs; medium				
	wet 105	5 @ 18.5*				ghness; medium stiff; wet; strong				
		8:58	19	-	odor; (0,35,65)					
						······································				
	wet 148	@ 20	20 -		Chiffy trace	im gravali cand madium				
		0.02		-		um gravel; sand medium grain;				
		5.02	21		(5,35,60)	·····				
	wet 152	@ 22			Some black etcia	ino.				
		9:04	22	-	Some black stain	<u>IIIY</u>				
	Ll	1 2.01		INCOMPANY						

	Project No: C10	1156151	Clior	ati Cone	ocoPhillips	Boring No: SB-1		
	Logged By: Tab				76 MacArthur Blvd	Date Drilled: 11/6/07		
	Driller: Gregg I	-			kland, CA	Page 2 of 2		
Delta	Drilling Method:	-	-	Diamet				
	Sampling Metho			Depth:		$\bigtriangledown$ = First Water		
Consultants	Casing Type: N			Diamet				
	Slot Size: NA		Well	Depth:	NA	<b>Y</b> = Static Groundwater		
	Gravel Pack: NA	<u>\</u>	First	: Water I	Depth: 4'			
	Elevatio	on	Northing		Easting * = Selected for lab			
Well		·····		r	· · · · · · · · · · · · · · · · · · ·	analysis		
Completion	Moisture Content PID Reading (ppm)	Sample Identification Depth (feet)	Sample	υ				
Static	Moisture Content ID Readin (ppm)	Sample dentificatior Depth (feet)	<u> </u>	Soil Type	LITUC	NOCY / DESCRIPTION		
Water Backfill Casing Mater	(Pr Con dis	San ntif	tecovery	<u>oi</u>		DLOGY / DESCRIPTION		
Ca Ba	Id	De	Rec	0				
				17 OP		· · · · · · · · · · · · · · · · · · ·		
		23	\$ <b> </b>		(5,40,55)			
Neat Cement	wet 61.1	24				· · · · · · · · · · · · · · · · · · ·		
e		24			A lot of black spe	cs, very stiff; sand medium to		
S S		a ar 25	₩₩		coarse; low plasti	city; high toughness; odor;		
ea 	wet 78.1	@ 25			(5,40,55)			
Z		9:13 26	5	N.S.B.				
				1.4		specs; trace orange mottling;		
	wet 41.2	@ 27 <sup>27</sup>	′ <u> </u>			e fine gravel; sub angular; very		
·	Wet 41.2	0.15			stiff; (5,35,60) Red brown with o	range mottling; soft; no plasticity;		
		28				um; crumbles easily; (5,40,55)		
	wet 53.9		, The second sec			<i>anii anni ca casiii ( 3,40,53)</i>		
		29			No orange mottlin	ng; medium stiff; low plasticity;		
		30	•		(0,40,60)	· · · · · · · · · · · · · · · · · · ·		
	wet 76.8					some tan mottling; a lot of black		
		31			specs; sand fine	grain; trace coarse sand; (0,35,65)		
	wet 38.3	32	2		Madium atiffi us d	have a state balance of the second		
	wet 50.5				plasticity and tou	brown with black specs; medium		
		33	3			gnitess		
	wet 65.8	@ 33.5*		a ann an a	SC Poorly graded s	and with clay; trace fine gravel;		
		9:32 34				coarse; red brown and orange;		
						; hard but crumbles easily; some		
		35	) i		black specs; grav	vel sub angular; wet; odor;		
		36	;		(5,65,30)			
			´		·····			
		37	/	4				
					TD	= 35 feet bgs		
		38	3					
•			· +		· · ··· ·· · ·· · · · · · · ·	·····		
		39	)	1				
			、	1	·····	······		
		40	) <u> </u>	]		······································		
		41		]	· · · · · · · · · · · · · · · · · · ·	······································		
			•					
		42	·					
			·	4		· · · · · · · · · · · · · · · · · · ·		
		43	3			·····		
				+				
		44	┇──┼─┼─			···- ······		
<u> </u>			II,	I				

<b>F</b>	Project No: C	101156151		Client: C	onocoPhillip	)\$	Boring No: SB-2			
	Logged By: T				: 4276 MacA		Date Drilled: 11/5/07			
	Driller: Greg	g Drilling &	Testing		Oakland, C	A	Page 1 of 2			
Delta	Drilling Metho	d: HSA		Hole Dia	meter: 4"					
1	Sampling Met	hod: Contin	nuous	Hole Dep	$\Sigma$ = First Water					
Consultants	Casing Type:	NA		Well Diar						
	Slot Size: NA			-	Well Depth: NA The Static Groundwate					
	Gravel Pack:		·r ····		ter Depth: 22					
	Eleva	tion	No	rthing	E	asting	* = Selected for lab			
Well				<u> </u>			analysis			
Completion	Moisture Content PID Reading	Sample	S G	ample o						
문 및 Water	Moisture Content D Readin	icat	Depth (feet)	terval Soll Type		1 77110	ACY / DECORTEZAN			
Backfill Back Forel Backfill	Si Di Si di	ntif	H H			LITHU	LOGY / DESCRIPTION			
Ca		Ide		Kecovery Intervai Soil Tv						
	<u>├──</u>					sphalt - 2"				
				Silves 1						
			1 1		563964		ravel; tan; low to medium			
E E		0	! -∔-				ughness; stiff; moist; gravel fine			
Ŭ		nife	2			medium; (30,0	,70)			
Neat Cement		Air-Knife	+-		Q.	······································	· · · · · · · ·			
S S S S S S S S S S S S S S S S S S S		Air	3				······································			
							· · · · · · · · · · · · · · · · · · ·			
			4							
						··· -·· · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
	moist 932.	0 @ 5	- 5		Ta	n with olive are	en mottling; medium plasticity			
		8:43					ome silt; trace fine sand; moist;			
			6			ong odor; (0,1				
							internation of the second s			
	moist 159	9 @ 7	7		Re	d brown specs;	some roots; medium stiff; trace			
		8:45	8		fin	e gravel; (5,25	,70)			
				<b>•</b>						
	moist 130	7 @ 8.5*	9		(5	,40,55)				
		8:47			SC CI	ayey sand; tar	and olive green; some red			
			10-		bro	own mottling; r	ed specs; sand fine to medium			
· · · ·	moist 152	-	<b></b>		m	edium stiff; cru	mbles easily; no plasticity; gravel			
		8:49	11				strong odor; (15,50,35)			
			_	and and and a			k specs; red brown and tan			
		-	12—				rown; some olive green mottling;			
	moist 133						fine sand; some black specs; low			
		8:51	13-		代表		ughness; moist; strong odor;			
						,35,65)				
	moist 122		14		1663		ium; trace fine gravel; red brown			
		8:53			an an	d tan; some oli	ive green; (5,25,70)			
	moist 76		15		M					
	Indisc 70.	2 @ 15 8:55					dium plasticity and toughness; red			
		0.55	16-		ANE I		e green; some black specs;			
· · · · · · · · · · · · · · · · · · ·					(0	,35,65)	·····			
	moist 308	3 @ 17	17		P -	d browny corre-	pink staining: alive grees			
		8:57					pink staining; olive green			
		0.5/	18			0,35,55)	es easily; some fine gravel;			
	moist 182	2 @ 18.5				(,)				
	10/	8:59	19		De	d brown: does	n't crumble easily; some fine sand;			
					2.2.2.14	lor; (0,40,60)	in t crumble cashy, some one sand;			
	moist 124	1 @ 20*	20			ior, (0,40,00)	······································			
		9:04			M.	edium soft: me	dium sand; trace fine gravel; some			
			21 —				plasticity; high toughness;			
	wet 228	3 @ 22			14.0.2	0,40,50)	plasticity, mgn tougimess;			
		9:06	22				d brown with orange mottling;			
						-, c, cana, rec				

<b></b>	Project	No: C10	1156151		Client: C	nocoPhillips	Boring No: SB-2	
			bitha Cro			4276 MacArthur Blvd	Date Drilled: 11/5/07	
	Driller:		villing &	Testing		Oakland, CA	Page 2 of 2	
Delta	<b>A</b> Drilling	Method:			Hole Dia			
	Jount		d: Contin	uous	Hole Dep	$\sum$ = First Water		
Consultant		Type: NA	۱.			Well Diameter: NA		
	Slot Siz				Well Dep		Y = Static Groundwater	
	Gravel	Pack: NA Elevatio			First Wat Northing	er Depth: 22' Easting	* = Selected for lab	
		Lievatio			Northing	casting	analysis	
Well		Б	L.	G				
	atic Woisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	covery Samble Covery Sould Frence		1	
	ater ts t	Re; ppr	amı	th th	Recovery Interval Soil Tv	LITH	IOLOGY / DESCRIPTION	
	evel Σŭ	OI d	den S	Cep	nte:			
			н					
				23			ty; sand fine to medium; fine gravel	
Neat Cement	wet	55.1				iouse, signity (	cemented; wet; odor; (15,50,35)	
Ĕ		00.1		24		Cemented: ver	y stiff; sand medium grain; red	
Ů 👘						1000	range mottling; (5,55,40)	
eat	wet	51.2	@ 25*	25—			anne far en anne afficielle i sin anne anne anne anne a	
ž			9:30	26—				
				20		the second se	brown and tan with orange	
• • •				27	<b>₩</b>		black specs; medium stiff; medium	
	wet	14.6				50.21	oughness; sand fine grain; wet;	
				28 —		odor; (0,40,60	)	
	wet	21.1		. –		Red brown with	ton mottling	
·····	WEC	21.1		29 —		Ked brown with		
				-				
	wet	13.7		30		Black specs; st	iff; trace fine gravel; low plasticity;	
				31 —		high toughness		
				51 _				
				32		Some pink stai		
	wet	2.3		_		Medium soft; (	5,40,55)	
				33 —		Bod brown with	h black specs; very stiff; some fine	
	wet	11.1		-		sand; slight od	in the second	
	1.00			34 —		Solid, Singhe of		
-				35 —	<b>•</b>	Medium stiff; (	0,20,80)	
				135 —				
		1	1	36	<u></u>			
							······································	
	1			37	╋╾╍╋╼╍╌┨	<b>T</b>	D = 35 feet has	
				-	+		D = 35 feet bgs	
				38 —				
			ľ	-	+ + +		· · · · · · · · · · · · · · · · · · ·	
		1		39				
				40				
	1							
				41-	+			
				-	+ + - +		· · · · · · · · · · · · · · · · · · ·	
				42	+		·····	
				-	╈╋		······	
		1		43	++	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
				-	+ +	······································	······································	
				44 —		1		
I		<b>.</b>	ł	<u></u>		······		

		Project	No: <b>C10</b>	1156151		Clie	nt: Con	ocoPhi	llips		Boring No: SB-3	_
		-		bitha Cro					Arthur Blvd		Date Drilled: 11/2/07	
	_		-	Drilling &	-			akland			Page 1 of 2	
Del	ta	Drilling		-		Hole		eter: 4"				
	La			d: Contin	110115		e Depth			$\nabla$ -	= First Water	
Consulta	ante	Casing 1					•	ter: NA			- Thist Water	
Consulta	ants	Slot Size	• •	•			l Depth			<b>.</b>	= Static Groundwater	
		Gravel F					•	Depth:	241	<u> </u>	- Static Groundwater	
		Graverr	Elevatio		Ν	lorthing	L Water	Deptit.	Easting		- Selected for lab	
			Lievauu	//·	i i i	ortning			Lasting	-	analysis	
Well		T			T		1			L	anarysis	
Completion	<b>a</b>	40	PID Reading (ppm)	Sample Identification	et)	Sample	ψ					
= n	Static Water	ten	ba C	icat ple	(fe	2 -	Δ <u>γ</u>		1 1740		DESCRIPTION	
Backfill Casing	Level	Moisture Content	(Pp	ntif	Depth (feet)	Recovery Interval	Soil Type		LIINU	LUGI /	DESCRIPTION	
Cas		Συ	0Id	dei	Dep	inte co	Ň					
				н		<u>~ ~</u>		<u> </u>				
									Concrete - 6			
<u>ب</u> ب					1				Silty clay; tannis	h brown; i	nedium plasticity;	
e e									medium soft; low	to mediur	n toughness; moist;	
				fe	2—				(0,0,100)			
Ŭ				, ir	2							•••• • •
Neat Cement				Air-Knife				1000				
ž				Σ.	3				@ 3' lean clay; st	iff; mediur	m plasticity; high	•• • • • • • • • • • • • • • • • • • • •
									toughness; moist	; (0,0,100	)	• • • •
					4				· · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · ·	•••
										··· ·· ·	· · · · · · · · · · · · · · · · · · ·	
		moist	1.1	@ 5	5				Some black strea	ks; tan; so	ome red brown specs;	• • • • •
				8:54					some medium sar		the state of the state of the second state and the state of the state	
		1			6			8				• • • • •
												•••
		moist	0.7	@ 7*	7				Some gray streak	s: (0.20.8		••••
			•••	8:57				9	<i>g.g. y. st.</i> ea			• • • • • •
				0.07	8—				• · · · ·		·····	
		moist	0.4	@ 8.5	-		- 5.2		Some black spece	· come wi	nite caliche; trace fine	··· ··
<i>ir</i>		1110131	0.1	9:00	9				gravel; sand med		(a) A set of the first set of a set of the set of th	• • ••
				5.00					giuver, sand meu		136, (3,23,70)	
·		moist	0.6	@ 10	10				Tan with red brow	vn mottlin	•••••••••••••••••••••••••••••••••••••••	
			0.0	9:02			┨╱╶╻	2	Turi wich rea biov	in moting	y	•••••••
				5.02	11				•• • •			
									· · ·			••
and a second sec		miost	0.8	@ 12	12			\$ 				••••
		most	0.0							ап; ріаск	specs; trace fine gravel;	
				9:04	13				(10,25,65)	··· · ···· ···	· · ······· ·····	••••
		maint	0.0	6 17 5	-			<u>.</u>				
		moist	0.6	@ 13.5	14				A lot of black spe	cs; crumb	ies easily	
				9:07	_			g				· · · •
			0.7	0 154	15							
		moist	0.6	@ 15*					Very stiff; low pla	asticity		
		ļ		9:09	16							
·					-					· · · <b>-</b> · · · · · · · · · · · · · · · · · · ·		
			_		17 —	*			More sand; some			
		moist	0.8	@ 17	l" _				Silty lean clay;	red brown	with tan mottling; soft;	
				9:11	18				some black spece	s; (0,35,6	5)	
				1	I							
		moist	2.6	@ 18.5	10				Trace fine gravel	; meidum	soft; medium palsticity;	• • •
				9:15	<sup>1</sup> -				crumbles easily;			• • • • • • •
				ł	20				······································			• • • •
		wet	36.1	@ 20*	20	A last						
	57						and a second s	sc	Clayey sand: no	orly grade	d with fine gravel: sand	
	<u> </u>				21			<b>1</b>				• • • •
1 1		wet	8.8		-				and the second sec			•
- · ·					22			n ar		. specs, w	er, singine odor, (5,55,40)	
	V			9:15	19  20  21  22 			SC	crumbles easily; Clayey sand; pc fine to medium;	silty; (5,4 borly grade red brown		nd ft;

			Project	No: C10	1156151		Clien	t: Con	ocoPhillips		Boring No: SB-3			
					bitha Cro				276 MacArthur Blvd		Date Drilled: 11/2/07			
_		•			Drilling &		3	08	akland, CA		Page 2 of 2			
	elt	ta	Drilling	Method:	HSA		Hole	Diame	ter: 4"					
		LU	Samplin	ig Metho	d: Contin	uous	Hole	Depth:	35'		= First Water			
Со	nsulta	ants	Casing	Type: NA	A Contraction of the second seco		Well	Diamet	_					
			Slot Siz	e: NA			Well	Depth:	NA	🗶 = Static Groundwater				
			Gravel I	Pack: NA				Water	Depth: 21'					
				Elevatio	'n	1	Northing		Easting	*-	= Selected for lab			
	ell		<u> </u>		1					I	analysis			
	letion	Static	يبره	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample	é						
=	5	Water	Moisture Content	pm	fica	E		Soil Type	LII	HOLOGY	DESCRIPTION			
Backfill	casing	Level	C di	A Q	Sar	b	Recovery Interval	Soil		,				
Ba	٢			Id	Įde	ď	Int Rec	0/						
				·····		23			Breaks easily					
t						23-	•							
Jer			wet	3.7		24 —			Sand mostly	medium grain;	; trace fine sand; red			
Cement					}	- ·			brown					
t t						25 —		el anno el terror d						
Neat (			wet	1.8	@ 25*	- 1				terms after the sign of separate second second second	to medium; red brown			
Z					9:48	26					ng; some red specs; stiff;			
										; nign tougnne	ess; wet; no odor;			
	· · · · · ·		wet	1.7		27			(0,35,65)					
	j			1.7		-			Some black s	necs: red brow	wn and some tan;			
	<b>i</b>					28 —	<b>V</b>				ivel; (5,40,55)			
			wet	0.7	ŀ		A							
						29			Stiff; sand fir	ne grain; tan w	with red brown mottling;			
Ï						30 —	<b>₩</b>		(0,30,70)					
			wet	0.5		30 -								
						31 —					ling; trace medium			
						· ·			sand; very st	iff; wet; (0,30	),70)			
			wet	1.1		32			· · · · · · · · · · · · · · · · · · ·					
			wet	1.1		· ·				sano medium	n to fine grain; wet;			
					ł	33			(5,30,65)					
	· · · ·		wet	1.8		· ·			A lot of black	specs: red br	own with tan mottling;			
						34 —					ium grain; (0,25,75)			
							+				, ( <i>,</i> )			
			1			35-		]						
						36					······································			
								4						
						37		4						
	_					Į .		4		TD = 35 fe	et bgs			
			1			38-		-						
							+ + -	1			and a second of the second			
					1	39 —	+ + -	1		··· ··· ·				
								1						
						40-		1						
				1		1.		1		· . ·				
						41-		]			an a			
			Í			42-		]		,				
						142-		]						
			1			43-		1			· · · · · · · · · · · · · · · · · · ·			
						1		4						
			1	1		44		4						
			<u> </u>											

: . . .

