Thomas K. Bauhs
Project Manager
Retail and Terminal
Business Unit

Chevron Environmental Management Company
6001 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 842-8898
Fax (925) 842-8370

December 3, 2007
(date)

Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Chevron Facility # 9-4930

Address: 3369 Castro Valley Boulevard, Castro Valley, California

I have reviewed the attached report titled Subsurface Investigation Report and Closure Request and dated December 3, 2007.

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

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Thomas K. Bauhs
Project Manager

Enclosure: Report

CONESTOGA-ROVERS
& ASSOCIATES

2000 Opportunity Dr, Suite 110, Roseville, California 95678
Telephone: 916-677-3407, ext. 100 Facsimile: 916-677-3687
www.CRAworld.com

December 3, 2007

Ms. Donna Drogos
Alameda County Health Care Services Agency (ACHCSA)
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Subsurface Investigation Report and Closure Request**
Former Chevron Station # 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

Dear Ms. Drogos:

Conestoga-Rovers & Associates (CRA) is submitting this *Subsurface Investigation Report and Closure Request* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. The work was performed in accordance with CRA's *Subsurface Investigation Workplan* dated December 7, 2005 (Attachment A). CRA advanced two cone penetrometer test (CPT) borings to delineate the lateral and vertical extent of hydrocarbons in groundwater off-site. The site background, details of the investigation and CRA's conclusions are presented below.

SITE DESCRIPTION AND BACKGROUND

The site is located in the southeastern corner of the intersection of Castro Valley Boulevard and Wilbeam Avenue in Castro Valley, California (Figure 1). The original site configuration consisted of four gasoline underground storage tanks (USTs), two dispenser islands and a station building that were located on the northeastern portion of the site. Second generation facilities included three USTs, two dispenser islands, a station building and a car wash facility located on the north to northeast portion of the site. All subsurface and above ground structures associated with the service station have been removed from the site, which is currently a Chipotle-branded restaurant.

SUMMARY OF ENVIRONMENTAL WORK

November 1992 Subsurface Investigation and Area Well Survey: In November 1992, Resna Industries, Inc. (Resna) advanced soil borings B-1 through B-10 and installed temporary wells in borings B-1 through B-4. Additionally, Resna advanced hand-augered soil borings H-1 through H-6. Total petroleum hydrocarbons as gasoline (TPHg) were detected in soil samples from borings B-1, B-3, B-4, B-8 and H-5

at concentrations up to 2,500 milligrams per kilogram (mg/kg). No benzene was detected in soil. Total oil and grease (TOG) was detected in boring H-5 at 57 mg/kg. Groundwater samples from the temporary monitoring wells contained maximum concentrations of 23,000 micrograms per liter (µg/L) TPHg and 800 µg/L benzene. Resna also conducted a well survey that identified 58 wells within a ½ mile radius of the site. The closest identified domestic water supply well is located approximately 1,500 feet west of the site. Two known leaking USTs were also identified between the site and the domestic well. No municipal water wells were identified within the search radius at the time of survey.

February 1993 Station Demolition: In February 1993, Chevron demolished the service station building and the car wash facility. In March 1993, Gettler-Ryan Inc. (G-R) removed the three 10,000-gallon USTs, associated piping and the car wash waste water reclaim tanks (WWRTs). Eight soil samples and one grab-groundwater sample were collected from the UST excavation pit. Four soil samples were collected from the WWRT excavation pit and thirteen soil samples were collected from beneath the product piping lines. The highest TPHg concentration detected was 720 mg/kg in soil sample P-10 at 4.5 feet below grade (fbg). Soil was over-excavated by G-R and overseen by Touchstone Inc. (Touchstone). The entire northern portion of the site, which included the locations of the first and second generation UST complexes, was excavated to depths ranging from 8 fbg to a maximum of 15 fbg. Approximately 7,500 cubic yards of soil were excavated and transported to Redwood Landfill, Inc in Novato, California. Confirmation soil samples collected at the bottom of the over-excavation pits indicates that no significant hydrocarbon mass remained in soil. Details of the station demolition and subsequent over-excavation activities can be found in Touchstone's *Tank/Line Removal and Over-excavation Report* dated June 5, 1993.

October 1993 Subsurface Investigation: In October 1993, Resna installed monitoring wells MW-1 through MW-4 to a maximum depth of 21.5 fbg. TPHg was detected in soil samples at a maximum concentration of 530 mg/kg in B-14 at 6 fbg.

January 1996 Subsurface Investigation: In January 1996, Pacific Environmental Group Inc. (PEG) advanced temporary wells GP-1 through GP-4. Soil samples were collected and analyzed from borings GP-3 and GP-4. No hydrocarbons were detected. No hydrocarbons were detected in grab-groundwater samples collected from boring GP-1. Grab-groundwater samples from boring GP-2 contained 1,600 µg/L TPHg and 9.6 µg/L benzene.

June 1996 Risk Based Corrective Action (RBCA) Tier 2 Analysis: In June 1996, Chevron Research and Technology Company (CRTC) prepared a final Tier 2 RBCA. In a letter dated August 22, 1996, the ACHCS personnel concluded the reported estimated multipathway risk for workers in the on-site

commercial facilities was substantially lower than the target risk value. The ACHCS also indicated the reported estimated risk for off-site residents was an acceptable risk management level for the site based on the conservative nature of the evaluation and the cumulative evidence presented in previous investigations.

September 2006 Well Destruction: In September 2006, Cambria properly destroyed onsite monitoring wells MW-1 through MW-4.

Groundwater Depth and Flow Direction: Groundwater depth has varied from approximately 4 to 8 fbg. Groundwater generally flows to the south to southwest.

INVESTIGATION RESULTS

The objective of this investigation was to delineate the offsite extent of hydrocarbons in groundwater. CRA advanced CPT borings CPT-1 and CPT-2 offsite and downgradient of the two former underground storage tanks (USTs). At each location, an initial CPT boring was advanced to approximately 35 fbg to log the encountered soil types and identify potential water bearing zones. Following this evaluation, the initial boring was grouted to surface and the rig moved approximately 2 feet. A new CPT boring was advanced to each selected depth and depth discrete groundwater samples were collected. Three depth discrete groundwater samples were collected from CPT-2, and two depth discrete groundwater samples were collected from CPT-1. Depth discrete groundwater sample results are summarized in Table 1. The drilling permit is presented as attachment B. Gregg Drilling and Testing, Inc.'s CPT report is presented in Attachment C. The laboratory analytical report is presented in Attachment D. CRA's Standard Field Procedures for CPT borings are presented in Attachment E. Details of the investigation and results are summarized below.

Although the December 7, 2005 workplan proposed three borings, we could not obtain access to the property for the third boring. Multiple attempts to locate the property owner via interviews with the property manager and a search of County records were unsuccessful. Thus, only the two most downgradient borings were advanced.

Permits: Alameda County Public Works Agency-Water Resources Well Permit # W2007-0918 (Attachment B).

Drilling Dates: September 10, 2007 through September 11, 2007.

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& ASSOCIATES

Drilling Company: Gregg Drilling and Testing, Inc. of Martinez, CA (C-57 Lic. # 485165).

Sampling Personnel: Staff Scientists John Bostick and Chris Benedict conducted all fieldwork under the supervision of California Professional Geologist Brian Carey (P.G. #7820).

Number of Borings: Two borings (CPT-1 and CPT-2).

Drilling Method: The first 8 feet of the borings were cleared using a hand auger to ensure no subsurface utilities were encountered. Below 8 feet, each boring was advanced using cone penetrometer testing and a hydropunch sampler.

Depth-Discrete Groundwater Sampling: Discrete groundwater samples were collected from depths of 15 and 32 fbg in CPT-1 and at 15, 21, and 34 fbg in CPT-2. No groundwater was recovered at 10 fbg in CPT-1. Table 1 lists the sample depths and groundwater analytical data for CPT-1 and CPT-2.

Encountered Lithology: Sediments encountered in the CPT borings predominantly consisted of interbedded clay, silty clay, sandy silt, silty sand, and clayey silt to a total explored depth of 35 fbg.