			Project	No: C10	1156151		Clie	nt: Cor	ocoPhillips	Boring No: SB-4
ł			-		bitha Cro				276 MacArthur Blvd	Date Drilled: 10/30/07
					Drilling &	-			akland, CA	Page 1 of 2
	)el	ta	Drilling			-			eter: 4"	
-		u			d: Contin	uous		e Depth		$\nabla$ = First Water
	onsult	ants	Casing					•	eter: NA	
1			Slot Siz				Wel	l Depth	: NA	🗶 = Static Groundwater
1			Gravel I	Pack: NA	\		Firs			
1				Elevatio	on		Northing		Easting	* = Selected for lab
	Well	r	<u> </u>			ļ	· · · · · · · · · · · · · · · · · · ·			analysis
Cor	npletion			D L	Sample Identification	l <del>,</del>	Sample			
		Static	Moisture Content	PID Reading (ppm)	ple	Depth (feet)		Soll Type		
Backfill	Casing	Water Level	oist	Re [ppi	lam tifi	£	Recovery Interval			DLOGY / DESCRIPTION
Bac	Caí	Level	Συ		der	Der	nte	м		
	100					ļ				
l						·			Asphalt - 6"	
5						1	<b>.</b>			o olive green; medium plasticity;
nei						_	<b>  </b>		and the second	ss; stiff; moist; some black
Neat Cement					Air-Knife	2—	<u> </u>		staining; (0,0,10	0)
<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>					Υ Υ	-	·			· ····································
lea						3				
2							┨──┨──			
1						4	╂──┨──			
1						-	╉╍╌╎╌╌╸			
ŀ			moist	7.5	@ 5	5			Very stiff: high t	oughness; some red specs; trace
					3:30				medium sand; or	
1						6—				
										· · · · · · · · · · · · · · · · · · ·
I			moist	27.5	@ 8*	7—	<b>A</b>			
1					3:32	1				
1						8-				
1			moist	25.3	@ 9	9			Orange mottling	
					3:35	<u> </u>				
					ł	10				
1			moist	11.5	@ 11	· ·			Tan some gray s	taining; stiff
					3:37	11				
1	- H		1			<sup></sup> _				
1					h	12—				
1			miost	6.5	@ 13.5 <sup>*</sup>	- "I				wn; some medium sand; slight
1					3:39	13			odor; (0,25,75)	
1			maint			-				
			moist	5.5	@ 14	14			Trace fine grave	; (5,30,65)
1					3:40	-				
			moint	0.8	@ 16*	15				er erne erne som som stat erne erne erne erne som erne erne erne erne er
ł			moist	υ.8		-	╘			d brown and tan; slightly
1					3:43	16-				umbles easily; soft; no plasticity;
1						-				sand medium grain; moist; slight
1		$\nabla$	wet	0.7		17		panada. Panada	odor; (5,60,30)	
1		<u> </u>		0.7					Low placticity a	and fine to medium: wat: (0.00.40)
						18			Low plasticity; s	and fine to medium; wet; (0,60,40)
1			wet	1		-			··· · · · · · · · · · · · · · · · · ·	
1				-		19			Trace gray stain	ina
1						-			a indee gray stand	
1			wet	1.1	1	20				
1						-	┼╌┼┼╴			
1						21			No plasticity; (0	,65,35)
1			wet	0.3						ter ant muchan and a construction was a set of a
						22				
	CHOICE .		•		· · · · · · · · · · · · · · · · · · ·			Contraction of the local sector		

			Project	No: <b>C10</b>	1156151	L		Clien	t: Con	ocoPh	nillips		Boring No: SB-4	
			-		bitha Cro						acArthur Blvd		Date Drilled: 10/30/07	
_		_		-	orilling &	-	a		0	akland	I. CA		Page 2 of 2	
n	eli	ta	Drilling					Hole	Diame		•			
		La	1 –		d: Contir	פווחוור			Depth				First Water	
			•			luous			Diame				- FIISC Wales	
COL	nsulta	ants	Casing	•	•						4	<b>•</b>	<ul> <li>Static Groundwater</li> </ul>	
			Slot Siz						Depth				- Static Groundwater	
				Pack: NA Elevatio		1			water	T Depth	: 17.5' Easting	- * -	* = Selected for lab	
				clevatio	41	1	North	ing			Lasting	analysis		
We														
Compl	etion	Static	يد ہ	PID Reading (ppm)	Sample Identification	Depth (feet)	San	nple	ě					
= 0	n	Water	Moisture Content	eac, DM,	fica	E.	<u></u>	al	Soil Type	Į	. ITTHO		DESCRIPTION	
Backfill Casing		Level	ie c	a g	Sar	E	Ň	Interval	io I	·				
Β̈́α Ο Β̈́α	3		2 ~	IId	Ide	De la	Recovery	Int	л С					
									a an	CL	Lean clay; tan to	n red brown	medium soft	
						23-		<b>_</b>					iness; some fine sand;	
Neat Cement			wet	0.6			100076924	Ă	關於其		moist; no odor; (		incos, some me sund,	
Ě			, net	0.0		24						(0,15,05)	· · · · · · · · · · · · · · · · · · ·	
e S														
at 🛛			wet	0.6		25-		¥.		2 2	With fine to med	ium sand: s	some black specs;	
ze Ze	-			0.0				-			(0,25,75)	iann Sana, i	Jointe block speed,	
						26-	12,4353				(0)23(13)			
													· · · · · · · · · · · · · · · · · · ·	
			moist	0.4	@ 27*	27 —		Å			Olive green and	tan: stiff: (	0.0.100)	
					4:15									
						28-							· · · · · · · · · · · · · · · · · · ·	
			moist	0.4			23340130 2334074	À		-				
	••••					29 -			i and a second				· ····	
						1		+				<u> </u>		
						30 -	10000000	À					· · · · · · · · · · · · · · · · · · ·	
								$\vdash$		¥	No Recovery		····	
						31-		$\square$						
						22	_	¥						
			moist	0.5		32-		1			Very stiff; trace	fine gravel;	some medium sand;	
- C. 194						33-			]		low plasticity; hi	gh toughne	ss; tan to red brown;	
34) 5					1	33-		+			(5,20,70)			
			moist	0.4		24		•						
					1	34-								
						35-		¥	1000		(10,30,60)			
			1			<b>_</b>					······		·····	
						36-								
									1	1			· · · · · · · · · · · · · · · · · · ·	
				1		37-		L	1					
					1	1	_	ļ	4		TD	= 35 fe	et bgs	
						38-			-					
								L	4				a a a construction and a second s	
			1	ļ		39 -		<b> </b>	4					
			1	1				L	4	ł				
						40-		<b> </b>	4					
								<b> </b>	4					
	• ···· •··			1		41-		<b> </b>	4				and the second sec	
			1	1				ļ	4	1			· · · · · · · · · · · · · · · · · · ·	
			1			42-		L	4					
								<u> </u>	4					
	<b>.</b>		1	ł		43-		ļ	4				·····	
					1				1	<b>.</b>			and the second	
					1	44 -			1			··· · · · · · · · · · · · · · · · · ·		
		ļ				1.,	1	1						

<b></b>			Proiect I	No: C10	1156151		Clie	nt: Con	ocoPhillips	Boring No: SB-5
			-		bitha Cro				276 MacArthur Blvd	Date Drilled: 11/1/07
	L		Driller:	Gregg D	rilling &	Testing		0	akland, CA	Page 1 of 2
	eli	ra	Drilling I					e Diame		
				-	d: Contin	uous		e Depth		$\nabla$ = First Water
Cor	nsulta	ants	Casing 1		L Contraction of the second se				ter: NA	
			Slot Size					l Depth		T = Static Groundwater
			Gravel P	Pack: NA Elevatio		[	Firs Northing	t Water	Depth: 18' Easting	* = Selected for lab
•				cievatio	11		Northing		Lasting	analysis
We			Recovery Soil Type Soil Type							
Comp	letion	Static	e te	din (	atio	feet		Soil Type		
	2	Water	Moisture Content	Rea	amp	5) 4:	/er/	L É	LITHO	DLOGY / DESCRIPTION
Backfill	למא	Level	နိုင္ဂ		Sadent	Depth (feet)	Recovery Interval	ŝ		
				<u>а</u>	Ĭ				Asphalt - 5"	
	· · ·					-		Sandons		an an madium atiff, madium
Ъ						1	+		the second second second to the second se	green; medium stiff; medium
ne					d)	-	┽╌┠╌╴		and an and a set of a set of the	ghness; some medium sand and some gray staining; moist;
e l					nif	2	+		strong odor; (10,	and the second
Neat Cement	·				∆ir-Knife				30.0119 00017 (10)	
Ne					Air	3—	1 1-	1	,	· · · · · · · · · · · · · · · · · · ·
						A		]		
					[	4				
						5			, ,	·····
			moist	468	@ 5		<b>▲</b>			he; very stiff; low plasticity; high
					11:11	6—	Sec.		1	medium to coarse sand; trace fine
						-		-88	gravel; (10,30,6)	0)
			moist	688	@ 7*	7—		-	Tan and olive or	een; some red brown mottling;
			moise	000	11:19	-			some medium sa	the second
						8				
		Ì	moist	638	@ 8.5	9			Low to medium p	plasticity
					11:20	9-				
						10-	•			
	iii		moist	573	@ 10	· · ·				
			ł		11:22	11-				
1						-				······································
		ł	minet	672	@ 12*	12			(0.25,75)	I; low plasticity; meidum soft;
		1	miost	623	11:25	-			(5,25,70)	a, low plasticity, meluum sort;
	Ø	ł			11.23	13-			(3,23,70)	
		ł	moist	570	@ 13.5				Crumbles easily	; (5,35,60)
	···	1			11:27	14			an a	
		]				15	•			
		]	moist	532	@ 15	1.2			Red brown with	olive green mottling; stiff; (0,35,65)
					11:30	16-				
			maint	4 5 7	@ 17*	17-				
			moist	157	[@ 1/*   11:32	.				
	· · · · · · ·	$\nabla$			11.52	18-				
		ł	wet	100					SC Clayey sand; ro	ed brown and olive; trace gravel;
						19-		-	🗱 - a - a a - a - a	raded; loose; soft; crumbles easily;
	M		1						(a) an annual annual anna anna anna anna an	ine gravel; wet; odor; (10,50,40)
			wet	53.6	@ 20	20-			n en	
		1	· ·	1	11:41	21 —				; sand fine grain; trace fine gravel;
										edium plasticity and toughness; wet;
			wet	57	@ 22*				odor; (5,50,45)	
	M		<u> </u>	<u> </u>	11:44					

10110-0

			Logged	By: Tab	1156151 bitha Cro	y	Location		MacArthur Blvd	Boring No: <b>SB-5</b> Date Drilled: <b>11/1/07</b>
Do			Drilling Samplin	Method: Ig Metho Type: NA	d: Contin		Hole Di Hole De Well Di	Oaklan ameter: 4 epth: 35' ameter: N epth: NA	t.,	Page 2 of 2 $\nabla$ = First Water $\mathbf{Y}$ = Static Groundwater
				Pack: NA Elevatio				ater Dept	h: <b>18'</b> Easting	* = Selected for lab
Backfill Casing Admo Casing	etion	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery Interval	Soil Type	LITHO	analysis
nent			wet	51.8		23 — 		CL	specs; fine sand; i	th red brown mottling; black medium soft; medium plasticity
Neat Cement			moist	7.3		25 — 	•			et; odor; (0,30,70) um sand; moist; slight odor
	 		moist	8.6	•	27			Stiff; (0,15,85) Tan and red brown	n with some olive green mottling
	••••••••••••••••••••••••••••••••••••••		moist	11.4		28 — 			Medium stiff; (0,3	5,65)
			wet	16.8	@ 30* 12:07	30 — 31 —		SC SC	fine gravel; sand i	brown; some black specs; trace medium grain; soft; loose; no ght odor; (10,50,40)
	•••• ••• ••••		wet	14.1		32			Some olive green	mottling; medium stiff
	· · · · · · ·		moist	13.5		34		CL	coarse sand; trace	an to olive green; stiff; some e black specs; low to medium ughness; moist; odor; (0,15,85)
	 					35 — 36 —			······································	
	•···•					37 —		· ··· ·	TD :	= 35 feet bgs
						38			· · · · · · · · · · · · · · · · · · ·	
						39 — 40 —			· · · · · · · · · · · · · · · · · · ·	
	 					41			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
						42			· · · · · · · · · · · · · · · · · · ·	
						43			· · · · · · · · · · · · · · · · · · ·	

Del		Logged Driller: Drilling Samplin Casing	By: <b>Tabl</b> Gregg D Method: Ig Method Type: NA	d: Contin	y Testing uous	Loca Hole Hole Wel		MacArthur Blvd and, CA 4" NA	Boring No: <b>SB-6</b> Date Drilled: <b>10/31/07</b> Page <b>1</b> of <b>2</b> $\nabla = \text{First Water}$ $\mathbf{Y} = \text{Static Groundwater}$ $* = \text{Selected for lab}$ analysis
Well Completion Served Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing Cassing	Static Water Level	istu	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery Interval	Soil Type	LITHO	LOGY / DESCRIPTION
Neat Cement		moist moist moist moist moist moist wet	253 47.4 96.9 33.8 12.7 20.6	g agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination agination aginatio	1         2         3         4         5         6         7         8         9         11         12         13         14         15         16         17         18			plasticity and toug medium sand; me slight odor; (15,2 Strong odor Stiff; sand fine to Tan with olive gre Red brown and ta (0,30,70) Low plasticity; hig (0,40,60) Clayey sand; rec medium soft; slig easily; poorly gra toughness; sand (0,55,45) Red brown with b Olive green and t sand medium to o Lean clay with s	reen; medium stiff; medium hness; some tan coloring; some dium to coarse gravel; moist; 5,60) medium grain; (0,20,80) en mottling; (0,25,75) n with olive green mottling; h toughness; medium stiff; odor; brown and tan; black specs; htly cemented but crumbles ded; no plasticity; high ine to medium; moist; odor; lack specs; (0,70,35) an; some gray staining; loose; oarse; wet; (0,65,35) and; red brown with black grain; medium stiff; medium
		wet	3.4		19 — 20 — -				ghness; wet; odor; (0,40,60)
	-	moist	1.8		21 — - 22 —	<b>▼</b>		·····	um gravel; coarse sand; low