Laboratory Analyses: All groundwater samples were analyzed for:

- TPHg by EPA Method 8015B,
- BTEX, and fuel oxygenates methyl tertiary butyl ether (MTBE), tert-butyl ether (TBA) di-isopropyl ether (DIPE), tert-amyl methyl ether (TAME), ethyl tert-butyl ether (ETBE), and lead scavengers 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB) by EPA Method 8260B.

Soil Disposal: Soil cuttings were stored in 55-gallon steel drums on-site, sampled for waste characterization, removed by Integrated Waste Management and transported to a Chevron approved facility for disposal/recycling.

Static Groundwater Depth: Static groundwater was encountered at approximately 21 to 38 fbg in each boring.

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HYDROCARBONS IN GROUNDWATER

Groundwater from CPT-2 contained 130 µg/L TPHg at 21 fbg and 140 µg/L TPHg at 34 fbg. MTBE was detected in CPT-1 at a concentration of 6 µg/L (32 fbg), and in CPT-2 at concentrations of 2 µg/L (15 fbg) and 17 µg/L (21 fbg and 34 fbg). No BTEX, ETBE, DIPE, TAME, TBA, 1,2-DCA, or EDB were detected in groundwater. Depth discrete groundwater sample results are summarized below and presented in Table 1.

CONCLUSIONS

TPHg and MTBE were detected at maximum concentrations of 140 µg/L and 17 µg/L in CPT-2, which was nearest to the site. MTBE was detected at 6 µg/L in CPT-1, which was farthest downgradient from the site. Based on these dissolved concentrations, the hydrocarbon plume is defined and no further assessment is warranted. The sources of hydrocarbons were removed during facility demolition and over-excavation in 1993. Historical groundwater monitoring at the site indicated decreasing trends of hydrocarbons in former on-site monitoring wells and the recent groundwater data supports these decreasing trends.

ACHCSA staff have previously stated that closure is warranted for this site. The site monitoring wells were destroyed in September 2006 after ACHCSA's concurred in their January 11, 2006 letter (Attachment A) that the onsite plume is stable and no further onsite investigation would be required. Based on the results of this investigation, TPHg and MTBE do not appear to pose a significant risk to the environment or to human health. Therefore, CRA recommends case closure and issuance of a no further action letter by the ACHCSA for the subject site.

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CLOSING

Please contact Brian Carey at (916) 677-3407 (ext. 106) or Chris Benedict at (916) 677-3407 (ext. 125) with any questions or if you require additional information.

Sincerely,
Conestoga-Rovers & Associates

Chris Benedict
Staff Scientist

Brian P. Carey, P.G. #7820
Senior Project Geologist

PROFESSIONAL GEOLOGIST
BRIAN P. CAREY
No. 7820
Exp. 1/08
STATE OF CALIFORNIA

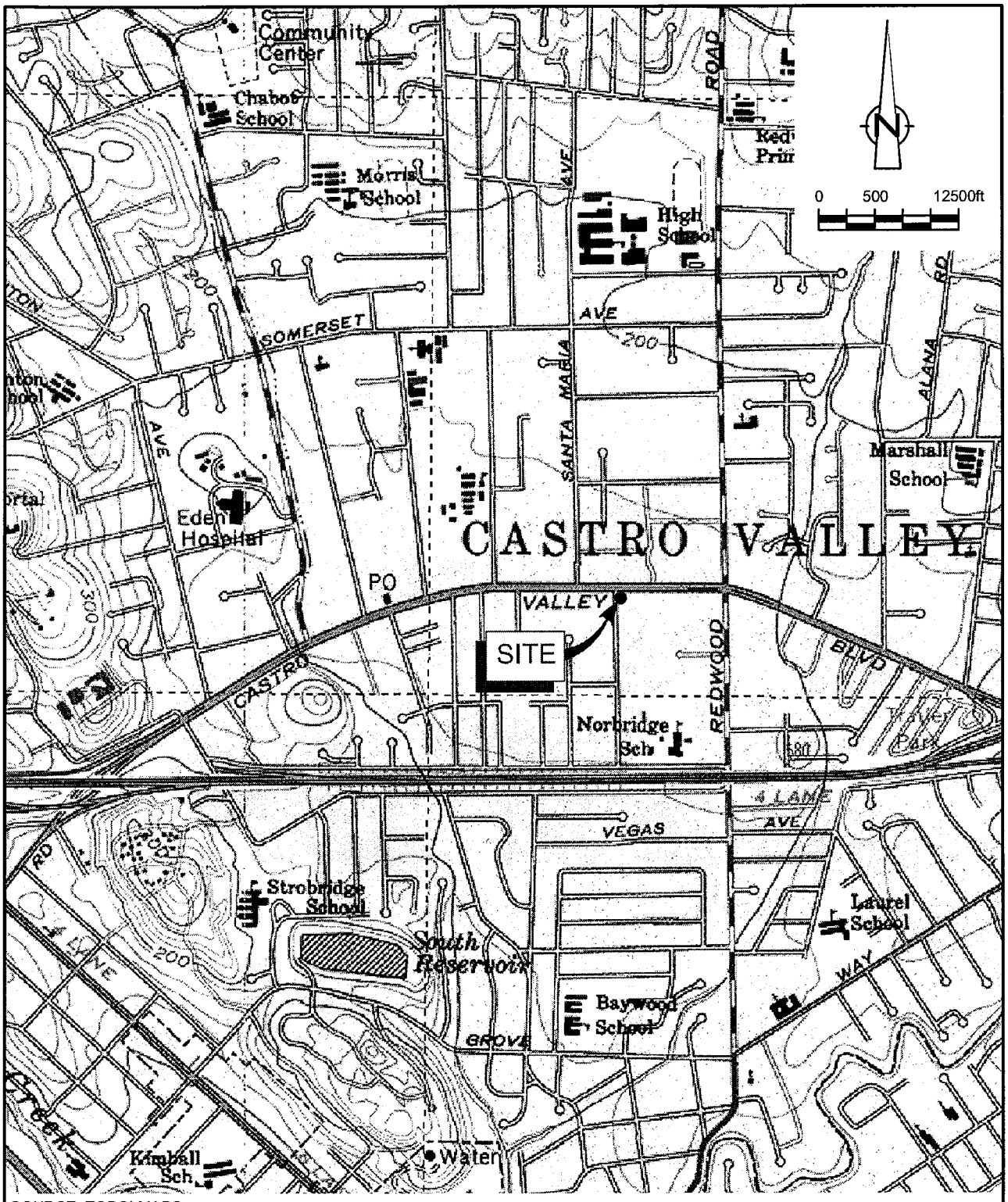
Figures: 1 – Vicinity Map
2 – Site Plan

Tables: 1 –Grab-Groundwater Analytical Results

Attachments: A – Regulatory Correspondence
B – Drilling Permit
C – Gregg Drilling CPT Site Report
D – Laboratory Analytical Report
E – Standard Field Procedures for CPT Borings

cc: Mr. Tom Bauhs, Chevron Environmental Management Company, PO Box 6012, K2236, San Ramon, CA 94583
CRA file copy

I:\Rocklin.Chevron\9-4930 Castro Valley\investigation 2007\9-4930 SSI-CPT November 2007.doc



SOURCE: TOPO! MAPS.

figure 1

VICINITY MAP
CHEVRON SERVICE STATION 9-4930
3369 CASTRO VALLEY BOULEVARD
Castro Valley, California

611967-203(PRES001)GN-WA001 SEP 26/2007

figure 2

SITE PLAN
FORMER CHEVRON STATION 9-4930
3369 CASTRO VALLEY BOULEVARD
Castro Valley, California

BASEMAP MODIFIED FROM DRAWING PROVIDED BY TOUCHSTONE DEVELOPMENTS, RESNA AND GETTLER-RYAN INC.

611967-203(PRES001)GN-WA002 SEP 26/2007

Table 1

Grab Groundwater Analytical Results

Former Chevron Station #9-4930, 3369 Castro Valley Blvd., Castro Valley, California

Sample ID	Date Sampled	DTW	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	ETBE	DIPE	TAME	TBA	1,2-DCA	EDB
		fbg	micrograms per liter (µg/L)											
CPT-1-15	9/11/2007	15	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5
CPT-1-32	9/11/2007	32	<50	<0.5	<0.5	<0.5	<0.5	**6**	<0.5	<0.5	<0.5	<2	<0.5	<0.5
CPT-2-15	9/11/2007	15	<50	<0.5	<0.5	<0.5	<0.5	**2**	<0.5	<0.5	<0.5	<2	<0.5	<0.5
CPT-2-21	9/11/2007	21	**130**	<0.5	<0.5	<0.5	<0.5	**17**	<0.5	<0.5	<0.5	<2	<0.5	<0.5
CPT-2-34	9/11/2007	34	**140**	<0.5	<0.5	<0.5	<0.5	**17**	<0.5	<0.5	<0.5	<2	<0.5	<0.5

Abbreviations:

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015B
BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B
MTBE = Methyl tertiary butyl ether by EPA Method 8260B
ETBE = Ethyl t-butyl ether
DIPE = di-isopropyl ether
TAME = t-Amyl methyl ether
TBA = t-Butyl alcohol by EPA Method 8260B
1,2 DCA= 1,2-Dichloroethane by EPA Method 8260B
EDB= 1,2-Dibromoethane by EPA Method 8260B
µg/L = micrograms per liter
fbg = feet below grade
<x = below laboratory detection limits

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& ASSOCIATES

ATTACHMENT A
Regulatory Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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

January 11, 2006

Mr. Dana Thurman
ChevronTexaco
6001 Bollinger Canyon Rd., K2236
P.O. Box 6012
San Ramon, CA 94583-2324

Dear Mr. Thurman:

Subject: Fuel Leak Case RO0000416, Chevron #9-4930, 3369 Castro Valley Blvd., Castro Valley, CA 94546

Alameda County Environmental Health has received and reviewed the December 7, 2005 *Subsurface Investigation Workplan* submitted by Cambria Environmental. This work plan responds to the County's July 29, 2005 letter requesting further off-site delineation of the hydrocarbon plume from the subject site. Three off-site borings are proposed from which three groundwater samples will be collected, at first encountered groundwater and at 15' intervals to 35' bgs. The grab groundwater samples will be analyzed for TPHg, BTEX, MTBE, the other oxygenates, TBA, DIPE, TAME, ETBE and the lead scavengers, EDB and EDC. In addition, monitoring wells MW-1 through MW-4 will be properly decommissioned under permit. This work plan is approved. We note that typically, well decommissioning is performed after site closure has been concurred by the Water Board, however, we believe that no further on-site investigation will be required and these wells indicate a stable on-site plume.

TECHNICAL REPORT REQUEST

Please submit the following technical report to our office according to the following schedule.

- 30 days after completion of off-site investigation- Off-site investigation report

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

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, 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. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

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. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for 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 monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

In order to facilitate electronic correspondence, we request that you provide up to date electronic mail addresses for all responsible and interested parties. Please provide current electronic mail addresses and notify us of future changes to electronic mail addresses by sending an electronic mail message to me at barney.chan@acgov.org.

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.

Please contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

Enclosure: ftp instructions

C: files, D. Drogos
√ Anna Counelis & Tula Gallanes, 109 Casa Vieja Place, Orinda, CA 94563
√ Ms. Christene Sunding, Cambria Environmental, 2000 Opportunity Drive, Suite 110, Roseville, CA 95678

1_11_06 3369CastroValleyBlvd

CONESTOGA-ROVERS
& ASSOCIATES

ATTACHMENT B
Drilling Permit

Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 08/16/2007 By jamesy

Permit Numbers: W2007-0918
Permits Valid from 09/10/2007 to 09/11/2007

Application Id: 1187282480629
Site Location: 3369 Castro Valley Bl, Castro Valley, cA
Project Start Date: 09/10/2007

City of Project Site: Castro Valley
Completion Date: 09/11/2007

Applicant: Conestoga-Rovers & Associates - Ben Summersett
2000 Opportunity Dr #110, Roseville, CA 95678
Phone: 916-677-3407

Property Owner: Charles & Patricia Schweng
4355 Moreland Dr, Castro Valley, CA 94544
Phone: 510-847-5657

Client: ** same as Property Owner **

Total Due: $200.00
Receipt Number: WR2007-0370 **Total Amount Paid:** $200.00
Payer Name : Conestoga & Rovers Associates Paid By: CHECK
PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Contamination Study - 2 Boreholes
Driller: Gregg - Lic #: 485165 - Method: DP

Work Total: $200.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2007-0918	08/16/2007	12/09/2007	2	1.00 in.	35.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Alameda County Public Works Agency - Water Resources Well Permit

5. Applicant shall contact James Yoo for an inspection time at 510-670-6633 at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

7. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

CONESTOGA-ROVERS
& ASSOCIATES

ATTACHMENT C
Gregg Drilling CPT Site Report

GREGG IN SITU, INC.

GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

September 12, 2007

CRA
Attn: John Bostick
3164 Gold Camp Dr., Suite 200
Rancho Cordova, California 95670

Subject: CPT Site Investigation
Former Chevron
Castro Valley, California
GREGG Project Number: 07-272MA

Dear Mr. Bostick:

The following report presents the results of GREGG Drilling & Testing's Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

1	Cone Penetration Tests	(CPTU)	☒
2	Pore Pressure Dissipation Tests	(PPD)	☐
3	Seismic Cone Penetration Tests	(SCPTU)	☐
4	Resistivity Cone Penetration Tests	(RCPTU)	☐
5	UVIF Cone Penetration Tests	(UVIFCPTU)	☐
6	Groundwater Sampling	(GWS)	☒
7	Soil Sampling	(SS)	☐
8	Vapor Sampling	(VS)	☐
9	Vane Shear Testing	(VST)	☐
10	SPT Energy Calibration	(SPTE)	☐

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact our office at (925) 313-5800.

Sincerely,
GREGG Drilling & Testing, Inc.