	Project N	lo: C10	1156151		Clier	nt: Con	ocoPhillips	Boring No: SB-6					
			bitha Cro				276 MacArthur Blvd	Date Drilled: <b>10/31/07</b>					
			orilling &	Testing	i	0	akland, CA	Page 2 of 2					
	Drilling M						ter: <b>4</b> "						
			d: Contin	uous	Hole	Depth	: 35'	💟 = First Water					
	Casing T		A Contraction of the second seco				ter: NA	_					
	Slot Size					Depth							
	Gravel Pa				Northing	water	Easting * = Selected for lab						
	Elevation						Lasting	analysis					
Well		 01	L C		I								
Completion Static	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample	/pe							
🗒 🖻 🛛 Water	onte	ppn	amp	C)	Recovery Interval	Soil Type	LITHO	LOGY / DESCRIPTION					
Mater Rasing Fill Casing Fill	ΣŬ	ð ,	den	)ep	eco.	ß							
						STEWS CON							
				23			plasticity; high to	ughness; moist; (15,35,50)					
ent	moist	1.8	@ 24.5										
ů,	1110130	1.0	1:30	24 —				······································					
Neat Cement					<b>₩</b>		Red brown to tan;	; ;some medium sand; trace					
eat	moist	1.4		25 —				low plasticity; high toughness;					
ž				26			moist; no odor; (!	5,30,65)					
				-									
		4 4		27 —									
· · · ·	moist	1.1	İ					own speca; medium plasticity;					
				28 —			(0,10,90)						
-	moist	0.8		-			Some black specs	; medium soft; no plasticity; fine					
				29				own sand; high toughness;					
				30 —			(0,25,75)	-					
	moist	0.6	@ 30.5*										
			1:43	31 —									
				-				an; stiff; some black staining;					
	moist	0.5	ľ	32			no odor; (0,40,60	/ <u>/</u>					
-		0.5		-			Olive green and t	an; fine to medium sand; trace					
				33 —	<b>₩</b>			stiff; some black specs but no					
	moist	0.9		34		]	staining; (5,25,70	the second s					
				<u> </u>									
	<b></b>		ļ	35	*		(0,20,80)						
	1					-		· · · · · · · · · · · · · · · · · · ·					
				36 —		-		• • • • • • • • • • • • • • • • • • • •					
				-	+ +	1	·····						
				37 —	+-+	1	TD	= 35 feet bgs					
				38		]							
• ·				39—		-1							
						4							
			1	40 —	+ + -	-{							
				-		1	······						
			1	41 —		1	······ ··· ····· · ···· · ···· · · · ·						
			ŀ	100		1		· · · · · · · · · · · · · · · · · · ·					
				42 —		1							
				43		1							
			1			4							
			1	44 —	<u> </u>	4	<b></b>						
			1	1			<u> </u>						

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Con	nsult	ta	Drilling	By: Gregg I Method: ng Metho Type: ee: Pack: Elevatio	Macrocor d: Contine N/A N/A N/A Dn	ger/ C. M e uous	Northin	Loca Hole Hole First Stati Well ng	tion: Oakla Diame Depth Water	: 30' Depth: 23.5 rr Depth: 6.21	Boring No: SB-7 Date Drilled: 07/09/09 Page 1 of 2
Comple III Yorg		Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sam Leover Secover	Analyzed al	Soil Type	LITHOLO	GY / DESCRIPTION
Neat Cement			Moist	3.9 ppm 405 ppm 6.5 ppm 64.1 ppm 64.7 ppm	Air-Knife	1 — 2 2 — 3 3 — 4 4 —			CL CL CL CL	dark brown, stiff, carbon odor prese	Sand; olive green-brown, iff, fine to medium grained ocarbon odor, visible w to medium plastic. Sand; same as above Sand; same as above s; visible contamination, eum hydrocarbon odor. Sand; brown to red brown, ined sand, low plasticity ontent, increasing moisture,

		Project	No:	C101156		-	Clien	t: Con	ocoPhillips	Boring No: SB-7
		Logged	By:	S. Menin	ger/ C. Mo	orgarL	ocat	ion:	4276 MacArthur Blvd.	Date Drilled: 07/09/09
			Gregg D	-						Page <b>2</b> of 2
Del	ta			Macrocor				Diame		
				d: Contin	uous			Depth:		Z = First Water
Consult	ants	Casing Slot Siz		N/A N/A					Depth: 23.5 r Depth: 6.5'	
		Gravel		N/A N/A				Depth:	·	Static Groundwater
			Elevatio	-		Northi		Deptit.	Easting	
	· · ·									
Boring Completion			Б	5	ភ្	Sam	nla			
	Static	Moisture Content	PID Reading (ppm)	cati	Depth (feet)		·	Soil Type		
×fill	Water Level	oist	D Readi (ppm)	am	Ę	ver	λZĢ	Dil T	LITHOLO	GY / DESCRIPTION
Backfill	Level		DIG	Sample Identification	Dep	Recovery	Analyzed	Ň		
						<u>~</u>	~			
	$\nabla$	س ا			23		$\overline{\mathbf{A}}$	CL	Lean Clay with Sa	nd; same as above; very
eut –	<u> </u>	Moist				f	$\neg$	SC	strong hydrocarbon	
E	1	Σ	0.5		24					vn, medium to coarse
Neat Cement			ppm		25—					lay, medium dense to
eat		Wet			25-				dense, moist to we	, some olive green
Ž		3			26				smearing.	
					<b>—</b>			SM		wet, medium to coarse
I II					27 —			CL	grained, strong hyd	ind; brown, low to medium
		Moist						CL	plastic, stiff, hydrod	
		Ĕ			28—					
					-					
					29			SP	Poorly Graded Sa	nd; light brown.
					30					
					] _				Total Depth of Bo	ring = 30' bgs.
					31					
									7/9/2009.	7.5-8' collected at 15:05
					32—					15.5-16' collected at 15:10
_									7/9/2009.	13.5-10 conected at 15.10
					33					23-23.5' collected at 15:15
					34—				7/9/2009.	
					34					
				1	35	$\square$				
						┝╌┼				
					36—	┠──┠	_			
						┟──┼				
					37	╞──┼			L	
					38					
				1	39—	┟┈╻Ӷ				
-					1 -	┟┈┼				
					40	┝─┼				
-					-	┝━┼	_			
					41	╞─┼				
					10 -					
					42					
					43					
						┝╌Ҭ				
					44	┟─┼				
					1				l	

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Delta Consultants	Drilling Sampl	d By: : <b>Gregg</b> g Method ing Meth I Type: ize:	Drilling : Macrocor od: Contin N/A N/A N/A	ger/ C. Morgan e	Oakland, CaliforniaPage 1 of 1Hole Diameter:3"Hole Depth: $8.5'$ First Water Depth: $N/A$ Static Water Depth: $N/A$ Well Depth: $N/A$						
Boring Completion E Wat Stat	rte it i	PID Reading (ppm)	Sample Identification	Depth (feet) Sau Recovery	Analyzed aid	Soil Type	LITHO	DLOGY / DESCRIPTION			
Neat Cement	Very Moist Moist	1453 ppm	Air-Knife & Hand I Augered I	1		GP	gravel, with no fines; high pet Gravel with Sar with presence asphalt; visible Note that boring due to drilling co indicated a sligh rig. A sudden pu then recorded w bgs, at which po was felt.	th Sand; thumb to fist sized on-native pumice fill and black roleum hydrocarbon odor.			
				14       15       16       17       18       19       20       21       22			Soil sample SE 7/10/2009.	3-8 @ 7-7.5' collected at 13:21			

Delta Consultants	Logged By: S. Me	Meninger/ C. Morgan <b>ing</b> crocore Continuous A A	Location: Oakla Hole Diamed Hole Depth: First Water Static Water Well Depth:	: 26.5' Depth: 26' r Depth: 24	Boring No: SB-9 Date Drilled: 07/08/09 Page 1 of 2
Boring Completion ╦ Water ♡ D D D D D	Moisture Content PID Reading (ppm) Sample	Sample Identification Depth (feet) Recovery Recovery	Analyzed Soil Type		DLOGY / DESCRIPTION
Neat Cement	3.6 ppm 2.5 ppm	1         2         3         4         5         6         7         8         9         10         11         12         13         14         15         16         17         18         19         20         21         22	CL CL CL CL CL	Lean clay wit	

Delta Consultants	Project No: Logged By: S. N Driller: <b>Gregg I</b> Drilling Method: Sampling Method Casing Type: N/ Slot Size: N/A Gravel Pack: N/ Elevatic	Drilling Macrocor od: Contine (A A	C. Morgan e uous	ı L F S	locati Hole [ Hole [ First \ Static Well [	ion: 4 ( Diame Depth Water	Depth: 26' r Depth: 24'	Boring No: SB-9 Date Drilled: 07/08/09 Page 2 of 2 $\nabla = \text{First Water}$ $\Psi = \text{Static Groundwater}$				
Boring Completion 	Moisture Content PID Reading (ppm)	Sample Identification	Depth (feet)	Sami Secovery	Analyzed 혀	Soil Type	LITHC	DLOGY / DESCRIPTION				
Veat Cement □ □ □ □ □ □ □ □ □			23 — 24 — 25 — 26 —			CL	Same as above, with increased sands.					
			$ \begin{array}{cccccccccccccccccccccccccccccccccccc$					of Boring = 26' bgs.         B-9@26' collected @ 18:40				

Project No:       C101156       Client: ConocoPhillips       Boring No: SB-10         Logged By:       S. Meninger/ C. Morgan       Location:       4276 MacArthur Blvd.       Date Drilled: 07/08/09         Driller:       Greeg Drilling       Oakland, California       Date Drilled: 07/08/09         Drilling Method:       Macrocore       Hole Diameter:       3"         Sampling Method:       Consultants       First Water Depth:       16         Slot Size:       N/A       Static Water Depth:       0.21         Gravel Pack:       N/A       Sample       Image: Completion         Water       Image: Completion       Image: Completion       Image: Completion       Image: Completion         Image: Completion       Static       Image: Completion       I
Delta consultants       Drilling Method: Macrocore Sampling Method: Continuous Casing Type: N/A Slot Size: N/A Elevation       Hole Diameter: 3" Hole Depth: 23' First Water Depth: 16 Static Water Depth: 6.21 Well Depth: N/A Elevation       ✓ = First Water         Boring       Basting
ConsultantsSampling Method: ContinuousHole Depth:23Casing Type:N/AFirst Water Depth:16Slot Size:N/AStatic Water Depth:6.21Gravel Pack:N/AWell Depth:N/AElevationNorthingEasting
ConsultantsSampling Method: ContinuousHole Deptn:23° $\checkmark = First Water$ Cosing Type:N/AFirst Water Depth:16Slot Size:N/AStatic Water Depth:6.21Gravel Pack:N/AWell Depth:N/AElevationNorthingEasting
Slot Size:     N/A     Static Water Depth: 6.21       Gravel Pack:     N/A     Well Depth: N/A       Elevation     Northing
Gravel Pack: N/A Well Depth: N/A Elevation Northing Easting
Elevation Northing Easting
Boring I
Boring Completion Static b t t t t t t t t t t t t t t t t t t
Completion Static Stat
Backfill     Backfill       Mater     PID     Real       Intervention     PID
Moisture Content CL Lean clay with sand; oilve green to
brown, medium plastic, medium stiff,
mild hydrocarbon odor; possible fill material.
Image: Stress of the start in the start
GP Gravel with Sand; gray, fine to medium
gravel with fine to medium grained sand,
loose, wet, fill material from former UST pit,
Image: second
Image: state of the state o
Z 10 SP Poorly Graded Sand with Gravel; gray to
dark gray, fine to medium grained sand,
tu t
899 12 CL Lean Clay with Sand; Olive green to brown,
ppm medium stiff low to medium plastic moist
slight hydrocarbon odor, visible contamination
- 7.6 ppm 17
SC Clayey Sand; Dark gray, loose, wet, fine to
medium grained sand yery strong hydrosarbo
545 18 odor, visible contamination, trace fine gravel.
6.6 CL Lean Clay with Sand; brown with olive
ppm 21 green mottling, stiff, low to medium plastic,
fine to coarse grained sand, slight odor, trace

Del Consult		Project No: C101156 Logged By: S. Meninger/ C. Morgan Driller: <b>Gregg Drilling</b> Drilling Method: Macrocore Sampling Method: Continuous Casing Type: N/A Slot Size: N/A Gravel Pack: N/A Elevation North					Local Oakl Hole Hole First Stati Well	tion: 42 a <b>nd, C</b> Diamei Depth: Water	28' Depth: 16' r Depth:28'	Dat Pag ∑ = Firs	ring No: SB-10 te Drilled: ge <b>2</b> of 2 st Water tic Groundwate
Boring Completion	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)		Analyzed ad Soil Type		LITHO	LOGY / DE	/ DESCRIPTION	
Neat Cement	⊻	moist	1.1 ppm		23— 24— 25— 26—			CL	Same as abov	· · · · · · · · · · · · · · · · · · ·	
					27 — 28 — 29 — 30 — 31 — 32 — 33 — 34 — 35 — 36 — 37 — 38 — 39 — 40 — 41 — 42 — 43 —				Soil Sample SE 07/10/09. Soil Sample SE 07/10/09. Soil Sample SE 07/10/09.	3-10@ 12-12 3-10@ 18-18	2.5' collected

Co	)e  onsult		Drilling	By: Gregg C Method: ng Metho Type: re:	Macrocore d: Continu N/A N/A N/A on	ger/ C. Mo e	Northin	Loca Hole Hole First Stat Well	ition: Oakla Diame Depth Water	a 44' ∑ = First Water Depth: 42' r Depth:N/A <b>∑</b> = Static Groundwater			
Com	pletion	Static Water Level	h (f (fice				Analyzed	Soil Type	LITHOLOGY / DESCRIPTION				
Neat Cement				405 ppm 6.8 ppm 16.7 ppm 108 ppm 12.1 ppm	Air-Knife & Hand Augered	1       -         2       -         3       -         4       -         5       -         6       -         7       -         8       -         9       -         10       -         11       -         12       -         13       -         14       -         15       -         16       -         17       -         18       -         20       -         21       -         22       -			CL CL CL CL	Lean clay with brown; fine to trace fine to m plasticity; moi Lean clay with very stiff to ha Lean clay with green, moist, hydrocarbon c Lean clay with content, medi moisture, sligh to hard, trace *Driller report	th sand; brown and olive very stiff to hard, very strong odor, low to medium plastic. th sand; decreasing sand um to high plasticity, increasing ht hydrocarbon odor, very stiff fine gravel, visible contamination. is very hard direct pushing. th sand; brown with green mottling ic, trace fine gravel, slight odor,		

Del		Driller: Drilling Samplin Casing Slot Siz	By: S. M Gregg D Method: ng Method Type: N/A	Macrocor d: Contin A	C. Morga 'e	n North	Loca Oak Hole First Stati Well	ition: Iand, C Diamet Depth: Water I	er: 3" 44' Depth: 42' <sup>-</sup> Depth: N/A	⊻ =	Boring No: SB-11 Date Drilled: 07/10/09 Page <b>2</b> of 2 = First Water = Static Groundwater
Boring Completion	Static Water Level	Moisture Content	PID Reading (ppm)	PID Reading (ppm) Sample Identification Depth (feet) Recovery		Analyzed ald Soil Type		LITHOLOGY / DESCRIPTION			
	_	Wet	5.8		23—			CL			brown, wet, no odo
	_		ppm		24				Wetness in sma	all portio	on-Not first water.
	_				25—			CL	Same as above increasing sand		visible contaminatio
	_				26—						······································
	_				27						
_	1		6.7		28			CL	lean clay wit	h cand	; brownand olive gre
	_							ess visible contamina			
	_		30								
_					31						
	_				32						
-	_		6.8 ppm					CL	Same as abov visible contami		easing sand content, red brown.
Neat Cement					33		-				
Neat	-				34		_				· · · · · · · · · · · · · · · · · · ·
	-				35				· · · ·		· · · · · · · · · · · · · · · · · · ·
	-		5.7		36			СГ		ove; increasing moisture	
	-		ppm		37				conent.		
<u> </u>					38			]			
					39		<u>}</u>				
			7.5		40		$\square$				
	-		ppm		41		$\overline{\mathbf{k}}$	CL	Same as abov	ve; wet.	
	-1	V			42		$\vdash$				
	_	43									
	-				44					-	
	i.								Total Depth of SB-11 samples of		