Mary Walden
Operations Manager

Cone Penetration Test Sounding Summary

-Table 1-

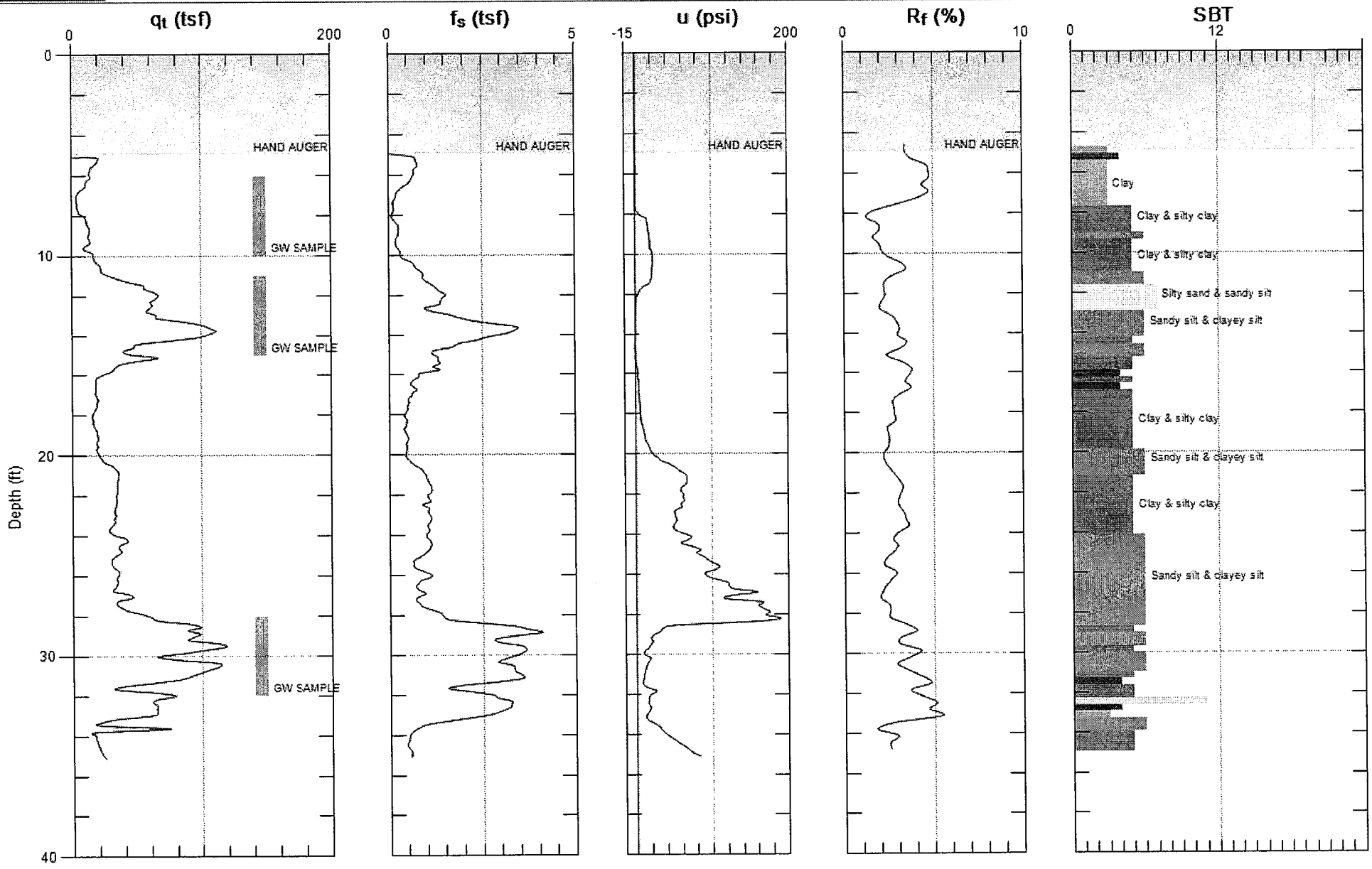
CPT Sounding Identification	Date	Termination Depth (Feet)	Depth of Groundwater Samples (Feet)	Depth of Soil Samples (Feet)	Depth of Pore Pressure Dissipation Tests (Feet)
CPT-01	9/11/07	35	10, 15, 32	-	-
CPT-02	9/11/07	35	15, 21, 34	-	-

GREGG

CRA

Site: FORMER CHEVRON
Sounding: CPT-01

Engineer: J.BOSTICK
Date: 9/11/2007 09:34



Max. Depth: 35.105 (ft)
Avg. Interval: 0.328 (ft)

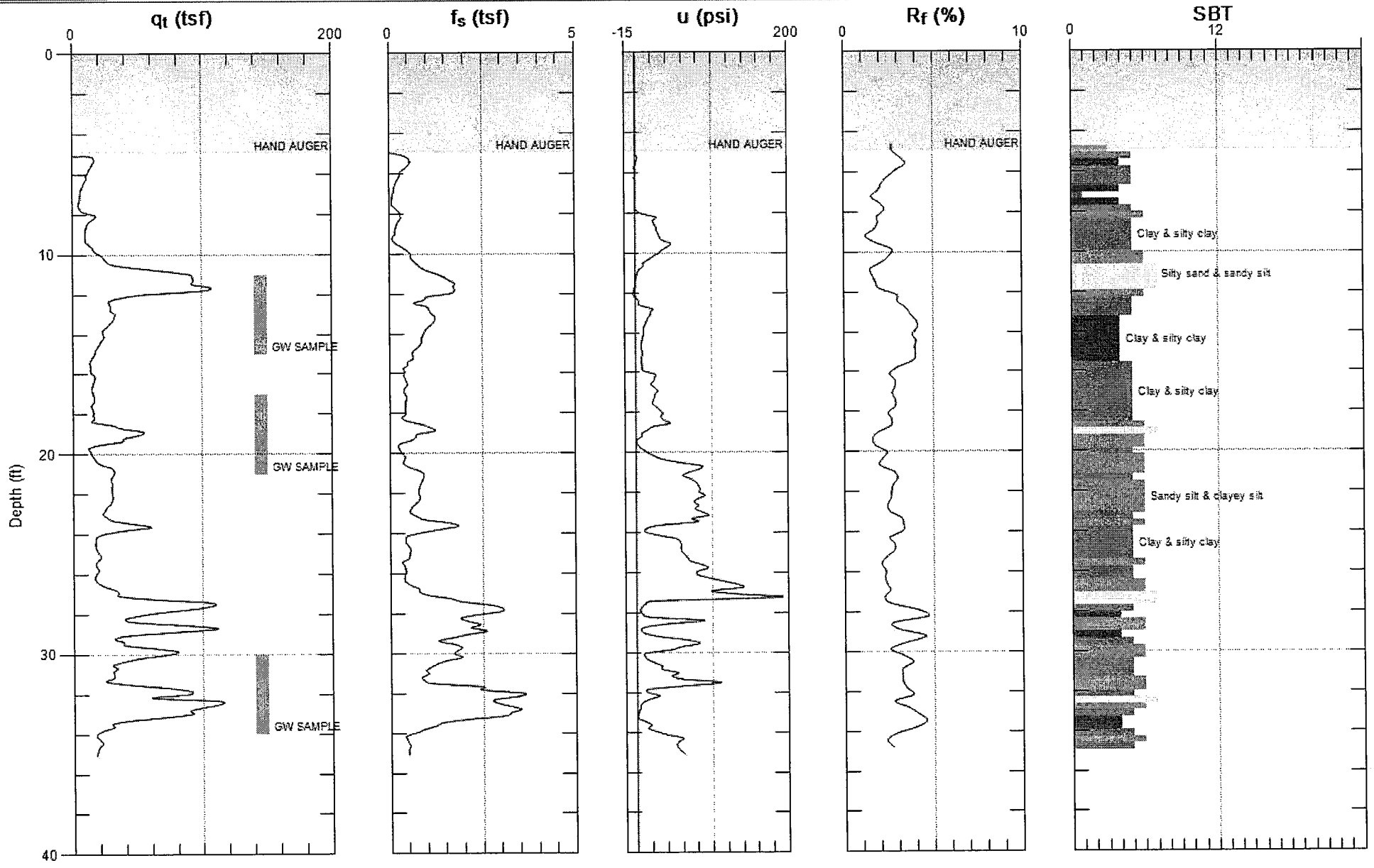
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CRA

Site: FORMER CHEVRON
Sounding: CPT-02

Engineer: J.BOSTICK
Date: 9/11/2007 11:57



Max. Depth: 35.105 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

Cone Penetration Testing Procedure (CPT)

Gregg In Situ, Inc. carries out all Cone Penetration Tests (CPT) using an integrated electronic cone system, *Figure CPT*. The soundings were conducted using a 20 ton capacity cone with a tip area of 15 cm^2 and a friction sleeve area of 225 cm^2. The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85.

The cone takes measurements of cone bearing (q_c), sleeve friction (f_s) and penetration pore water pressure (u_2) at 5-cm intervals during penetration to provide a nearly continuous hydrogeologic log. CPT data reduction and interpretation is performed in real time facilitating on-site decision making. The above mentioned parameters are stored on disk for further analysis and reference. All CPT soundings are performed in accordance with revised (2000) ASTM standards (D 5778-95).

The cone also contains a porous filter element located directly behind the cone tip (u_2), *Figure CPT*. It consists of porous plastic and is 5.0mm thick. The filter element is used to obtain penetration pore pressure as the cone is advanced as well as Pore Pressure Dissipation Tests (PPDT's) during appropriate pauses in penetration. It should be noted that prior to penetration, the element is fully saturated with silicon oil under vacuum pressure to ensure accurate and fast dissipation.

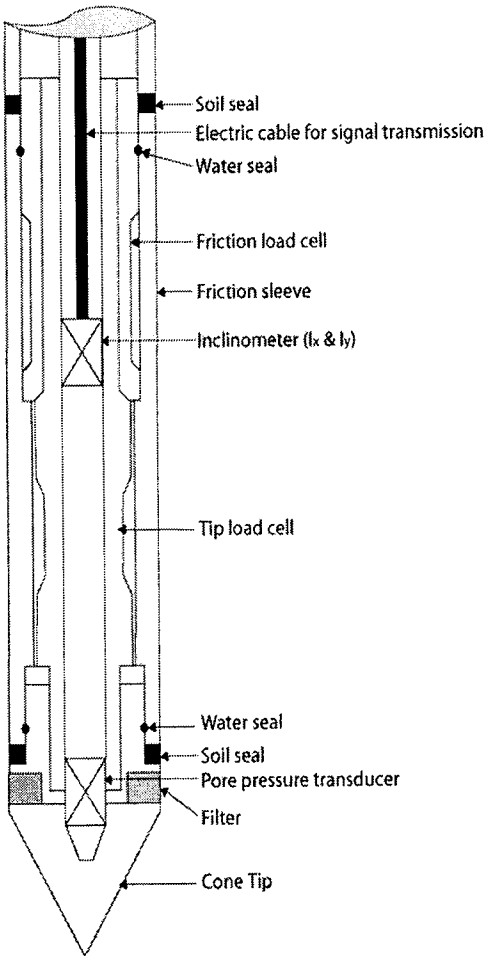


Figure CPT

When the soundings are complete, the test holes are grouted using a Gregg In Situ support rig. The grouting procedures generally consist of pushing a hollow CPT rod with a "knock out" plug to the termination depth of the test hole. Grout is then pumped under pressure as the tremie pipe is pulled from the hole. Disruption or further contamination to the site is therefore minimized.

Cone Penetration Test Data & Interpretation

Soil behavior type and stratigraphic interpretation is based on relationships between cone bearing (q_c), sleeve friction (f_s), and pore water pressure (u_2). The friction ratio (R_f) is a calculated parameter defined by $100f_s/q_c$ and is used to infer soil behavior type. Generally:

Cohesive soils (clays)

- High friction ratio (R_f) due to small cone bearing (q_c)
- Generate large excess pore water pressures (u_2)

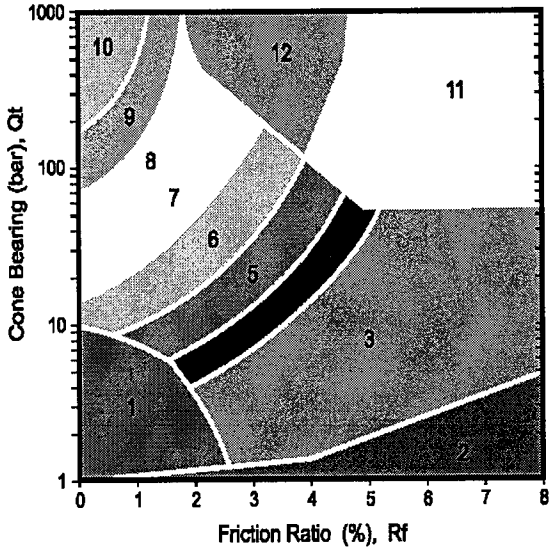
Cohesionless soils (sands)

- Low friction ratio (R_f) due to large cone bearing (q_c)
- Generate very little excess pore water pressures (u_2)

A complete set of baseline readings are taken prior to and at the completion of each sounding to determine temperature shifts and any zero load offsets. Corrections for temperature shifts and zero load offsets can be extremely important, especially when the recorded loads are relatively small. In sandy soils, however, these corrections are generally negligible.

The cone penetration test data collected from your site is presented in graphical form in Appendix CPT. The data includes CPT logs of measured soil parameters, computer calculations of interpreted soil behavior types (SBT), and additional geotechnical parameters. A summary of locations and depths is available in Table 1. Note that all penetration depths referenced in the data are with respect to the existing ground surface.

Soil interpretation for this project was conducted using recent correlations developed by Robertson, 1990, *Figure SBT*. Note that it is not always possible to clearly identify a soil type based solely on q_c, f_s, and u_2. In these situations, experience, judgment, and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type.



ZONE	Qt/N	SBT
1	2	Sensitive, fine grained
2	1	Organic materials
3	1	Clay
4	1.5	Silty clay to clay
5	2	Clayey silt to silty clay
6	2.5	Sandy silt to clayey silt
7	3	Silty sand to sandy silt
8	4	Sand to silty sand
9	5	Sand
10	6	Gravely sand to sand
11	1	Very stiff fine grained*
12	2	Sand to clayey sand*

*over consolidated or cemented

Figure SBT

Cone Penetration Test (CPT) Interpretation

Gregg have recently updated their CPT interpretation and plotting software (2007). The software takes the CPT data and performs basic interpretation in terms of soil behavior type (SBT) and various geotechnical parameters using current published empirical correlations based on the comprehensive review by Lunne, Robertson and Powell (1997). The interpretation is presented in tabular format using MS Excel. The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software.

The following provides a summary of the methods used for the interpretation. Many of the empirical correlations to estimate geotechnical parameters have constants that have a range of values depending on soil type, geologic origin and other factors. The software uses 'default' values that have been selected to provide, in general, conservatively low estimates of the various geotechnical parameters.

Input:

1 Units for display (Imperial or metric) (atm. pressure, pa = 0.96 tsf or 0.1 MPa)
2 Depth interval to average results,(ft or m). Data are collected at either 0.02 or 0.05m and can be averaged every 1, 3 or 5 intervals.
3 Elevation of ground surface (ft or m)
4 Depth to water table, z_w (ft or m) – input required
5 Net area ratio for cone, a (default to 0.85)
6 Relative Density constant, C_{Dr} (default to 350)
7 Young's modulus number for sands, α (default to 5)
8 Small strain shear modulus number
  a. for sands, S_G (default to 180 for SBT_n 5, 6, 7)
  b. for clays, C_G (default to 50 for SBT_n 1, 2, 3 & 4)
9 Undrained shear strength cone factor for clays, N_{kt} (default to 15)
10 Over Consolidation ratio number, k_{ocr} (default to 0.3)
11 Unit weight of water, (default to γ_w = 62.4 lb/ft^3 or 9.81 kN/m^3)

Column

1 Depth, z, (m) – CPT data is collected in meters
2 Depth (ft)
3 Cone resistance, q_c (tsf or MPa)
4 Sleeve friction, f_s (tsf or MPa)
5 Penetration pore pressure, u (psi or MPa), measured behind the cone (i.e. u_2)
6 Other – any additional data, if collected, e.g. electrical resistivity or UVIF
7 Total cone resistance, q_t (tsf or MPa) $q_t = q_c + u(1-a)$

8	Friction Ratio, R_f (%)	$R_f = (f_s/q_t) \times 100\%$
9	Soil Behavior Type (non-normalized), SBT	see note
10	Unit weight, γ (pcf or kN/m^3)	based on SBT, see note
11	Total overburden stress, σ_v (tsf)	$\sigma_{vo} = \gamma z$
12	Insitu pore pressure, u_o (tsf)	$u_o = \gamma_w (z - z_w)$
13	Effective overburden stress, σ'_{vo} (tsf)	$\sigma'_{vo} = \sigma_{vo} - u_o$
14	Normalized cone resistance, Q_{t1}	$Q_{t1} = (q_t - \sigma_{vo}) / \sigma'_{vo}$
15	Normalized friction ratio, F_r (%)	$F_r = f_s / (q_t - \sigma_{vo}) \times 100\%$
16	Normalized Pore Pressure ratio, B_q	$B_q = u - u_o / (q_t - \sigma_{vo})$
17	Soil Behavior Type (normalized), SBT_n	see note
18	SBT_n Index, I_c	see note
19	Normalized Cone resistance, Q_{tn} (n varies with Ic)	see note
20	Estimated permeability, k_{SBT} (cm/sec or ft/sec)	see note
21	Equivalent SPT N_{60}, blows/ft	see note
22	Equivalent SPT $(N_1)_{60}$ blows/ft	see note
23	Estimated Relative Density, D_r, (%)	see note
24	Estimated Friction Angle, ϕ', (degrees)	see note
25	Estimated Young's modulus, E_s (tsf)	see note
26	Estimated small strain Shear modulus, Go (tsf)	see note
27	Estimated Undrained shear strength, s_u (tsf)	see note
28	Estimated Undrained strength ratio	s_u/σ_v'
29	Estimated Over Consolidation ratio, OCR	see note