			Project	No:	C101156			Clier	nt: Con	ocoPhillips		Boring No: SB-12		
			Logged		A.Buehler			Loca	tion:	4276 MacArthur Bl	lvd.			
	الم			Gregg D			Oakland, CA Page 1 of 3							
D	en	LD.		Method:					Diame Depth		5			
				ng Metho	d:			= First Water						
Cor	nsulta	ants	Casing						Depth:	_	<b>. .</b> .			
			Slot Siz							er Depth:	<b>.</b>	= Static Groundwater		
			Gravel	Elevatio	n	Г <del></del>			Depth	Easting				
				Lievatio		Northing				Lasting				
Bori				_							L			
Compl	etion	Static	e t	PID Reading (ppm)	Sample Identification	Depth (feet)		nple	þe	· · · · · · · · · · · · · · · · · · ·				
U		Water	Moisture Content	sea pm	mp ifica	ч (f	ery	zed	Soil Type	LITHO	LOGY	/ DESCRIPTION		
Backfill		Level	မိပိ	<u> </u>	Sa ent	ept	Recovery	Analyzed	Soi					
6				<u>م</u>	PI		Re	An						
						1								
	_				ed	-								
	I				gei	2—								
					Hand Augered	-								
					p	3—	-							
	_				lar	-	-							
					-	4—	1							
												······································		
						5								
						6—								
	_		5.2 SB-12 0 @ 12 9:44 7-				Sandy lean clay with	n gravel	; brown with					
	I					7—	7		4	visible green contam	nination	; moist.		
ut 🚺	_			9:44			23/3 (32/3)							
Cement	I —				8-									
Ce	-				-									
at						9—	-							
Neat	-					-								
•				30.1	SB-12	10-			CL	Sandy lean clay clay	; light t	prown; wet.		
					@ 10	11 -						· · · · · ·		
	_				· 9:58	<u>+ +</u>								
						12—		L	ļ					
	_													
	I —					13—			-		· · · · · · · · · · · · · · · · · · ·	····		
	-					.		<u> </u>	-					
						14 —	_	┢──	ł					
	-					· ·								
				NA	SB-12	15-			CL	Same as above. Sat	urated.			
					@ 15	1.			1					
					10:25	16-			1					
						17								
						<u> </u>								
						18	_		ł					
						·	_	<b> </b>	1					
						19—		<u> </u>	-					
								<u> </u>	-			· · · · · · · · · · · · · · · · · · ·		
				64.7	SB-12	20 —	-		CL	Sandy lean clay; bro	wn · m	nist		
					@ 20		-			Canay rean clay, bro				
					10:36	21			1					
						22			1					
						22 —			1					

				Project	No:	C101156	-	Cli	ent: Con	ocoPhillips		Boring No: SB-12		
				Logged	By:	A. Buehle	۱r	Lo	cation:	vd.	Date Drilled:			
		_ 1	<b>I</b>	Driller:	Gregg D	rilling				Oakland, CA	<u> </u>	Page 2 of 3		
		el	ra	Drilling	Method:	Sonic		Ho	le Diame	ter:				
			<b>L</b> U	Samplin	ng Method	<b>1</b> :		На	le Depth:		$\nabla$ =	= First Water		
	Cor	nsulta	ants	Casing '					st Water		—			
				Slot Siz	e:			St	atic Wate	r Depth:	▼ =	= Static Groundwater		
				Gravel	Pack:			W	ell Depth:					
					Elevatio	n		Northing	1	Easting	Easting			
								·						
	Boring Completion				PID Reading (ppm)	Sample Identification	ĵ;	Sampl	ela					
	Static Water Completion Water Completion User Level			Moisture Content	adi m)	ple cati	Depth (feet)		_ <u> </u>					
				oist	Re (pp	am	£	ver		LITHO	LOGY /	DESCRIPTION		
	Bac		Levei	ΣΟ	DI9)	der	Dep	Recovery	N N					
						н	-	~ <	:					
	1						23 —		4					
	int								-					
	Neat Cement						24 —							
	G	-						<b>├</b>	-					
	at (	—					25	2002 (SA)						
	Ze:	-					_							
	-				10.2	SB-12	26 —			Same as above, very	1 stiff wi	th large gravel		
						@ 26	_		-1					
						10:45	27 —		-					
		-							-1					
							28		-					
								dimente:	-					
				2		29		1			· · · · · · · · · · · · · · · · · · ·			
						30 —								
					NA	SB-12			CL	Same as above; damp.				
						@ 30	31 —		_					
						10:47			_					
							32		_					
		- 1					-	34005 34405	_					
		I —					33	83598 868360	_					
							• -	2019 Q						
							34		-					
								+				· · · · · · · · · · · · · · · · · · ·		
		] —			3.5	SB-12	35 —		CL	Same as above.				
						@ 35	-							
						10:58	36—	S. 3						
							37							
							38		_					
							_		_					
							39 —							
							-	+		<u> </u>				
							40 —	+ +		No recovery.				
							-	┼		The recovery.	· · · · · · · · · · · · · · · · · · ·			
					5.6	SB-12	41		CL	Sandy clay; <10% sands; brown; moist;				
						@ 41				slight odor.		<u> </u>		
						11:42	42		7					
							43							
							44 —							

	Project	t No:	C101156	5	Clier	nt: Con	ocoPhillips	Boring No: SB-12
	Logged	d By:	A. Buehl	er	Loca	tion:	4276 MacArthur Blv	
	Driller	Gregg [	Drilling				Oakland, CA	Page 3 of 3
Delta	Drilling	Method:	Sonic		Hole	Diame		
	Sampli	ing Metho	d:		Hole	Depth	:	💭 = First Water
Consultants	Casing	Type:			First	Water	Depth:	
	Slot Si	ze:			Stat	ic Wate	er Depth:	👿 = Static Groundwater
	Gravel					Depth		
		Elevatio	n		Northing		Easting	
Boring		T	r <u> </u>		T			
Completion		PID Reading (ppm)	Sample Identification	et)	Sample	0		
Sta		m (in	ple	Depth (feet)		Soil Type		
開い Wat シマン Lev 路		P Re	San ntifi	Ę	Recovery Analyzed	iii l		LOGY / DESCRIPTION
Bag	. <u>≥</u> 0	I II	[dei v	Del	ecc	Ň		
						—		
		NA	SB-12	45 —		CL	Same as above with 2	0% graval: 10%
— super-			@ 45	-			sand; damp.	
u u u u u u u u u u u u u u u u u u u			11:45	46 —		1	Sandy clay; light brow	n: 20% sand no
Neat Cement			11.45			1	odor.	
at				47				
S S								
				48		1		
				49		1		
				49-			Same as above, with 1	15% gravel and 15%
				50 —	10 40 A		sand.	
		3.3	SB-12 @ 50	-	<u> </u>		Boring terminated a	t 50 feet bgs.
			۵ <u>۵</u> 11:54	51 —	+			
			11.5 /	 52		1		
				52				
				53		-		
				-	+	4		
				54		1		
				55				
						4	· · · · · · · · · · · · · · · · · · ·	
•				56		-		
					+	1		
				57		1		
				58		]		
					<u> </u>	4		
				59	+ + -	{		
				-		1		
				60		1		
				61—		]		
						]		
				62		1		
				-	<u>                                      </u>	4		
				63	+	4		
				- 1	┨	-		
				64 —		4		
				-	╉╸╌┠┈━	-		
				65 —	+	1		
				-	+	1	·	
				66—		1		

		Project	No:	C101156		Cli	ent: Cor	nocoPhillips		Boring No: SB-13
		Logged	By:	A.Buehler	-	Loc	ation:	4276 MacArthur B	lvd.	Date Drilled: 06/18/10
		Driller:	Gregg I	Drilling				Oakland, CA		Page 1 of 1
Del	ra	Drilling	Method	Sonic		Но	e Diam	eter:		
	CU	Sampli	ng Metho	od:		Ho	e Depth	1:		First Water
Consulta	ants	Casing	Type:			Fir	st Water	r Depth:		
		Slot Siz	e:					er Depth:	`⊻=	Static Groundwater
		Gravel	Pack:			We	ll Depth	1:		
			Elevatio	on		Northing		Easting	1	
Boring				<u>.                                    </u>			1			
Completion			PID Reading (ppm)	Sample Identification	۲Ţ	Sample				
	Static	Moisture Content	adii	e di	Depth (feet)		ā			
kfil	Water	ont	ppr	titi	Ę	ver vze		LITHO	LOGY /	DESCRIPTION
Backfill	Level	ΣŬ	Ę,	den	)ep	Recovery Analvzed	N S			
			_	Ĥ.		l <u>v</u> ⊲				
					1 —		4			
				e e			4			
				Hand Augered	2		-			
				AU			-			
Neat Cement				q	3 —	<u> </u>	4			
- me				lan	_		4			·
ප <u> </u>					4	├	-			
at –						┨━━- ┤	-			
Ne.				SB-13	5		-	Black, sandy, granu	lar tar-li	ke material verv
				@ 6			1	strong odor		ince material, very
<b>—</b>				8:45	6—		-		nated at	t 6 feet bgs due to
				0.15	-		-	refusal.	nuceu a	to leet bys due to
					7		-			
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					11					
					<sup>11</sup> _					
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	-		Project	No:	C101156		Clier	nt: Con	ocoPhillips		Boring No: SB-14
			Logged	By:	C. Morgar	ı	Loca	tion:	4276 MacArthur Bl	lvd.	Date Drilled: 06/17/10
			Driller:	Gregg D	rilling				Oakland, CA		Page 1 of 3
	eli	ta		Method:			Hole	Diame			
		La		ng Metho				Depth		- 77	= First Water
					u:			•			- First water
Col	nsulta	ants	Casing						Depth:	_	
			Slot Siz						er Depth:	⊻ =	= Static Groundwater
			Gravel					Depth			
				Elevatio	n		Northing		Easting		
Bor	ing			·	I						
Bori Compl				þ	Sample Identification	Ŧ	Sample				
Compi	cuon	Static	ure int	⊂ gi	atio	fee		,pe			
9		Water	isti nte	pr Sea	ific n	- -	er)	Ê	LITHO	LOGY /	DESCRIPTION
Backfill		Level	Moisture Content	PID Reading (ppm)	ent	Depth (feet)	Recovery Analyzed	Sail Type		-	
, ĉ	í í			Ы	P P	ă	Ans	•			
								CL	Clay: green vi	isible cor	ntamination; with
	—							UL.	some tan, blac		
					<del>u</del>	1-			some carr, blac		nite graver.
	—				ě					•	
					Hand Augered	2 —					
	. —				Π						
					þ	3 –					
					an	_					
					Ξ	4-					
						5-					
						6-					
						7_					
ц ц						/-				• • • • • • •	
en								•			
Ê				3335	SB-14	8-		CL	Lean Clay with	sand: o	ray with visible green
ပီ 📃					@ 8	_			contamination		
Neat Cement					11:50	9-				, early	
P P											
				5553	SB-14	10-					
					@ 10						
					11:50	11					
					11.50						
						12-					
						13-					
						14					
				107.5	1	15-			Same as abov	e, with s	mall coarse grained
					@15	10		CL	white and tan	gravel a	t 16.5 to 18 feet bgs;
					11:54	16-	1201		moist.		
						10					
						17-					
						1.1					
						10			······		
						18-		1			
						1.	365	1	····		
						19-		1			
	I −						188	1			
				11.2	SB-14	20 —		CL	Same as abov	e with i	ncreased fines at 21
		$\nabla$			@ 20				feet bgs.		ner casca niñes at 21
		<u> </u>			12:01	21 -		1		e with	continued increased
					12.01			1	fines; gravel a		
						22		GC			
				L	L		288.SQ-	اهر		with saf	nd, thumb-sized white

	Projec	t No:	C101156		Clier	nt: Con	ocoPhillips		Boring No: SB-14
	Logge	d By:	C.Morgar	ı	Loca	ition:	4276 MacArthur Bl	vd.	Date Drilled: 06/17/10
	Driller	: Gregg D	Drilling				Oakland, CA		Page 2 of 3
Delta	Drilling	Method:			Hole	Diame	ter:		
	Sampl	ing Metho	d:		Hole	Depth		⊻ =	= First Water
Consultants	casing	Type:			First	. Water	Depth:		
	Slot Si	ze:			Stat	ic Wate	r Depth:	=	<ul> <li>Static Groundwater</li> </ul>
	Grave	Pack:			Well	Depth			
		Elevatio	n		Northing		Easting		
Dering			1	L		r			
Boring Completion		PID Reading (ppm)	Sample Identification	j;	Sample				
Sta		m (in the second s	ple	(fee		Soil Type			
문 Wa 강 Lev	ter Isio	Re [ppi	am	Ę	ver	<u> </u>	LITHO	LOGY /	DESCRIPTION
Wa Lev Back		1 H	der	Depth (feet)	Recovery Analyzed	Ň			
		+	<u>↓</u>						
				23—			depths.	ess odor	then at previous
Neat Cement				-	+	-	deptris.		
u n n n n n n n n n n n n n n n n n n n				24 —					
ଅ –									
at				25					
N				-		1			
		11.9	SB-14	26—		СН	Sandy fat clay	with gra	avel; gray, tan,
			@ 26	27—		1	moist.		
		1	12:07	2/					
				28					
				<b></b>			· · · · · · · · · · · · · · · · · · ·		
				29		-			
				-		4			
		NA	SB-14	30		СН	Same as above	•	
			@ 30	-				<b>.</b> .	
			12:07	31		1 ·			
				-		1			
				32—		1			
				33—		]			
		1		<sup>33</sup> _		1			
				34 —		4			
						4			
		10.5	SB-14	35	╇╋			+ h	
		10.5	@ 35	-		CL			to tan; some small light odor; moist.
			12:16	36—		1	grameu graver	, 11111, 5	angrit odor, moist.
			12.120			1			
				37 —		1			
			:	-		1			
				38—		1			
				39		1			
						1			
		1 10 -		40					
		18.5	SB-14	-		CL		e, with i	ncreased moisture
			@ 40 12:22	41		-	and softness.		·
			12:22	-		-			
				42		-			
						1	·····		
				43		1			
						1			
				44 —		1			

		Project	No:	C101156	;	Clier	nt: Con	ocoPhillips	Boring No:	SB-14
		Logged		C.Morga			ition:	4276 MacArthur Blv		ed: 06/17/10
	-		Gregg [					Oakland, CA	Page 3 of 3	
	ta		Method:			Hole	Diame		rage 5 01	
Del	La					-				
			ng Metho 	a:			Depth		🕎 = First Water	r .
Consulta	ants	Casing						Depth:		
		Slot Siz						er Depth:	👿 = Static Grou	undwater
		Gravel					Depth			
			Elevatio	n		Northing		Easting		
		ļ	r · · · · ·	ī						
Boring			þ	Sample Identification	÷	Comple			_	
Completion	Static	Moisture Content	PID Reading (ppm)	atio	Depth (feet)	Sample	Soil Type			
	Water	istu nte	Sea	цü	с 	ery red	Ē	LITHO	LOGY / DESCRI	PTION
Backfill	Level	မိုပိ		Sa ent	ept	Recovery Analyzed	Soi		-	
ä			E	Р́Р	ă	Rec				
	$\nabla$					323		Possible seco	nd water bearing	7000
	<u> </u>		14.5	SB-14	45—		CL	Sandy lean cl	ay with silt to 48	foot has
	-		11.5	@45	-			then clay with	sand and gravel	leet bys,
ມີ				12:28	46		-		i sanu anu gravei	to bottom
- G				12:28	_			of boring.		
					47 —					
Neat Cement									· · · · · · · · · · · · · · · · · · ·	
Z					48					
					49					
					50 —					
			10.6	SB-14	50					
				@ 50			r — —	Boring term	inated at 50.5 f	eet bas.
				12:28	51		1			
							1			
					52 —		1			
							1			
					53—		1			
					_			<u> </u>		
					54 —		1			
						+ +	1			
					55		1			
							1			
					56 —		-		· · · · · · · · · · · · · · · · · · ·	
						┥──┤──	4			
					57 —	<u> </u>	ł			
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					58 —	<b>↓</b>	4			
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					59 —		1			
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					01		]	-	·····	
7							]			
					62 —		1	·····		
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					63 —	<u>   </u>	1			
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					64 —	+ +	1			
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					65 —	<u>├.</u>	1			
						╞╌┥──	-	· · · · · · · · · · · · · · · · · · ·		
					66 —	┼──	-			

			Project	No:	C101156		Clie	nt: Con	ocoPhillips	Boring No: SB-15
			Logged		C. Morgar	ו	Loca		276 MacArthur Blvd.	Date Drilled: 06/17/10
	<b>–</b> I-		1	Gregg D	-			Oakla	ind, CA	Page 1 of 2
	el	га	•	Method:			Hole	e Diame	ter: 3"	
				ng Metho	d:		Hole	e Depth	:	$\nabla$ = First Water
Co	nsulta	ants	Casing						Depth:	
			Slot Siz						r Depth:	👤 = Static Groundwater
			Gravel I	Pack: Elevatio		r	Wel Northing	l Depth		
				Lievalit			Northing		Easting	
Bor				<b>D</b>		$\sim$	6			· · · · · · · · · · · · · · · · · · ·
Comp	letion	Static	nt e	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample	þe		
Ę		Water	Moisture Content	Rea	tific		/er/	Soil Type	LITHO	LOGY / DESCRIPTION
- - - - - -		Level	ĔŬ	<u>а</u> )	dent Si	Dept	Recovery Analyzed	So		
				ш. 	й		Å Å			
						_			Sandy gravel;	brown.
					- -	1		-		
	-				Hand Augered		+ $+$	1		
					bn	2—	+ +	1	·	
· .					Ā	3-		1		
					anc	3—				
					ĽΪ	4		]		
				14.0	SB-15	5				
				14.8	@ 5	-		СН		with fine grained sand; at
					2:01	6—		-		bgs, color had orange mottling, stant lithology to 11.5 feet.
				· .	2.01	-	+	1	Otherwise cons	
ъ						7—				
Neat Cement								1		·
em						8		]		
Ŭ						9				
eat										
z	I —			24.4	SB-15	10				
	-			24.4	@ 10	-				
					2:01	11	7330			
							+ +			
						12		1		
						13—		]		
						<u> </u>		4		
						14 —		-		
	-							-		
				6.3	SB-15	15 —		СН	Same as abov	e to 16 feet bgs.
				0.0	@ 15	-			Same as abov	
					2:04	16 —		CL	Sandy lean cla	ay; fine grained; increased
						<sub>17</sub> -		1	moisture.	,, <u> </u>
						17—		1		
		$\nabla$				18		GC	Sandy gravel	with clay from 17.5 to 18 feet;
						<sup>10</sup> -		4	moist-saturate	ed.
						19		4		
						-		4		
						20 —	+ $+$	4		
								4		
				12.3	SB-15	21		GC	Same as abov	e, with thumb-sized, angular
					@ 21	<sup>_</sup>		1	to subangular	
					2:10	22 —		1		

		Project	No:	C101156			Clien	t: Con	ocoPhillips		Boring No: SB-15
		Logged		C.Morgan	I		Loca	tion:	4276 MacArthur Bl	vd.	Date Drilled: 06/17/10
			Gregg D						Oakland, CA		Page 2 of 2
Del	га		Method:				Hole	Diame	ter:		
			ng Metho	d:				Depth:		∑ =	= First Water
Consulta	ants	Casing							Depth:	_	
		Slot Siz							r Depth:	⊻ =	Static Groundwater
		Gravel	Elevatio			Norti		Depth:	Easting		
			Licialio	/11		11010	ing		Lasting		
Boring			5	Ę	÷						
Completion	Static	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)		nple	/pe			
Ψ.	Water	oistu	Rea	tific	E E	) Š	zed	Soil Type	LITHO	LOGY /	DESCRIPTION
Backfill	Level	ΣŬ	ц ́	den xi	)epi	Recovery	Analyzed	So			
			<u> </u>	н П		a a	Ā				
					23—						
= _					_						
	-				24 —						
Neat Cement									·		
eat					25—						
N N					26—						
_					- <sup>-</sup>					·····	
l II			10.9	SB-15	27 —	20		GC	Same as above	е.	
				@ 26.5 2:18	_		<u> </u>		· ···· ····		
				2.10	28 —			CL	Sandy lean cla	v with w	vith gravel, fine
-					_			CL			vel, more saturated
					29				(saturation due		
					30				drilling)		<u> </u>
			5.2	SB-15							
				@ 30	31 —						
				2:18							
·					32 —						
					33—	2			· · · · · · · · · · · · · · · · · · ·		
					34						
					54						· · · · · · · · · · · · · · · · · · ·
					35—						
			10.7	SB-15			<u> </u>	CL	Same as above	e, moist	
				@ 35 2:24	36		<u> </u>				
				2.27			-				
					37 —				·		
					38						
					38						
					39 —						
					1						
			2.6	SB-15	40				Carra an abay	-	
			2.0	@ 40				CL	Same as abov	e	
· · · ·				2:40	41			┝╼╍╼	Boring temin	ated at	41 ft due to
—					-	$\vdash$	1		refusal.	accu di	
					42						
					43			ĺ			
					44	_	ļ				

Delt Consultar	nts	Drilling Samplir Casing Slot Siz Gravel	By: Gregg C Method: ng Metho Type: .e: Pack: Elevatio	Sonic d: Direct P	ush		Loca Hole First Stat Well ing	tion: Diame Depth: Water ic Wate Depth:	5.5' Depth: r Depth:	⊻ =	Boring No: SB-16 Date Drilled: 6/17/10 Page 1 of First Water Static Groundwater
同じ	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery	Analyzed	Soil Type	LITHO	DLOGY /	DESCRIPTION
Image: state of the state		moist moist		eyiuX-iV SB-16 @ 10' 10:49 SB-16 @ 10' 10:49 SB-16 @ 15' 12:55 SB-16 @ 15' 12:55 SB-16 @ 15' 12:55	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			CL CL CL GC	sand, moist, st	trong od t brown, nse/firm, e, with li feet bgs e to 21 f	<5% fine grained moist, strong odor. ght brown and orange eet bgs.

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Del consult		Drilling	By: Gregg D Method: ng Method Type: e: Pack: Elevatio	Sonic d: Direct I n	er Push	Lo Ho Ho Fir Sta	cation: le Diame le Depth st Water atic Wate ell Depth	: 5.5' Depth: er Depth:	Boring No: SB-16 Date Drilled: $6/17/10$ Page 2 of <b>3</b> $\swarrow$ = First Water $\checkmark$ = Static Groundwater
Completion	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sampl Recovery	<u> </u>	LITHO	DLOGY / DESCRIPTION
			9.3	SB-16 @ 25' 1:10	23 — 24 — 25 — 26 — 27 — 28 —		CL	Sandy lean cla	ay, brown, 15% sand, damp ay; brown, wet. y contains more gravels, and damp.
	-		12.3	SB-16 @ 30' 1:10	29 — 30 — 31 — 32 — 33 —				
			7.7	SB-16 @ 34' 1:25	34 — 35 — 36 — 37 —		CL	Sandy lean cla some orange r <15% sand, d	ay with gravel; brown and mottling; <5% gravel and lamp.
			12.2	B-16 @ 40' 1:37	38 — 39 — 40 — 41 — 42 — 43 — 44 —			Same as abov	e

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		Project	No:	C101156	5	Clier	nt: Con	ocoPhillips			Boring No: SB-16
		Logged	By:	A. Buehl	er	Loca	tion:	4276 Ma	ac Arthur Blv	d.	Date Drilled: 6/17/10
		Driller:	Gregg [	Drilling				Oakland, G	CA		Page 3 of 3
Delt	ta		Method:			Hole	Diame		3"		
	ιu			d: Direct	Push		Depth		5.5'	<u> </u>	First Water
Consulta	ante	Casing		a. Direct	1 usii			Depth:	5.5		
Consulta	ints	Slot Siz						r Depth:		<b>.</b>	Static Groundwater
		Gravel					Depth				- Static Gloundwater
			Elevatio	n	T ·	Northing	Depth		Easting		
			Liciatio	••		Noranng			Lasting		
Boring			ľ	-		Г					
Completion		ىب بە	PID Reading (ppm)	Sample Identification	et)	Sample	ψ				
_	Static Water	Moisture Content	m (n	icat	(fe	<u>ज</u> ्र	Soil Type		LITUO		
kfil	Level	siol Son	a d	fil	닱	vei yze	-		LIIHO	LUGY /	DESCRIPTION
Backfill	20101	20		gev i	Depth (feet)	Recovery Analyzed	Ň	1			
				H		R A					
					45						
			11.5								
en 📃					46 —						
ынары —				SB-16			CL		Clay; brown v	with <5	% coarse grained sand
Ŭ				©	47				very dense; r	noist.	
Neat Cement				46'	4/				······		
Ne _				1:46	-						
					48		CL		Clay; tan wit	h orang	e mottling <10% sand
					-				with some ar	avel: m	oist; very dense/firm.
			8.3	SB-16	49 —						
				G	-						
· · · · · · · · · · · · · · · · · · ·				50'	50 —	2020 2200	┝		Boring Termi		
				1:48	-				boring remin	nateu u	50 bys.
				1:40	51	+		·			
					-						
					52	+ +					
_					-	+ +					
					53 —	+ $+$ $-$					
					-	┥ ┤ …	ł				
					54 —	┥ ┥──			· • • • • • • • • • • • • • • • • • • •		
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Delt Consulta Boring Completion	Static Water	Drilling	By: Gregg D Method: ng Method Type: re:	Sonic d: Direct P	ush	Loca Oal Hold Firs Stat Wel Northing Sample	ation: <b>dand, C</b> e Diame e Depth: t Water	Depth: r Depth: Easting	Ivd.Boring No: SB-17 Date Drilled: 06/16/10 Page 1 of 3 $\bigtriangledown$ $\bigtriangledown$ $\bigtriangledown$ $\blacksquare$ $\checkmark$ = First Water $\checkmark$ = Static GroundwaterLOGY / DESCRIPTION
Backfill	Level	ΣŬ	DId	S	Dep	Recovery	Š		· · · · · · · · · · · · · · · · · · ·
Neat Cement           I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I <td< td=""><td></td><td></td><td>259.0 239.0<sup>,</sup></td><td>SB-17 @ 5 10:25 SB-17 @ 10 10:28</td><td></td><td></td><td>CL</td><td>contamination; chips and coars thumb sized gr Same as above fine grained. C coloring with h</td><td>y; gray with visible green ; trace ammount of wood se grained sand, pea to ravel from 6-8 feet bgs. e, however sand becomes lay has more tan and orange ints of green contamination. um hydrocarbon odor.</td></td<>			259.0 239.0 <sup>,</sup>	SB-17 @ 5 10:25 SB-17 @ 10 10:28			CL	contamination; chips and coars thumb sized gr Same as above fine grained. C coloring with h	y; gray with visible green ; trace ammount of wood se grained sand, pea to ravel from 6-8 feet bgs. e, however sand becomes lay has more tan and orange ints of green contamination. um hydrocarbon odor.
	V		19.4 79.4	SB-17 @ 15 10:30 SB-17 @ 20 10:11	13 — 14 — 15 — 16 — 17 — 18 — 19 — 20 — 21 — 22 —		CL	sized gravel, g hydrocarbon o Lean Clay with white and red more coarse g Sandy lean cla white trace roo thumb sized g	y with gravel, pea to thumb reen and gray, moist, strong dor. sand; tan, orange and some mottling; more firm, and rained sand; moist. y with gravel, green, and ots; rounded to subrounded, ravel, very moist. e, however sandy clay ge to tan; still very moist.

	Project	No:	C101156			Clier	it: Con	ocoPhillips	Boring No: SB-1	.7
	Logged		C. Morga	n		Loca		4276 Mac Arthur B		.6/10
	Driller:	Gregg D						aliforn ia	Page 2 of <b>3</b>	
Delta	Drilling	Method:					Diame		_	
	Journhui	-	d: Direct I	Push			Depth		📡 = First Water	
Consultants	Casing							Depth:	—	
	Slot Siz Gravel							r Depth:	👿 = Static Groundwate	er
	Graver	Elevatio		r	Nort		Depth:	Easting		
		Elevatio	///		NOT	mig		Lasting		
Boring		6	c							
Completion Static	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)		mple	pe			
🔁 Water	bistu	Rea	tific	ت ج	ې ک	zed	Soil Type	LITHO	LOGY / DESCRIPTIO	N
Water کې Level	žΰ	i g <sup>i j</sup>	fent Si	ept	Recovery	Analyzed	Soi			
		<u>م</u>	Ц		Re	AL				
				23—			CL	Same as above	, with increased firmne	SS.
t _										
ц — ц				24						
				-						
Neat Cement		NA	SB-17	25—						
No			@ 25	-	-				······································	
			10:17	26 —						
				27						
				2/						
· ·				28—						
				29—	_					
				_						
		12.5	SB-17	30 —			CL	Same as above		
		12.5	@ 30			1.49			•	
			10:20	31	1.1988656					
				-						
				32 —						
				33—						
				J _						
				34 —	_	<u> </u>			······································	
					_					
		3.8	SB-17	35 —			CL	Same as above		
			0 35	-					•	
			@ 35 10:24	36 —		$\vdash$				
			-	37 —						
				38						
				J _						
			1	39			l			
					-					
		10.5	SB-17	40 —				Como no altar	· · · · · · · · · · · · · · · · · · ·	
		10.5	@ 40	-			CL	Same as above	· · · · · · · · · · · · · · · · · · ·	
			10:44	41 —			1			
				-						
		l		42			1			
				43			1			
				44			l			