Notes:

1 Soil Behavior Type (non-normalized), SBT — Lunne et al. (1997) listed below

2 Unit weight, γ either constant at 119 pcf or based on Non-normalized SBT (Lunne et al., 1997 and table below)

3 Soil Behavior Type (Normalized), SBT_n — Lunne et al. (1997)

4 SBT_n Index, I_c — $I_c = ((3.47 - \log Q_{t1})^2 + (\log F_r + 1.22)^2)^{0.5}$

5 Normalized Cone resistance, Q_{tn} (n varies with Ic)

$Q_{tn} = ((q_t - \sigma_{vo})/pa)\ (pa/(\sigma'_{vo})^n$ and recalculate I_c, then iterate:

When $I_c < 1.64$, $n = 0.5$ (clean sand)
When $I_c > 3.30$, $n = 1.0$ (clays)
When $1.64 < I_c < 3.30$, $n = (I_c - 1.64)0.3 + 0.5$
Iterate until the change in n, $\Delta n < 0.01$

6 Estimated permeability, k_{SBT} (based on Normalized SBT_n) (Lunne et al., 1997 and table below)

7 Equivalent SPT N_{60}, blows/ft — Lunne et al. (1997)

$$\frac{(q_c/p_a)}{N_{60}} = 8.5\left(1 - \frac{I_c}{4.6}\right)$$

8 Equivalent SPT $(N_1)_{60}$ blows/ft — $(N_1)_{60} = N_{60} C_N$,
where $C_N = (pa/\sigma'_{vo})^{0.5}$

9 Relative Density, D_r, (%) — $D_r^2 = Q_{tn} / C_{Dr}$
Only SBT_n 5, 6, 7 & 8 — *Show 'N/A' in zones 1, 2, 3, 4 & 9*

10 Friction Angle, ϕ', (degrees) — $\tan\phi' = \frac{1}{2.68}\left[\log\left(\frac{q_c}{\sigma'_{vo}}\right) + 0.29\right]$
Only SBT_n 5, 6, 7 & 8 — *Show 'N/A' in zones 1, 2, 3, 4 & 9*

11 Young's modulus, E_s — $E_s = \alpha\, q_t$
Only SBT_n 5, 6, 7 & 8 — *Show 'N/A' in zones 1, 2, 3, 4 & 9*

12 Small strain shear modulus, Go
a. $G_o = S_G (q_t\ \sigma'_{vo}\ pa)^{1/3}$ — *For SBT_n 5, 6, 7*
b. $G_o = C_G q_t$ — *For SBT_n 1, 2, 3& 4*
Show 'N/A' in zones 8 & 9

13 Undrained shear strength, s_u — $s_u = (q_t - \sigma_{vo}) / N_{kt}$
Only SBT_n 1, 2, 3, 4 & 9 — *Show 'N/A' in zones 5, 6, 7 & 8*

14 Over Consolidation ratio, OCR — $OCR = k_{ocr} Q_{tl}$
Only SBT_n 1, 2, 3, 4 & 9 — *Show 'N/A' in zones 5, 6, 7 & 8*

SBT Zones **SBT_n Zones**

The following updated and simplified SBT descriptions have been used in the software:

1	sensitive fine grained	1	sensitive fine grained
2	organic soils	2	organic soils
3	clays	3	clays
4	clays & silty clays	4	clays & silty clays
5	clays & silty clays		
6	silty sands & sandy silts	5	silty sands & sandy silts
7	silty sands & sandy silts		
8	sands & silty sands	6	sands & silty sands
9	sands & silty sands		
10	sands	7	sands
11	very dense/stiff soils*	8	very dense/stiff soils*
12	very dense/stiff soils*	9	very dense/stiff soils*

* heavily overconsolidated and/or cemented

Track when soils fall with zones of same description and print that description (i.e. if soils fall only within SBT zones 4 & 5, print 'clays & silty clays')

Estimated Permeability (see Lunne et al., 1997)

SBT_n	Permeability (ft/sec)	(m/sec)
1	$3x\ 10^{-8}$	$1x\ 10^{-8}$
2	$3x\ 10^{-7}$	$1x\ 10^{-7}$
3	$1x\ 10^{-9}$	$3x\ 10^{-10}$
4	$3x\ 10^{-8}$	$1x\ 10^{-8}$
5	$3x\ 10^{-6}$	$1x\ 10^{-6}$
6	$3x\ 10^{-4}$	$1x\ 10^{-4}$
7	$3x\ 10^{-2}$	$1x\ 10^{-2}$
8	$3x\ 10^{-6}$	$1x\ 10^{-6}$
9	$1x\ 10^{-8}$	$3x\ 10^{-9}$

Estimated Unit Weight (see Lunne et al., 1997)

SBT	Approximate Unit Weight (lb/ft^3)	(kN/m^3)
1	111.4	17.5
2	79.6	12.5
3	111.4	17.5
4	114.6	18.0
5	114.6	18.0
6	114.6	18.0
7	117.8	18.5
8	120.9	19.0
9	124.1	19.5
10	127.3	20.0
11	130.5	20.5
12	120.9	19.0

Groundwater Sampling (GWS)

Gregg In Situ, Inc. conducts groundwater sampling using a Hydropunch® type groundwater sampler, *Figure GWS*. The groundwater sampler has a retrievable stainless steel or disposable PVC screen with steel drop off tip. This allows for samples to be taken at multiple depth intervals within the same sounding location. In areas of slower water recharge, provisions may be made to set temporary PVC well screens during sampling to allow the drill rig to advance to the next sample location while the groundwater is allowed to infiltrate.

The groundwater sampler operates by advancing 1 ¾ inch hollow push rods with the filter tip in a closed configuration to the base of the desired sampling interval. Once at the desired sample depth, the push rods are retracted; exposing the encased filter screen and allowing groundwater to infiltrate hydrostatically from the formation into the inlet screen. A small diameter bailer (approximately ½ or ¾ inch) is lowered through the push rods into the screen section for sample collection. The number of downhole trips with the bailer and time necessary to complete the sample collection at each depth interval is a function of sampling protocols, volume requirements, and the yield characteristics and storage capacity of the formation. Upon completion of sample collection, the push rods and sampler, with the exception of the PVC screen and steel drop off tip are retrieved to the ground surface, decontaminated and prepared for the next sampling event.

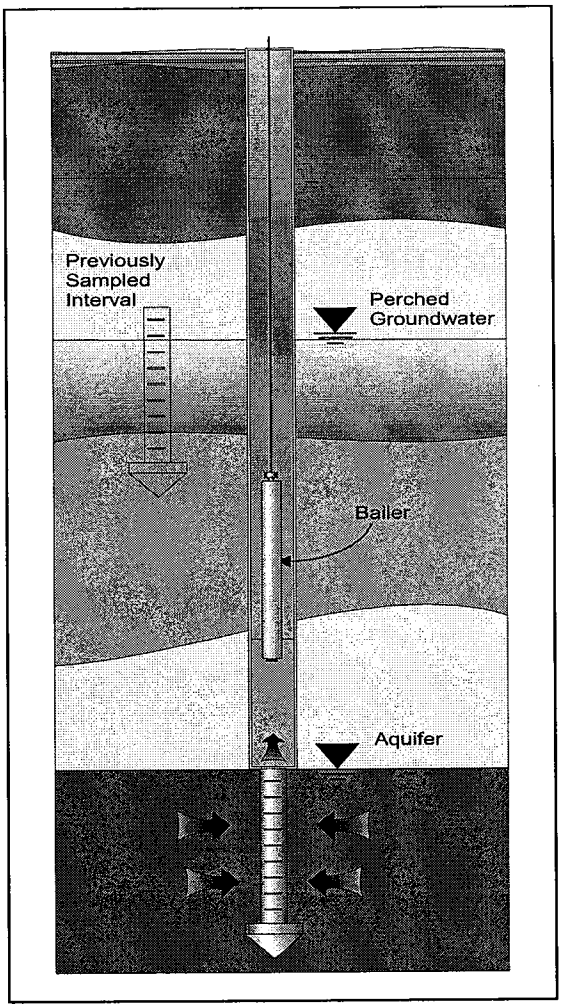


Figure GWS

A summary of the groundwater samples collected, including the sampling date, depth and location identification, is presented in Table 1 and the corresponding CPT plot.