		Project	No:	C101156	;	С	ient: <b>Co</b>	ocoPhillips		Boring No: SB-17
		Logged		C. Morga	in	Le	cation:	4276 Mac Arthur Blv	d.	Date Drilled: 06/16/10
		Driller:	Gregg [	Drilling		o	akland,	Californ ia		Page 3 of 3
Delt	ra	Drilling	Method:	Sonic		н	ole Diam	eter: 3"		
	LU			d: Direct	Push		ole Depth		∽ =	First Water
Consulta	ints	Casing	Type:				rst Water			
		Slot Siz						er Depth:	<b>X</b> =	Static Groundwater
		Gravel	Pack:				ell Depth			
			Elevatio	n		Northin	g	Easting		
Boring Completion			þ	Sample Identification	с С	Samp				
	Static	Moisture Content	PID Reading (ppm)	ble	Depth (feet)		1 0			
cfill	Water	bit of	ppr	titic	EP ()	/er/	II T	LITHO	LOGY /	DESCRIPTION
Backfill	Level	žŬ	e )	den S	)ep	Recovery	Soil Ty			
			ш.	Ĭ		L N	Ā			
					45					
uei ——		1			46—					
Cen –							_			
Neat Cement			26	0.0 4 7	47—					
lea –			36	SB-17	_		CL	same as abov	ve.	
Z		· · · ·		@ 47 11:02	48—					
				11:02	_		_			
					49	+	-			
					-		-		····	
			9.2	SB-17	50					
				@ 50				Boring term	inated	at 50.5 feet bgs.
				11:03	51—					
					- 52					
					. 52 —					
					53—		_			
						+				
					54		_			
					-					
					55 —	++	_			
					-					
				r	56 —					
					57—					
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			Project	No:	C101156		Clie	ent: Cor	ocoPhillips	<u>.</u>	Boring No: SB-18
			Logged	-	C. Morgar	า	Loc	ation:	4276 MacArthur B	lvd.	Date Drilled: 06/14/10
				Gregg D					Oakland, California		Page 1 of 1
	elt	га	Drilling	Method:	Soni c		Но	e Diame	eter:		
			Samplir	ng Metho	d:		Ho	e Depth	:		First Water
Co	nsulta	ants	Casing <sup>-</sup>	Type:			Firs	st Water	Depth:		
			Slot Siz	e:			Sta	tic Wate	er Depth:	▼=	Static Groundwater
			Gravel					ll Depth			
				Elevatio	n		Northing		Easting		
Bor	ina l				Γ						
Comp			a	PID Reading (ppm)	Sample Identification	G)	Sample				
		Static	ture	m) (n	ple	(fe	2 2	Å			DECODIDATE
34	, YII	Water Level	Moisture Content	(pp	itifi	Depth (feet)	Vel	Soil Type		DLOGY /	DESCRIPTION
- - - - - - - - - - - - - - - - - - -	Ď .	Level	ΣU		gen	Dep	Recovery Analvzed	Ň			
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🛛					Hand Augered	-		4	·		
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						5—		-			
								7			
						6—		7			
						7_					
L L						/					
Neat Cement				12.5	SB-18	8—					
ец					@ 7.5	<sup>0</sup> -		CL			en, some thumb sized
					3:05	9_		_	white gravel/r	ock, moi	st.
ea						-		_			
Z	·			254		10					
				25.1	SB-18	-					
					@ 10 3:13	11		_			
	· ·				3:13	-		_			
						12		-			
						-	╶┨╾╴┨╴	-			
						13		-			
						-		-			
						14 —		-			
						-	+ $+$	-	Fine grained s	ilty sand	; black, saturated,
				476.0	SB-18	15—		SM	very strong oc		
					@ 15	-		СН			and gray, visible
					3:19	16—	+		contamination		
					0.10			-	containination		
						17—					·
						<sup>-</sup>					
						18—			Clay with silt a	and sand	; tan to grav:
						10		1			ne grained sand more
					SB-18	19-		1			sample with tan and
				11.1	@ 20	120		CL	orange colorin		
					3:26	20—		1			t 20 feet bgs.
						21					
						21					
1						22					
								1			

		Project		C101156			Clier	t: Con	ocoPhillips		Boring No: SB-19
		Logged		C. Morgar	1		Loca	tion:	4276 MacArthur Bl	lvd.	Date Drilled: 06/15/10
	1+-	Driller:	Gregg D						Oakland, California		Page 1 of 1
De	ILd	Drilling	Method: ng Metho					Diame		$\nabla$	= First Water
	litants	Casing	-	u.				Depth Water	Depth:	<u> </u>	- Filst Water
Const	ntunts	Slot Siz							r Depth:	▼ :	= Static Groundwater
		Gravel						Depth			
			Elevatio	n		North	ing		Easting		
Boring	1		r			1					
Completio	n Chat	y the last	PID Reading (ppm)	Sample Identification	set)	Sam	nple	e			
Ē	Stati Wate		ead pm)	fica	Depth (feet)	Σ	fed	Soil Type			DESCRIPTION
Backfill	Leve	U Qui	L L L L L L L L L L L L L L L L L L L	Sai	ept	Recovery	Analyzed	Soil		,	
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t					′ _						
Neat Cement			33.7	SB-19	8			CL	Lean clay; gra		
Cer				@ 7.5 2:30	-				contamination	, some g	gravel.
at (				2.50	9						
Ze					-						
_			26.9	SB-19	10			CL	Same as abov	e.	
				@ 10	11-						
				2:30	-	02036	<u> </u>				······
—					12						· · · · · · · · · · · · · · · · · · ·
	-					+					
					13-						
	_			SB-19							
			55.3	@15 2:30	15 —			CL	Sandy lean da	av light	brown to tan; some
	-			2.50	-						present; very firm;
-					16				moist.	· · · · · r	, , , , , , , , , , , , , , , , , , , ,
					17						
					- <sup>1</sup>		<u> </u>				
- 10				· · ·	18						
				SB-19	-		<u> </u>				
	-1			@20	19			СН	Fat clay with o	gravel; d	gray and some orange
			58.4	2:52	20 —				increased moi	sture; s	light odor.
					20				Boring termi	nated a	at 20 feet bgs.
-	_				21 —	_	<u> </u>				
	_				-	-					
-					22	1					

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			Droject N		6000			CU-	<b></b>	
			_	o: <b>C10113</b> y: <b>S. Men</b> i		Morgan				DecoPhillips Boring: SV-1 Dakland, CA Page 1 of 1
			Driller: G		inger/t	Morgan				· · · · · · · · · · · · · · · · · · ·
D				ethod: Ha						d: 7/7/2009 Location Map
	EI	la	-	Method: Ha	-					
						rive			Depth	
	sulta	ants	Casing Ty Slot Size:		N/A				Diame	,
			Gravel Pa		N/A 3.5' - !	= 1	T		Depth:	: N/A Depth: N/A
			Glaverra	CK.	3.5 - :	5	$\overline{\nabla}$			er Depth: N/A
We	11						T <u> </u>	Jtat		
Comple	etion	ve	يدبع	PID Reading (ppm)	Sample Identification	Depth (feet)	San	nple	e	
=		Water Level	Moisture Content	) Readi (ppm)	nple lica	l f	_≤	a	Soil Type	LITHOLOGY / DESCRIPTION
Backfill		ater	4ois Con	a d	San	fi	ove	Interval	iio	
Ba		Ň	2.0	lId	Ide	Б	Recovery	Int	N N	
Asphalt	1				<u> </u>		-			Sand with Gravel (SM) - Possible fill
Asphale	-					-		-	SM	material, brown to red brown, moist, medium
Bent.			Moist			1				dense to dense, medium to coarse sand
Grout	-		1.0100							
						2				
Bent.	1								~~~	
Chips						3			SM	Silty Sand (SM) - Light brown, moist,
#2/12	1 -		Moist							medium dense, fine to coarse grained sand
# 2/ 12 Sand						4				
Sanu				S	<u>V-1-S</u>	5-				
						]				Boring Terminated at 5' bgs.
						6—				Groundwater Not Enountered
	_				1	Ŭ _				
						7	ļ			Soil Sample SV-1-S collected at 10:15 7/7/2009
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Delta consultants Well Completion Backtill	Project No Logged By Driller: <b>Gr</b> Drilling Me Sampling Casing Ty Slot Size: Gravel Pac	/: <b>S. Men</b> r <b>egg</b> ethod: <b>Ha</b> Method: <b>H</b> pe:	inger/C nd Aug		Locati Date I Hole I Hole I Well I First V Static	on: <b>O</b> Drilled Diame Depth: Diame Depth: Water	ter: N/A N/A Depth: N/A r Depth: N/A	Boring: SV-2 Page 1 of 1 Location Map
Asphalt Bent Grout Bent Chips #2/12 Sand	Moist Moist	S	V-2-S			SM	medium den	with Gravel (SM) - Brown, moist, se, no odor, fine to coarse sand, fine to medium grained gravel
				5 			Boring Terminated Groundwater Not E Soil Sample SV-2-	at 4' bgs. Enountered S collected at 14:05 7/7/2009

De cons	sulta		Project No Logged By Driller: <b>Gi</b> Drilling Mo Sampling Casing Ty Slot Size: Gravel Pa	y: <b>S. Men</b> r <b>egg</b> ethod: <b>Ha</b> Method: <b>I</b> pe: ck:	inger/C nd Aug Hand Dr N/A N/A 3.5' - 5	er 'ive		Loca Date Hole Hole Well Well First	tion: <b>O</b> Drilled Diame Depth Diame Depth Water	ter: N/A	Boring: SV-3 Page 1 of 1 Location Map
Comple		Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sar Kecovery	Interval aldu	Soil Type	LIT	HOLOGY / DESCRIPTION
Asphalt Bent. Grout			Moist	17.2		1— 2—			SM	medium de	with Gravel (SM) - Dark brown, nse, moist, no odor, fine to ained sand, possible fill material
Bent. Chips #2/12 Sand			Moist	78.9	V-3-S	3— 3— 4—			CL		<b>with Sand (CL)</b> - Dark brown, ium plastic, stiff, hydrocarbon odor, ive green
						6— 7— 9— 10— 11—				Boring Terminate Groundwater Not Soil Sample SV-3	
				·		13 — 14 — 15 — 16 — 17 — 18 — 19 — 20 — 21 — 22 —			-		

lta	Driller: G		inger/C	. Morgan		Loca	tion: <b>O</b>	ocoPhillips akland, CA	Boring: SV-4 Page 1 of 1
Itants	Sampling Casing Ty Slot Size:	ethod: <b>Ha</b> Method: <b>H</b> pe:	land Dr N/A N/A 3.5' - 5	rive	▼ ▽	Hole Hole Well Well First	Diame Depth: Diame Depth: Water	ter: N/A N/A Depth: N/A	Location Map
a Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	San Kecovery	Interval	Soil Type	LITH	OLOGY / DESCRIPTION
	Moist	14.8		1			CL		<b>CL)</b> - Dark brown with black ist, stiff, medium plastic
	Moist	21.6		3 — 4 —			CL	black, moist, slight hydroc	Clay (CL) - Dark olive green to medium stiff, medium plastic, arbon odor (ML) - light brown with black
		S	 V-4-S	- 5			ML	mottling, mo	ist, very dense, non-plastic
								Groundwater Not E Soil Sample SV-4-	Enountered S collected at 12:40 7/7/2009
		Gravel Pa	Gravel Pack: n Arter Leave n Arter Leave Moist 14.8 Moist 21.6 S	Gravel Pack: 3.5' - 5	Gravel Pack:       3.5' - 5'         n       Image: Strate in the s	Gravel Pack:       3.5' - 5'       V         n       varue       varue <t< td=""><td>Gravel Pack:       3.5' - 5'       ▼ First         n       N       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       <t< td=""><td>Gravel Pack:       3.5' - 5'       ✓       First Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         Moist       14.8       Image: Static Water       Image: Static Water         Moist       21.6       Image: Static Water       Image: Static Water         Moist       21.6       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: S</td><td>Gravel Pack:       3.5' - 5'       ✓       First Water Depth: N/A         n       1       Static Water Depth: N/A       LITH         n       1       1       CL       Lean Clay ( mottling, mo         Moist       14.8       1       CL       Lean Clay ( mottling, mo         Moist       21.6       SV-4-S       ML       Soil Sample       Soil Sample SV-4-S         Soil Sample       9       1       1       Clay Site       Soil Sample SV-4-S         1       1       1       1       1       Clay Site       Soil Sample SV-4-S         1       1       1       1       1       1       1       1         1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1</td></t<></td></t<>	Gravel Pack:       3.5' - 5'       ▼ First         n       N       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I <t< td=""><td>Gravel Pack:       3.5' - 5'       ✓       First Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         Moist       14.8       Image: Static Water       Image: Static Water         Moist       21.6       Image: Static Water       Image: Static Water         Moist       21.6       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: S</td><td>Gravel Pack:       3.5' - 5'       ✓       First Water Depth: N/A         n       1       Static Water Depth: N/A       LITH         n       1       1       CL       Lean Clay ( mottling, mo         Moist       14.8       1       CL       Lean Clay ( mottling, mo         Moist       21.6       SV-4-S       ML       Soil Sample       Soil Sample SV-4-S         Soil Sample       9       1       1       Clay Site       Soil Sample SV-4-S         1       1       1       1       1       Clay Site       Soil Sample SV-4-S         1       1       1       1       1       1       1       1         1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1</td></t<>	Gravel Pack:       3.5' - 5'       ✓       First Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         n       Image: Static Water       Image: Static Water       Image: Static Water         Moist       14.8       Image: Static Water       Image: Static Water         Moist       21.6       Image: Static Water       Image: Static Water         Moist       21.6       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: Static Water       Image: Static Water       Image: Static Water       Image: Static Water         Image: S	Gravel Pack:       3.5' - 5'       ✓       First Water Depth: N/A         n       1       Static Water Depth: N/A       LITH         n       1       1       CL       Lean Clay ( mottling, mo         Moist       14.8       1       CL       Lean Clay ( mottling, mo         Moist       21.6       SV-4-S       ML       Soil Sample       Soil Sample SV-4-S         Soil Sample       9       1       1       Clay Site       Soil Sample SV-4-S         1       1       1       1       1       Clay Site       Soil Sample SV-4-S         1       1       1       1       1       1       1       1         1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1

			Due de etc. Nu							
			-	: C10115		. Morgan				ocoPhillips Boring: SV-5
			Driller: G		inger/C	Morgan				Page 1 of 1
D										Location Map
	21	ιa		ethod: Ha						ter: <b>3.5</b> "
				Method: <b>I</b>		rive			Depth	
Con	sulta	ants	Casing Ty		N/A				Diame	
			Slot Size:		N/A				Depth	
			Gravel Pa	ck:	3.5' - !	5'				Depth: N/A
We					r		$\nabla$	Stati	ic Wate	r Depth: N/A
Comple		ē		Ę	Sample Identification	ភ្ល	Sam	nple		
		Water Level	Moisture Content	PID Reading (ppm)	ati	Depth (feet)			Soil Type	
liiji		er	ont	) Readi (ppm)	ti ju	E E	le'	val	Г П	LITHOLOGY / DESCRIPTION
Backfill		Vat	ΣŬ	ц, )	len S	Geb	Recovery	Interval	S	
ш		_		4	Ĭ		l a	Ir		
Asphalt						_			GW	Well-Graded Gravel with Sand (GW) - light
						1			GVV	brown, dense, medium grained, moist,
Bent.			Moist	27.3						possible fill material
Grout						2—				
Bent.						3			CL	Lean Clay (CL) - Gray/black to olive green,
Chips_						<sup>_</sup> _				moist, medium stiff, medium, plastic,
#2/12			Moist	237		4				hydrocarbon odor
Sand						<sup>-</sup> _				
Janu				S	<u>V-5-S</u>	5				
										Boring Terminated at 5' bgs.
	<u></u>					6	<u> </u>			Groundwater Not Enountered
						<sup>°</sup> _				
						7—				Soil Sample SV-5-S collected at 11:00 7/7/2009
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			Project No	o: C10115	6203			Clier	t' Con	nocoPhillips Boring: SV-6
			-			. Morgan				Dakland, CA Page 1 of 1
			Driller: G		inger/ c	. Horgan				
D	<u>ali</u>		Drilling M		nd Aug	<b>~</b> r				d: 7/7/2009 Location Map
ישו		ια		Method: Ha						
						rive			Depth	
Con	sulta	ints	Casing Ty Slot Size:		N/A				Diame	
			Gravel Pa		N/A 3.5' - 5	-'	▼		Depth:	: N/A Depth: N/A
			Glaverra	CR.	5.5	,	$\nabla$			er Depth: N/A
We	li j					<u> </u>	T	Stat		
Comple		vel	чю	PID Reading (ppm)	l a l	et)	San	nple	υ	
-		Le	ten	ead (m	nple	(fe	≥	-	Typ	LITHOLOGY / DESCRIPTION
Backfill		Water Level	Moisture Content	a d	San	Depth (feet)	N N	Interval	Soil Type	
Ba		Ŵ	20	PII	Sample Identification	De	Recovery	Int	S	
Aanhalt										Well-Graded Gravel with Sand (GW) - light
Asphalt									GW	brown, dense, medium grained, dry to moist,
Bent.			Moist			1				possible fill material
Grout			110100			-				
Groue						2				
Bent.	-									Lean Clay with Sand (CL) - light olive green,
Chips						3—			CL	moist, soft to stiff, low plastic, strong
			Moist							hydrocarbon odor
#2/12						4 —	1			
Sand				S	v-6-5	5				
						]				Boring Terminated at 5' bgs.
						6—				Groundwater Not Enountered
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						7—		<u> </u>		Soil Sample SV-6-S collected at 9:45 7/7/2009
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Con Con	sulta	ints	Logged By Driller: <b>G</b> i Drilling M Sampling Casing Ty Slot Size: Gravel Pa	regg ethod: Ha Method: H pe: ck:	inger/C nd Aug Hand Di N/A N/A 3.5' - !	rive 5'		Loca Date Hole Hole Well Well First Stati	tion: <b>O</b> Drillec Diame Depth Diame Depth: Water c Wate	eter: N/A
Backfill		Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery	Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt Bent. Grout			Moist	25.9		1			SM	<b>Gravelly Sand with Clay (SM)</b> - Brown to black, moist, medium dense to dense, medium grained gravel, possible fill material
Bent. Chips #2/12 Sand	· · · · · · · · · · · · · · · · · · ·		Moist	54.5 <b>S</b>	V-7-S	3 — 4 — 5 —			CL	<b>Lean Clay (CL)</b> - Blue-gray to light olive green, moist, stiff, medium plastic, slight hydrocarbon odor
						$ \begin{array}{c}                                     $				Boring Terminated at 5' bgs. Groundwater Not Enountered Soil Sample SV-7-S collected at 11:30 7/7/2009

		Project	No:	C101156			Clier	nt:	COP Boring/Well No: SVW-1
1		Logged		Alan Bueh	ler			tion:	
		Driller:		Gregg Dri				Drilled	
$  \rangle \Delta   $	<b>~ &gt;</b>			Hand Aug					
Delt	LU	Sampli	ing Method	nana Aag	CI				meter: 36"
Consultar		Casing	Type:	1/4" Tubir	ng			Depth Diame	neter: 1/4"
		Slot Si						Depth	
		Gravel	Pack:	#30					er Depth:
						$\nabla$	Stati	c Wate	ater Depth:
	·	Elevati	on:		Northing	:			Easting:
Well Completion	-		5	c			,		
	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sar	nple	g	
	1	stu	DUea	L L L L	5	2	ā	Soil Type	LITHOLOGY / DESCRIPTION
Backfill Casing	ate	0 <del>0</del>	₩ġ	Sar	E E	l Š	Ž	<u>ë</u>	
Co Ba	Ň	<u> </u>	IId	lde	ď	Recovery	Interval	S	
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See					1				
Construction					<sup>-</sup> _				
Detail					2			CL	Brown lean clay with sand and gravel, moist
					<sup>2</sup>				- brown lear day with sand and graver, moist
					3				
					4			011	
							_	CH	Green/gray fat clay
					5—				Total Depth = 5'
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Lower and Dates									
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		Project	No:	C101156			Clier	it:	COP Boring/Well No: SVW-2
		Logged		Alan Bueh	ler		Loca		
		Driller:		Gregg Dril				Drillec	
1100lt	- 2			Hand Aug					
Delt		Commit	ng Method:	nanu Augi	er			Diame	
								Depth	
Consultar	Its	Casing		1/4" Tubir	ıg			Diame	
		Slot Si				_		Depth	
		Gravel	Pack:	#30			First	Water	er Depth:
		Flouoti			182 a vikila 144 a	$\nabla$	Stati	c Wate	ter Depth:
		Elevati	on: T	r	Northing	: r			Easting:
Well Completion	ē		p	Sample Identification	କ୍ଳ	Sar	nple		
	Le,	ent	Э́б	tati	, te	1		γp	
ting fi	ja J	Moisture Content	D Readi (ppm)	tili	£	١.	2	Soil Type	LITHOLOGY / DESCRIPTION
Backfill Casing	Water Level	ΣŬ	PID Reading (ppm)	ler v	Depth (feet)	Recovery	Interval	So	
шŬ			<u>ц</u>	Ä		2	片		
See					1				
Construction									
Detail								Ċ.	Brown/green lean clay with sand and gravel, 20%
					2			ĊĹ	sand, some gravel, cobbles, moist
					3—				
		.							
					4				
								СН	Green/gray clay
					5				Total Depth = 5'
									917-91991/01/01/01/01/01/01/01/01/01/01/01/01/01
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		Project	No:	C101156			Clier	nt:	COP Boring/Well No: SVW-3
		Logged		Alan Bueh	nler			tion:	
	1	Driller:		Gregg Dri				Drilled	
Delt				Hand Aug				Diame	
	LU		ng Method					Depth	
Consulta	nte	Casing		1/4" Tubii	na.			Diame	
Consulta		Slot Siz		1/4 1000	ng			Depth	
		Gravel		#30		T			er Depth:
		0.0101		1 50					ter Depth:
		Elevatio	 วก:		Northing		Stat	ic wate	Easting:
Well Completion	Γ		1			i –			Lasting,
wen competion	vel	40	ing	io i	et)	Sar	nple	e v	
= -	۲ ا	ten	a fa	Cat	(fe	5	=	۲yp	
Backfill Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery	Interval	Soil Type	LITHOLOGY / DESCRIPTION
U B	Wŝ	1 <sup>2</sup> <sup>V</sup>	DIC	ge, v	a la	۲ ۲	nt€	Ň	
						×			
					_				
See					1				
Construction					•••	<u> </u>		CL	Brown/green lean clay with sand and gravel, strong
Detail					2	ļ		00	odor
					3				
					4			СН	Gray/green clay, strong odor
					_			••••	
P.11.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.					5				
									Total Depth = 5'
					6				
					7				
A.V. (11)					_				
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	Project No:	C101156	Clien	it:	COP	Boring/Well No: SVW-4
	Logged By:	Alan Buehler		tion:	Oakland	Page 1 of 2
	Driller:	Gregg Drilling				
				Drilled		
Delta	Drilling Method:	Hand Auger		Diame		
	Sampling Metho			Depth		
	Casing Type:	1/4" Tubing		Diame		
	Slot Size:			Depth		
	Gravel Pack:	#30	🗴 First	Water	Depth:	
			Stati	c Wate	r Depth:	
	Elevation:	No	rthing:		Easting:	
Well Completion	5					
Mater Level	Moisture Content PID Reading (ppm)	Sample Identification Depth (feet)	Sample	Soil Type		
	Dagi jeti		ਤ ਤੁ	ž	1774	IOLOGY / DESCRIPTION
Backfill Casing Water I		bt ga	Recovery Interval	oil		
<u>ຮິບ</u> 😤	E E	De Ed	t ut	S		
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See						
Construction				CL		ish lean clay with sand, strong
Detail			,	~-	odor	
1.000						
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		4		011	Orean/harris -1	
		4		СН	Green/brown clay, sto	ong odor
		5	,		Total Depth :	= 5'
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		Project	No:	C101156			Clier	nt:	COP Boring/Well No: SVW-5
		Logged		Alan Bueh	ler			tion:	Oakland Page 1 of 2
		Driller:		Gregg Dri				Drilled	
				Hand Aug					
Delt	La				er .			Diame	
Consulta		Casing		1/4" Tubir	ng			Depth Diame	
		Slot Siz				-		Depth	
		Gravel	Раск:	#30					r Depth: er Depth:
		Elevatio	on:		Northing		Stati	c wate	Easting:
Well Completion	Γ		[	l'	inor ching	, 	1		Lasting.
weil Completion	Water Level	ب ب	PID Reading (ppm)	Sample Identification	(f)	Sar	nple	Ð	
	Le l	Moisture Content	m)	at b	(fe			Soil Type	
sing sing	fer	lois	b R K	lan ar	Ę	Ş	Ş	L Eio	LITHOLOGY / DESCRIPTION
Backfill Casing	Ma	ΣΟ	Q,	der	Depth (feet)	Recovery	Interval	й	
-				н		à	T		
·									
See					1				
Construction					<sup>_</sup> _			CL	Green/gray/black lean clay with sand, some gravel,
Detail					2—				wood debris, strong odor
					l ~ _				
					3				
					4			СН	Greenish gray clay, strong odor
					4			ŲΠ	Greenish gray clay, shong odor
					5				
					3				Total Depth = 5'
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					10				
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		Project	No:	C101156			Clier	t:	COP Boring/Well No: SVW-6
		Logged		Alan Bueh	ler			tion:	Oakland Page 1 of 2
		Driller:		Gregg Dri				Drillec	
IDAI	- 2			Hand Aug					
Delt					er			Diame	
Consultar		Casing	ng Method	: 1/4" Tubir	20			Depth Diame	
Consulta	11.5	Slot Siz		1/4 1000	ıy			Depth	
		Gravel		#30		¥	First	Water	r Depth:
									er Depth:
		Elevatio	on:		Northing		5.00		Easting:
Well Completion					Τ	ŕ			
wen completion	Water Level		ing	i j	l <del>(</del>	Sar	nple	Ŷ	
	لو ل	ten	n ga	De la	l a	5		ſ	
sing Kfi	ter	Moisture Content	Pp Re	itit	tt.	2 S	Ž	Soil Type	LITHOLOGY / DESCRIPTION
Backfill Casing	Ma	20	PID Reading (ppm)	Sample Identification	Depth (feet)	Recovery	Interval	Ϋ́,	
_				~		αż	м		
					_				
See					1				
Construction					<u> </u>				
Detail					2			CL	Green/gray lean clay with sand, some gravel, some
					2			CL	odor, asphault debris
					3—				Υ. Υ.
					4				
								СН	Green/brown clay, strong odor
					5				Total Depth = 5'
					6—				
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				_	Clie		lumbor	Chevron Enviornmental Mana	agement Company		Borin	ng No. MW-9A
A			JN	1		-		60287515 .ocation: 351645 Oakland, O	akland, California		Ambient PID Read	ling: 0.0
	COM En					ordina	•	Not Surveyed	Elevation:	Datum:	Sheet: 1 of	
Ca	20 Aveni amarillo, (	CA 930	12					t/Method: /Hollow Stem Auge			Monitoring Well Ins	
	(805) 388 vww.aeco							Split Spoon	Boring Diameter:	8 IN.	Screened Interval:	
oprove	d Byr				Our	npic i	ypc(3).	Logged By: J.Harms	Date/Time Started:		Depth of Boring: 1	
,	contracto	or AB	C					Backfill: grout	Date/Time Finished			Not Encountered
	011110010	1			Ω.			Buchim. grout	Date, Time Timened			
(ff)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	nscs	Graphic Log	MATERIAL IDENTI grained material (s grained material (sand features, density or stiffr	silt and clay), desci and gravel), struct	iption of coarse ural or mineralogical	We	ell Diagram
						0		(0-5") ASPHALT				2" Diameter Sched. 40
						CL		(5"- 2.5') LEAN CLAY, Darl 5% silt, 5% fine-grain	k Gray (5Y 3/1), med led gravel, stiff, dry,	lium-plastic, 90% clay, Hydrocarbon odor	X	PVC Concrete Slurry
		$\bigtriangledown$			242	СН		(2.5-6') FAT CLAY, Olive C 5% fine-grained grav				
5	5.0, 5.0Dup	$\square$			3770	CL			rov (5V4/2) modium	plastic 20% day 10%	_	Hydrated Bentonite Chips
						UL		(6-9') LEAN CLAY, Olive G silt, 10% fine-grained	ו gravel, very stiff, dry	, Hydrocarbon odor		
 0	8.5	X	8 9 11, 11 9 12 13	2 1.5	1005	СН		(9-12.5') FAT CLAY, Olive silt, 10% fine-grained				Monterey N 3 Sand
			13 14 15	1.5	1347			, Dark Reddish Gray (4/2) /				0.020" Slot
	14		8	1	237	CL		(12.5- 15') LEAN CLAY, Da 6/6) mottled, medium fine-grained gravel, 5 dry, Iron staining star	n-plastic, 70% clay, 1 5% fine to coarse-gra	Ó% silt, 15%		Screen
15		X	10 12, 14									

	\ =/			_	Clie Pro		umber:	Chevron Enviornmental Man 60287515	agement Company		Boring	No. MW-9B
-				/				ocation: 351645 Oakland, C	Dakland, California		Ambient PID Reading	: 0.0
	ECOM En 220 Aveni				Cod	ordina	tes:	Not Surveyed	Elevation: Dat	tum:	Sheet: 1 of 1	
	amarillo, (805) 38	CA 930			Dril	ling Ed	quipmen	t/Method: /Hollow Stem Auge	er Weather:60* Clear		Monitoring Well Instal	led: Yes
	www.aec		n		Sar	nple T	ype(s):	Split Spoon	Boring Diameter: 8 IN.		Screened Interval: 15	-20 ft.
Approve	ed By:							Logged By: J.Harms	Date/Time Started: 03-15-	13 / 13:20	Depth of Boring: 20 F	T BGS
Drilling (	Contracto	or: AB	С					Backfill: grout	Date/Time Finished: 03-15-	13 / 14:00	Water Level: Not	Encountered
DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	nscs	Graphic Log	grained material ( grained material (sanc features, density or stiffi	IFICATION, color, descript silt and clay), description o I and gravel), structural or r ness, moisture content, ode	f coarse nineralogical	Well [	Diagram
						~		(0-6") ASPHALT		1 11 000/	-	2" Diameter Sched. 40
						CL		(6"-2.5') LEAN CLAY, very clay, 5% silt, 5% gra (stronger at 4')	dark gray (5Y 3/1), medium- vel, medium dense, dry, Hydr	plastic, 90% rocarbon odor		PVC Concrete Slurry
					3247	СН		(2.5-7.0') FAT CLAY, olive silt, 5% gravel, stiff, (	gray (5Y 4/2), high-plastic, 9 dry, Hydrocarbon odor	0% clay, 5%		
5	5.0	$\square$			2416							
			68			CL		gray (5Y 4/2), mediu	H SILT, SAND, AND LITTLE m-plastic, 80% clay, 10% silt very stiff, dry, Mn nodules, find	, 10%	-	Hydrated Bentonite Chips
	9.0	$\square$	9, 11	2	41.2							
			6 8 12	1.5	573						_	
			6 8 9, 11			CL		mottled, medium-pla coarse-grained grav decreasing at 13 fee , brownish yellow (10YR 6	/6)	6 fine to at 12 feet, odor		
15	14.0	$\square$		1.5 2	7.9 128			` silt, 30% fine-grained	ND, olive (5Y 5/3) mottled, lov d sand, 10% clay, dense, dry	• •		Monterey No. 3 Sand
			6 8 9	1.5		SM		fine to medium-grair	H GRAVEL, light brown (7.5% led sand, 40% silt, 20% fine t el (max size 0.5 inches), mec	0		
	19.0		6 9 9 6 8 10,12	2	0.7	ML		low-plastic, 50% silt, fine-coarse grained	) AND GRAVEL, red brown (5 20% fine to medium-grained gravel (max size 0.5 inches), st, slight odor at 18.5-18.8 fee	l sand, 20% 10% clay,		0.020" Slotted Screen
20 Notes:	Contin	uous S	Split S	poon 1	from 8	Feet					ı ŀ`.}	