For a detailed reference on direct push groundwater sampling, refer to Zemo et. al., 1992.

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Copies of ASTM Standards are available through www.astm.org

CONESTOGA-ROVERS
& ASSOCIATES

ATTACHMENT D
Laboratory Analytical Report

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Chevron c/o CRA
Suite 110
2000 Opportunity Drive
Roseville CA 95678

916-677-3407

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1055971. Samples arrived at the laboratory on Thursday, September 13, 2007. The PO# for this group is 94930 and the release number is MTI.

Client Description	Lancaster Labs Number
CPT-1-15-W-070911 Grab Water	5154483
CPT-1-32-W-070911 Grab Water	5154484
CPT-2-15-W-070911 Grab Water	5154485
CPT-2-21-W-070911 Grab Water	5154486
CPT-2-34-W-070911 Grab Water	5154487

ELECTRONIC COPY TO CRA

Attn: Brian Carey

Lancaster Laboratories

Analysis Report

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Questions? Contact your Client Services Representative
Angela M Miller at (717) 656-2300

Respectfully Submitted,

Susan M Goshert

Susan M. Goshert
Group Leader

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 5154483

CPT-1-15-W-070911 Grab Water
Facility# 94930 MTI# 611967 CETK
3369 Castro Valley Blvd T0600100137 CPT-1-15
Collected:09/11/2007 10:57 by JB

Account Number: 11997

Submitted: 09/13/2007 09:30
Reported: 09/26/2007 at 15:19
Discard: 10/27/2007

Chevron c/o CRA
Suite 110
2000 Opportunity Drive
Roseville CA 95678

PT115
I 5E w

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
06058	BTEX+5 Oxygenates+EDC+EDB					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	2.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	SW-846 8015B modified	1	09/18/2007 11:34	Steven A Skiles	1
06058	BTEX+5 Oxygenates+EDC+EDB	SW-846 8260B	1	09/25/2007 01:39	Michael A Ziegler	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/18/2007 11:34	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	09/25/2007 01:39	Michael A Ziegler	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5154484

CPT-1-32-W-070911 Grab Water
Facility# 94930 MTI# 611967 CETK
3369 Castro Valley Blvd T0600100137 CPT-1-32
Collected:09/11/2007 11:14 by JB

Account Number: 11997

Submitted: 09/13/2007 09:30
Reported: 09/26/2007 at 15:19
Discard: 10/27/2007

Chevron c/o CRA
Suite 110
2000 Opportunity Drive
Roseville CA 95678

PT132
I 5E w

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
06058	BTEX+5 Oxygenates+EDC+EDB					
02010	Methyl Tertiary Butyl Ether	1634-04-4	6.	0.5	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	2.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	SW-846 8015B modified	1	09/18/2007 11:56	Steven A Skiles	1
06058	BTEX+5 Oxygenates+EDC+EDB	SW-846 8260B	1	09/25/2007 02:03	Michael A Ziegler	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/18/2007 11:56	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	09/25/2007 02:03	Michael A Ziegler	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5154485

CPT-2-15-W-070911 Grab Water
Facility# 94930 MTI# 611967 CETK
3369 Castro Valley Blvd T0600100137 CPT-2-15
Collected:09/11/2007 13:22 by JB

Account Number: 11997

Submitted: 09/13/2007 09:30
Reported: 09/26/2007 at 15:19
Discard: 10/27/2007

Chevron c/o CRA
Suite 110
2000 Opportunity Drive
Roseville CA 95678

PT215
I 5E w

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	N.D.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
06058	BTEX+5 Oxygenates+EDC+EDB					
02010	Methyl Tertiary Butyl Ether	1634-04-4	2.	0.5	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	2.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	SW-846 8015B modified	1	09/18/2007 12:18	Steven A Skiles	1
06058	BTEX+5 Oxygenates+EDC+EDB	SW-846 8260B	1	09/25/2007 02:26	Michael A Ziegler	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/18/2007 12:18	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	09/25/2007 02:26	Michael A Ziegler	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5154486

CPT-2-21-W-070911 Grab Water
Facility# 94930 MTI# 611967 CETK
3369 Castro Valley Blvd T0600100137 CPT-2-21
Collected:09/11/2007 13:33 by JB

Account Number: 11997

Submitted: 09/13/2007 09:30
Reported: 09/26/2007 at 15:19
Discard: 10/27/2007

Chevron c/o CRA
Suite 110
2000 Opportunity Drive
Roseville CA 95678

PT221
I 5E w

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	130.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
06058	BTEX+5 Oxygenates+EDC+EDB					
02010	Methyl Tertiary Butyl Ether	1634-04-4	17.	0.5	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	2.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	SW-846 8015B modified	1	09/18/2007 12:39	Steven A Skiles	1
06058	BTEX+5 Oxygenates+EDC+EDB	SW-846 8260B	1	09/25/2007 02:50	Michael A Ziegler	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/18/2007 12:39	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	09/25/2007 02:50	Michael A Ziegler	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5154487

CPT-2-34-W-070911 Grab Water
Facility# 94930 MTI# 611967 CETK
3369 Castro Valley Blvd T0600100137 CPT-2-34
Collected:09/11/2007 13:48 by JB

Account Number: 11997

Submitted: 09/13/2007 09:30
Reported: 09/26/2007 at 15:19
Discard: 10/27/2007

Chevron c/o CRA
Suite 110
2000 Opportunity Drive
Roseville CA 95678

PT234
I 5E w

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
01728	TPH-GRO - Waters	n.a.	140.	50.	ug/l	1
	The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.					
06058	BTEX+5 Oxygenates+EDC+EDB					
02010	Methyl Tertiary Butyl Ether	1634-04-4	17.	0.5	ug/l	1
02011	di-Isopropyl ether	108-20-3	N.D.	0.5	ug/l	1
02013	Ethyl t-butyl ether	637-92-3	N.D.	0.5	ug/l	1
02014	t-Amyl methyl ether	994-05-8	N.D.	0.5	ug/l	1
02015	t-Butyl alcohol	75-65-0	N.D.	2.	ug/l	1
05401	Benzene	71-43-2	N.D.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	N.D.	0.5	ug/l	1
05407	Toluene	108-88-3	N.D.	0.5	ug/l	1
05412	1,2-Dibromoethane	106-93-4	N.D.	0.5	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	0.5	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	0.5	ug/l	1

State of California Lab Certification No. 2116
Trip blank vials were not received by the laboratory for this sample group.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
01728	TPH-GRO - Waters	SW-846 8015B modified	1	09/18/2007 13:01	Steven A Skiles	1
06058	BTEX+5 Oxygenates+EDC+EDB	SW-846 8260B	1	09/25/2007 03:14	Michael A Ziegler	1
01146	GC VOA Water Prep	SW-846 5030B	1	09/18/2007 13:01	Steven A Skiles	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	09/25/2007 03:14	Michael A Ziegler	1

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: Chevron c/o CRA
Group Number: 1055971
Reported: 09/26/07 at 03:19 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 07261B20A	Sample number(s): 5154483-5154487							
TPH-GRO - Waters	N.D.	50.	ug/l	93	108	75-135	16	30
Batch number: Z072673AA	Sample number(s): 5154483-5154487							
Methyl Tertiary Butyl Ether	N.D.	0.5	ug/l	95		73-119		
di-Isopropyl ether	N.D.	0.5	ug/l	93		70-123		
Ethyl t-butyl ether	N.D.	0.5	ug/l	94		74-120		
t-Amyl methyl ether	N.D.	0.5	ug/l	90		79-113		
t-Butyl alcohol	N.D.	2.	ug/l	93		74-117		
Benzene	N.D.	0.5	ug/l	93		78-119		
1,2-Dichloroethane	N.D.	0.5	ug/l	82		69-135		
Toluene	N.D.	0.5	ug/l	98		85-115		
1,2-Dibromoethane	N.D.	0.5	ug/l	93		81-114		
Ethylbenzene	N.D.	0.5	ug/l	98		82-119		
Xylene (Total)	N.D.	0.5	ug/l	98		83-113		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 07261B20A	Sample number(s): 5154483-5154487 UNSPK: P155943								
TPH-GRO - Waters	117		63-154						
Batch number: Z072673AA	Sample number(s): 5154483-5154487 UNSPK: P154342								
Methyl Tertiary Butyl Ether	75 (2)	78 (2)	69-127	0	30				
di-Isopropyl ether	97	95	68-129	2	30				
Ethyl t-butyl ether	98	97	78-119	1	30				
t-Amyl methyl ether	95	96	72-125	1	30				
t-Butyl alcohol	47*	53*	70-121	3	30				
Benzene	100	98	83-128	2	30				
1,2-Dichloroethane	84	82	70-143	2	30				
Toluene	104	103	83-127	1	30				
1,2-Dibromoethane	99	99	78-120	0	30				
Ethylbenzene	105	105	82-129	0	30				
Xylene (Total)	104	104	82-130	1	30				

Surrogate Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Chevron c/o CRA
Reported: 09/26/07 at 03:19 PM

Group Number: 1055971

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO - Waters
Batch number: 07261B20A

	Trifluorotoluene-F
5154483	80
5154484	82
5154485	78
5154486	82
5154487	81
Blank	80
LCS	104
LCSD	113
MS	110
Limits:	63-135

Analysis Name: BTEX+5 Oxygenates+EDC+EDB
Batch number: Z072673AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5154483	91	94	102	94
5154484	91	94	102	92
5154485	92	96	102	92
5154486	92	96	102	92
5154487	92	95	103	92
Blank	89	94	104	94
LCS	90	98	104	96
MS	92	97	104	95
MSD	92	98	103	96
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Chevron California Region Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. #: 11997 Sample #: 5154483-87 SCR#: 244524

MTI # 611967 1055971

Facility #: Chevron 9-4930
Site Address: 3369 Castro Valley Blvd, Castro Valley, CA
Chevron PM: Tom Bays Lead Consultant: CRA
Consultant/Office: CRA Roseville
Consultant Prj. Mgr.: Brian Carey
Consultant Phone #: 916 677 3407 Fax #: 916 677 3687
Sampler: J. Bostick
Service Order #: ☐ Non SAR:

Field Point Name	Matrix	Repeat Sample	Top Depth	Year Month Day	Time Collected	New Field Pt.	Grab	Composite	Total Number of Containers	BTEX + MTBE 8260 ☒ 8021 ☐	TPH 8015 MOD GRO	TPH 8015 MOD DRO ☐ Silica Gel Cleanup	8260 full scan	☒ Oxygenates	Lead 7420 ☐ 7421 ☐
CPT-1-15-W	W		11	20070911	1057	y	X		4	X	X			X	
CPT-1-32-W	W		28	20070911	1114	y	X		4	X	X			X	
CPT-2-15-W	W		11	20070911	1322	y	X		4	X	X			X	
CPT-2-21-W	W		17	20070911	1333	y	X		4	X	X			X	
CPT-2-34-W	W		30	20070911	1348	y	X		4	X	X			X	
~~WASTE-S~~	~~S~~														

Analyses Requested

Preservation Codes

Preservative Codes
H = HCl T = Thiosulfate
N = HNO_3 B = NaOH
S = H_2SO_4 O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

Comments / Remarks
7 Oxy's to include MTBE, TBA, DIPE, TAME, ETBE, EDB, 1-2, DCA

Turnaround Time Requested (TAT) (please circle)
(STD. TAT) 72 hour 48 hour
24 hour 4 day 5 day

Data Package Options (please circle if required)
QC Summary Type I – Full
Type VI (Raw Data) ☐ Coelt Deliverable not needed
WIP (RWQCB)
Disk

Relinquished by:	Date	Time	Received by:	Date	Time
Joel Bostick	9/14/07				
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by Commercial Carrier: UPS (FedEx) Other			Received by: Kathy Binkley	Date 9-13-07	Time 0930
Temperature Upon Receipt 26° C°			Custody Seals Intact? (Yes) No		

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

CONESTOGA-ROVERS
& ASSOCIATES

ATTACHMENT E
Standard Field Procedures for CPT Borings

CRA

STANDARD FIELD PROCEDURES FOR CONE PENETROMETER TESTING AND SAMPLING

This document describes Conestoga-Rovers & Associates (CRA's) standard field methods for Cone Penetrometer Testing (CPT) and direct-push soil and groundwater sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines.

Use of CPT for logging and soil and groundwater sampling requires separate borings. Typically an initial boring is advanced to estimate soil and groundwater characteristics as described below. To collect soil samples a separate boring must be advanced using a soil sampling device. If groundwater samples are collected, another separate boring must be advanced using a groundwater sampling device. Specific field procedures are summarized below.

Cone Penetrometer Testing (CPT)

Cone Penetrometer Testing is performed by a trained geologist or engineer working under the supervision of a California Professional Geologist (PG) or a Certified Engineering Geologist (CEG). Cone Penetrometer Tests (CPT) are carried out by pushing an integrated electronic piezocone into the subsurface. The piezocone is pushed using a specially designed CPT rig with a force capacity of 20 to 25 tons. The piezocones are capable of recording the following parameters:

Tip Resistance (Qc)
Sleeve Friction (Fs)
Pore Water Pressure (U)
Bulk Soil Resistivity (rho) - with an added module

A compression cone is used for each CPT sounding. Piezocones with rated load capacities of 5, 10 or 20 tons are used depending on soil conditions. The 5 and 10 ton cones have a tip area of 10 sq. cm. and a friction sleeve area of 150 sq. cm. The 20 ton cones have a tip area of 15 sq. cm. and a friction sleeve area of 250 sq. cm. A pore water pressure filter is located directly behind the cone tip. Each of the filters is saturated in glycerin under vacuum pressure prior to penetration. Pore Pressure Dissipation Tests (PPDT) are recorded at 5 second intervals during pauses in penetration. The equilibrium pore water pressure from the dissipation test can be used to identify the depth to groundwater.

The measured parameters are printed simultaneously on a printer and stored on a computer disk for future analysis. All CPTs are carried out in accordance with ASTM D-3441. A complete set of baseline readings is taken prior to each sounding to determine any zero load offsets.

The inferred stratigraphic profile at each CPT location is included on the plotted CPT logs. The stratigraphic interpretations are based on relationships between cone bearing (Qc) and friction ratio (Rf). The friction ratio is a calculated parameter (Fs/Qc) used in conjunction with the cone bearing to identify the soil type. Generally, soft cohesive soils have low cone bearing pressures and high friction ratios. Cohesionless soils (sands) have high cone bearing pressures and low friction ratios. The classification of soils is based on correlations developed by Robertson et al (1986). It is not always possible to clearly identify a soil type based on Qc and Rf alone. Correlation with existing soils information and analysis of pore water pressure measurements should also be used in determining soil type.

CPT and sampling equipment are steam-cleaned or washed prior to work and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent. Groundwater samples are decanted into appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

After the CPT probes are removed, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate groundwater depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Professional Geologist (PG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

Soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon[7] tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector measures volatile hydrocarbon vapor concentrations in the bag=s headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy, and groundwater depth to select soil samples for analysis.

Grab Groundwater Sampling

Groundwater samples are collected from the open borehole using bailers, advancing disposable Tygon[7] tubing into the borehole and extracting groundwater using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.