				_	Clie		umher:	Chevron Enviornmental Man 60287515	agement Company	Boring No. MV	V-10A
Ĥ			Л	1				Location: 351645 Oakland, C	Dakland, California	Ambient PID Reading: 0.0	
	ECOM Er 220 Aven					ordina		Not Surveyed	Elevation: Datum:	Sheet: 1 of 1	
	amarillo, (805) 38	CA 930			Dril	llina E	auipmer	nt/Method: /Hollow Stem Auge	er Weather:60* Clear	Monitoring Well Installed: Yes	
	www.aec		ı			-		Split Spoon	Boring Diameter: 8 IN.	Screened Interval: 10-15 ft.	
prove	d Bv:							Logged By: J.Harms	Date/Time Started: 03-18-13 / 10:40	Depth of Boring: 15 FT BGS	
	Contracto	or: AB	С					Backfill: grout	Date/Time Finished: 03-18-13 / 11:00	Water Level: Not Encount	tered
(ff)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	NSCS	Graphic Log	MATERIAL IDENT grained material ( grained material (sanc	FICATION, color, description of fine (silt and clay), description of coarse and gravel), structural or mineralogical ness, moisture content, odors or staining.	Well Diagram	
			H			ML			AND GRAVEL, red brown (5YR 5/4), 70% d gravel (max sixe 0.25 inches), 10% clay, Hydrocarbon odor		2" Diameter Sched. 40 PVC Concrete Slurry
•••••					346	CL		medium-plastic, 80% subangular, medium (3-8.5') FAT CLAY WITH	TRACE OF SAND AND SILT, gray (2.5Y	-	
	5.0							dry	% clay, 5% fine-grained sand, 5% silt, stiff,		Hydrated Bentonite
	5.0			1	657			-(increasing silt and sand	@ 4')		Chips
	9.0		6 8 9, 10	2	325	CL		(8.5-13') LEAN CLAY WIT	y, 10% fine-grained sand, 10% silt @ 7.5' H SAND, olive (5 Y 5/3), medium-plastic, grained sand, 10% silt, stiff, dry, Iron staining		Monterey N 3 Sand
			9 11 12	1.5							0.020" Slot
			8 11 13	1.5	1011	ML		20% fine to medium	) AND GRAVEL, olive (5 Y 5/3), 70% silt, -grained sand, 5% clay, 5% gravel, stiff, ecreased silt increase from fine to medium		0.020" Slot Screen
	14.0		9 10 11, 12	2	3222			grained sand) -(moist at 14')			

				A	Clie Pro		umber:	Chevron Environmental Management Company 60287515	Boring No. MW-10B
-					Site	e Desc	cription/L	ocation: 351645 Oakland, Oakland, California	Ambient PID Reading: 0.0
	ECOM En 220 Aveni				Cod	ordina	tes:	Not Surveyed Elevation: Datum:	Sheet: 1 of 1
Ca	amarillo, ( (805) 38		12		Dril	lling E	quipmen	t/Method: /Hollow Stem Auger Weather:60* Clear	Monitoring Well Installed: Yes
١	www.aec		ı		Sar	mple 1	ype(s):	Split Spoon Boring Diameter: 8 IN.	Screened Interval: 15-20 ft.
oprove	d By:							Logged By: J.Harms Date/Time Started: 03-18-13 / 08:50	Depth of Boring: 22 FT BGS
rilling C	Contracto	or: AB	С					Backfill: grout Date/Time Finished: 03-18-13 / 09:45	Water Level: 19 FT BGS
(ff)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	nscs	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogic features, density or stiffness, moisture content, odors or stain	
	5.0					CL		<ul> <li>(2"-2") LEAN CLAY WITH SAND AND GRAVEL, reddish brown (5 \ 5/4), low plastic, 70% clay, 20% fine to medium-grained sand 10% fine-grained gravel (max size 0.25 inches), medium den dry</li> <li>(2-5') LEAN CLAY, olive gray (5Y 5/2), medium-plastic, 90% clay, 1 silt, stiff, dry, hydrocarbon odor at 4 feet</li> </ul>	R Sched. 40 PVC Concrete Slurry
5	5.0 9.0		6 8 9, 11	2	593 255	СН		(5-11.5') FAT CLAY, olive gray (5Y 5/2), medium-plastic, 90% clay, 10% silt, stiff, dry, hydrocarbon odor	Hydrated Bentonite Chips
<u>o</u>			9 12 14 9 12	1.5 1.5		CL		, increase in silt, odor decreased at 10 feet to 12 feet (11.5-13') LEAN CLAY WITH SILT, light yellowish brown (10YR 6/4	).
			14 9 11 12, 14	1.5		CL		mottled at 7 feet, low-plastic, 80% člay, 20% silt, very stiff, dry (13-16') LEAN CLAY WITH SAND, light yellowish brown (10YR 6/4 low plastic, 70% clay, 20% fine to coarse-grained sand, 10% fine-grained gravel, very stiff, dry	
5	15.0		9 11 15	2				, (Iron staining and deposits at 15 to 20 feet)	
			8 9 13 10 11	1.5		ML SM SW CL		<ul> <li>(16-16.5') SILT WITH CLAY, brown (10YR 4/3), 80% silt, 15% sand 5% clay, medium dense, moist</li> <li>(16.5-16.8') SILTY SAND, brown (10YR 4/3), 75% fine-grained san 20% silt, 5% clay, medium dense, moist</li> <li>(16.8-17') WELL GRADED SAND, brownish yellow (10YR 6/6), 80% fine to medium-grained sand, 10% silt, 10% fine-grained grav (may sing 4.5% clay) and the same dense /li></ul>	d, b b c c c c c c c c c c c c c c c c c
	20.0	X	13,17	2	7.7	SM		(max size 0.25 inches), medium dense, moist, odor decrease (17-18.8') LEAN CLAY WITH SILT AND GRAVEL, brownish yellow (10YR 6/6), low-plastic, 70% clay, 10% silt, 10% fine to medium-grained sand, 10% fine-grained gravel, very stiff, dry-(clay, odor decreases 18.5 - 18.8 feet) (18.8-20')SILTY SAND WITH GRAVEL, dark gray (10YR 4/1), 50% to coarse-grained sand, 40% silt, 10% fine-grained gravel (m size 0.25 inches), medium dense, wet-(coarse gravel 19 -20 f	

				_	Clie Pro		umber:	Chevron Enviornmental Manag 60287515	gement Company	Boring No.	MW-11A
F			Л	7				.ocation: 351645 Oakland, Oal	kland, California	Ambient PID Reading: 0.0	
	ECOM Er 220 Aven					ordina			Elevation: Datum:	Sheet: 1 of 1	
	amarillo, (805) 38	CA 930			Dril	llina E	auipmer	t/Method: /Hollow Stem Auger	Weather:60* Clear	Monitoring Well Installed: `	Yes
	www.aec		ı					ů.	Boring Diameter: 8 IN.	Screened Interval: 10-15 ft	
prove	d By:							Logged By: J.Harms	Date/Time Started: 03-19-13 / 10:15	Depth of Boring: 15 FT B	GS
illing (	Contracto	or: AB	C / Ke	enny					Date/Time Finished: 03-19-13 / 10:35	Water Level: Not Enco	ountered
(ff)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	NSCS	Graphic Log	grained material (sil grained material (sand a	ICATION, color, description of fine It and clay), description of coarse and gravel), structural or mineralogical ss, moisture content, odors or staining.	Well Diagr	am
								(0-10") ASPHALT AND BAS	E		2" Diameter Sched. 40 PVC
					4.3	ML		4/6), low-plastic, 60% 10% clay, 10% fine to	AND GRAVEL, dark yellowish brown (10YR silt, 20% fine to medium-grained sand, coarse-grained gravel (max size 3 inches), ydrocarbon odor-(large cobbles at 2-2.5		Concrete Slurry
5	5.0	X			1380			-(gray staining at 4.5 feet)			Hydrated Bentonite Chips
	9.0		6 8 10, 14	2	4557						Monterey I 3 Sand
0			6 8 10	1.5		CL		medium-plastic, 70% c fine-grained subangula			
			4 6 13	1.5	2530	SM CH		sand, 30% silt, 10% fir Hydrocarbon odor (12.5-15')FAT CLAY, dark re 6/6), mottled, high-plas	ive (5Y 5/3), 60% fine to coarse-grained e-grained gravel, medium dense, wet, addish gray (5YR 4/2)/ olive yellow (5Y stic, 80% clay, 20% silt, 20% fine-grained		0.020" Slot Screen
	14		6 8 8, 13	2	116			sand, very stiff, dry, od nodules)	or decreases, (Fe and Mn staining and		

F			$\mathcal{I}\mathcal{N}$	1	-	-		60287515	
A	ECOM En	vironme	ent	-		ordina		ocation: 351645 Oakland, Oakland, California Not Surveyed Elevation: Datum:	Ambient PID Reading: 0.0
	220 Aveni amarillo, (							,	Sheet: 1 of 1
	(805) 38 www.aeco		n			-		t/Method: /Hollow Stem Auger Weather:60* Clear	Monitoring Well Installed: Yes
			-		Sar	mpie i	ype(s).	Split Spoon Boring Diameter: 8 IN.	Screened Interval: 15-20 ft.
	ed By:		0.114					Logged By: J.Harms         Date/Time Started:         03-19-13 / 08:05	Depth of Boring: 20 FT BGS
rilling	Contracto			nny	Ê			Backfill: grout Date/Time Finished: 03-19-13 / 09:00	Water Level: Not Encountered
	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	NSCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.	Well Diagram
								(0-9") ASPHALT AND BASE	2" Diamete Sched. 40
					5.1	ML		(0.9"-7.5") SILT WITH SAND AND GRAVEL, dark yellowish brown (10YR 4/6), low-plastic, 60% silt, 20% fine to medium grained sand, 10% clay, 10% fine-grained gravel (max size .25 inches), medium dense, dry, no odor	- PVC Concrete Slurry
5	5.0	X			2.6			-(decreased gravel, fine-grained sand at 3 feet)	
•••••					0.0	CL		(7.5-8.5') LEAN CLAY WITH SILT, brown (10YR 5/3), medium-plastic,	Hydrated Bentonite Chips
			6 8 10, 12		202	ML		<ul> <li>70% clay, 20% silt, 10% fine-grained sand, medium dense, dry, no odor</li> <li>(8.5-10.5')SILT WITH SAND, brown (10YR 5/3), 60% silt, 25% fine to medium-grained sand, 10% clay, 5% fine-grained gravel, medium dense, dry, odor/gray hydrocarbon staining</li> </ul>	-
	10, Dup			2	1047				
			6 6 8	1.5	3519	CH SM		(10.5-11') FAT CLAY, brown (7.5YR 5/4), high-plastic, 70% clay,10% silt, 10% fine to medium-grained sand, 10% fine to coarse-grained gravel (max size 0.5 inches), stiff, dry, hydrocarbon odor	
•••••			6 8	1.5	3991	СН		(11-12') SILTY SAND, olive gray (5Y 5/2), 60% fine to medium-grained sand, 20% silt, 20% fine to coarse-grained gravel (max size 0.5 inches), medium dense, dry, hydrocarbon odor (12-16.5') FAT CLAY, brownish yellow (10YR 6/6), high-plastic, 80%	
	14.0	$\bigtriangledown$	10 8, 8 10 12	2	842			clay, 10% fine-grained sand, 10% silt, very stiff, dry, hydrocarbon odor, iron staining	Monterey N
15		$\square$	8 10 10	1.5	32.2			-(odor decreases at 14.5 feet)	
			8 8 8	1.5		CL		, (70% clay, 10% silt, 20% fine to medium-grained sand) at 16 Feet (16.5-18') LEAN CLAY WITH SAND, brownish yellow (10YR 6/6), medium-plastic, 70% clay, 20% fine to medium-grained sand, 5% silt, 5% fine-grained gravel (max size 0.25 inches), stiff, dry	- 0.020" Slot
 20	19.0		6 8 10, 11	2	5.1	SM CL		<ul> <li>(18-18.5') SILTY SAND, brownish yellow (10YR 6/6), 60% fine to coarse-grained sand, 20% silt, 10% fine-grained subangular gravel (max size 0.25 inches), medium dense, moist, hydrocarbon odor</li> <li>(18.5-20') LEAN CLAY WITH SAND, brownish yellow (10YR 6/6), low-plastic, 70% clay, 20% fine to medium-grained sand, 5% silt, 5% fine-grained gravel (max size 0.25 inches), stiff, moist, decreased hydrocarbon odor</li> </ul>	Screen
		uous S							

	1=0	~	1	A	Pro	oject N	lumber:	60314377		Boring No	. MW-10S
					Site	e Deso	cription/l	Location: 4276 MacArthur Blv	d, Oakland, California	Ambient PID Reading:N	IS
	1220 Avenie	da Acas	50		Co	ordina	tes:	See Survey	Elevation: Datum:	Sheet: 1 of 1	
	Camarillo, C (805) 388		12		Dri	lling E	quipmer	nt/Method:DPT Combo Rig/HS	A Weather:	Monitoring Well Installe	d:Yes
	www.aeco		I			-		Direct Push	Boring Diameter: 10 IN.	Screened Interval:6.5-1	0 ft.
vorag	ed By:				1			Logged By:J. Harms	Date/Time Started: 06-12-14 / 10:15	Depth of Boring: 10 FT	
	Contracto	or: Per	necore	9				Backfill: NA	Date/Time Finished: 06-12-14 / 10:45	Water Level: dry FT	
	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	NSCS	Graphic Log	grained material (s grained material (sand	FICATION, color, description of fine silt and clay), description of coarse and gravel), structural or mineralogical less, moisture content, odors or staining	. Well Dia	agram
		0,	ш					3 INCH ASPHALT			
					0.4	ML		LEAN CLAY WITH SAND A low-plastic clay, 20%	ND GRAVEL, brown (5YR 5/4), 70% fine-to medium-grained sand, 10% nax size 0.25"), subangular, medium dense,		l Concrete
	MW-10S-2			1	2.6	СН		FAT CLAY, olive gray (5Y5, clay, 10% silt, stiff, dr	/2) with orange mottling, 90% medium-plastic y, HC odor	_	Bentonite Chips
					0.7						
					4.1	CL		LEAN CLAY, olive gray (5Y medium-grained sand	5/2), 80% low-plastic clay, 10% fine-to d, 10% silt, stiff, dry, HC odor		
5	MW-10S-5			1	8.1	ML			ay and brown mottled (5Y 5/2 and 5YR 5/4), stic clay, 20% fine-to coarse-grained sand,	-	Sand - Montery #3
					0.4				eases, gravel at 5.5' to 5.7'		
	MW-10S-7			1	28.1	СН		FAT CLAY, brown (10 YR 6 clay, 10% silt, stiff, dr	6/4) with grey staining, 90% medium-plastic y, HC odor and staining		
	MW-10S-8	3		1	2.9						0.020 Slot si
	MW-10S-				24			, 85% medium-plastic clay,	10% silt, 5% gravel		
10	10			1	3.5						
10 Notes	10			1	3.5	<u> </u>					

	\ <b>_</b> /			-	Clie Pro		umber:	Chevron EMC 60314377			Boring	No. MW-11S
F			Л	Τ	-			Location: 4276 MacArthur Bl	vd, Oakland, California	3	Ambient PID Readii	na:NS
•	1220 Aveni		20			ordina		See Survey	Elevation:	Datum:	Sheet: 1 of 1	
	Camarillo, C (805) 388	CA 9301			Dril	lling E	quipme	nt/Method:DPT Combo Rig/H	SA Weather:		Monitoring Well Inst	talled:Yes
	www.aeco							Direct Push	Boring Diameter:	10 IN.	Screened Interval:6	
vorag	ed By:							Logged By:J. Harms	Date/Time Started:	06-11-14 / 13:40	Depth of Boring: 10	
	Contracto	or: Per	necore	9				Backfill: NA	Date/Time Finished			68 FT BGS
DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	NSCS	Graphic Log	MATERIAL IDENT grained material ( grained material (sand features, density or stiff	(silt and clay), desc d and gravel), struc	cription of coarse tural or mineralogical	Well	Diagram
								6 INCH ASPHALT				
					0.0	SM		FILL, SILTY GRAVEL, bro coarse-grained grav sand, subangular, dr	el (max size 2"), 30% s			Concrete
	MW-11S-2			1	0.0			, 60% fine-to coarse-grain fine-grained sand, 1		5"), 20% silt, 10%		Bentonite Chips
					0.0	ML		LEAN CLAY WITH SILT, t				
	MW-11S-4			1	0.4			, slight HC odor				
5					4.6			, moist at 5'-5.5'				Sand - Montery #
	MW-11S-6			1	16.0	CL		LEAN CLAY WITH SILT A low-plastic clay, 25% fine-grained gravel (	fine-to medium-grain	gray HC stained, 60% ed sand, 10% silt, 5% um dense, dry, HC odor		
					15.8	ML		LEAN CLAY WITH SILT, <u>c</u> fine-to medium-grair	gray HC stained, 55% l ned sand,10% silt, med	ow-plastic clay, 35% lium dense, dry, HC odor		
	MW-11S-8			1	47.5	ML				y, 5% fine-grained gravel		0.020 Slot
	MW-11S- 10			1	325 361							
10											 	
Notes	:											