Alexis Fischer
Project Manager
Marketing Business Unit

Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 790-6441
afischer@chevron.com

Alameda County Environmental Health (ACEH)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Chevron Service Station No. 90329
340 Highland Avenue
Piedmont, CA

I have reviewed the attached report titled *Well Destruction 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 to the best of my knowledge.

Sincerely,

Alexis Fischer
Project Manager

Attachment: *Well Destruction Report*

CONESTOGA-ROVERS & ASSOCIATES

2300 Clayton Road, Suite 920
Concord, California 94520
Telephone: (925) 849-1000 Fax: (925) 849-1040
www.CRAworld.com

June 30, 2014 Reference No. 311776

Mr. Mark Detterman, P.G., C.E.G.
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Well Destruction Report
Former Chevron Service Station 90329
340 Highland Avenue
Piedmont, California
Case No. RO0000269

Dear Mr. Detterman:

Conestoga-Rovers & Associates (CRA) is submitting this *Well Destruction Report* for the site referenced above (Figure 1) on behalf of Chevron Environmental Management Company (Chevron). As the final step prior to case closure, in accordance with the State of California State Water Resources Control Board (SWRCB) Order WQ 2013-0003-UST dated March 14, 2013 (Attachment A), remaining site monitoring wells C-2 through C-6 were destroyed as described below. Well destruction was performed in general accordance with Alameda County Public Works Agency (ACPWA) water resources well permits W2014-0380 through W2014-0384, dated April 17, 2014. Excavation permit EX14-00007 was also obtained from the City of Piedmont Department of Public Works for the destruction of offsite wells C-5 and C-6. Copies of all permits are included as Attachment B.

On May 19, 2014, CRA staff observed Vapor Tech Services (C-57 License No. 916085) destroy wells C-2 through C-6 (Figure 2). As permitted by ACPWA, the wells were destroyed by pressure grouting with neat cement grout and removing the well boxes. The well box cavities, resulting from well destruction, were backfilled with concrete to match existing surface grade. CRA's standard field procedures for monitoring well destruction are included as Attachment C.

Department of Water Resources (DWR) Well Completion/Destruction Forms (Form 188) have been submitted to the ACPWA by email.

CONESTOGA-ROVERS & ASSOCIATES

June 30, 2014 Reference No. 311776

We appreciate your assistance with this project and look forward to receipt of the case closure letter. Please contact Mr. Nate Lee at (925) 849-1003 if you have any questions or need any additional information.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

Brandon S. Wilken, PG 7564

CA/cw/15
Encl.

Figure 1	Vicinity Map
Figure 2	Site Plan

Attachment A	State of California SWRCB Correspondence
Attachment B	Permits
Attachment C	Standard Field Procedures

cc: Ms. Alexis Fischer, Chevron *(electronic copy only)*
Mr. Chuck Headlee, Regional Water Quality Control Board – San Francisco Bay
Mr. Chester Nakahara, City of Piedmont Department of Public Works
Bains Tarvinder Trust

Figures

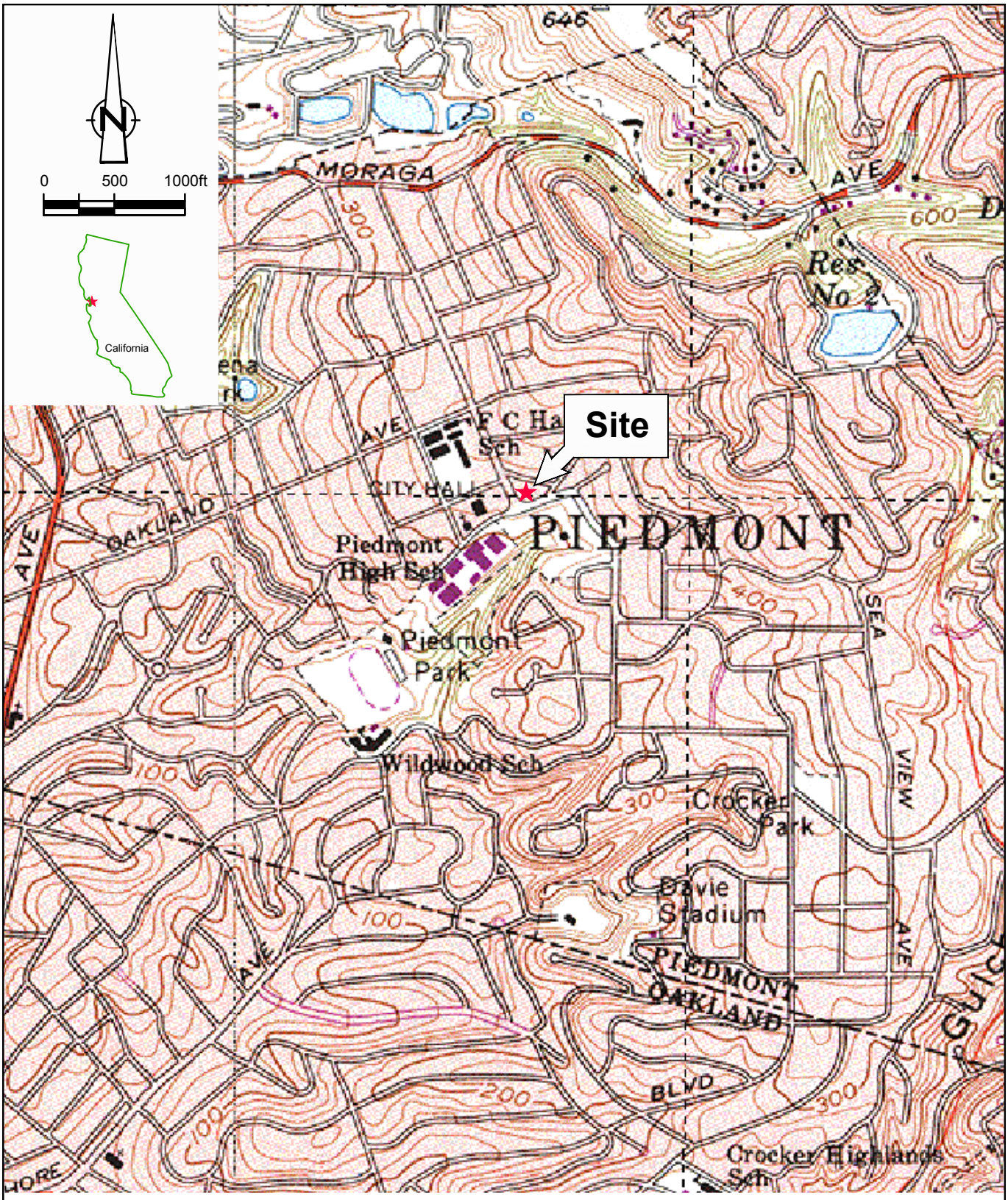


Figure 1

VICINITY MAP
FORMER CHEVRON STATION 90329
340 HIGHLAND AVENUE
Piedmont, California

311776-2014(015)GN-WA001 MAY 28/2014

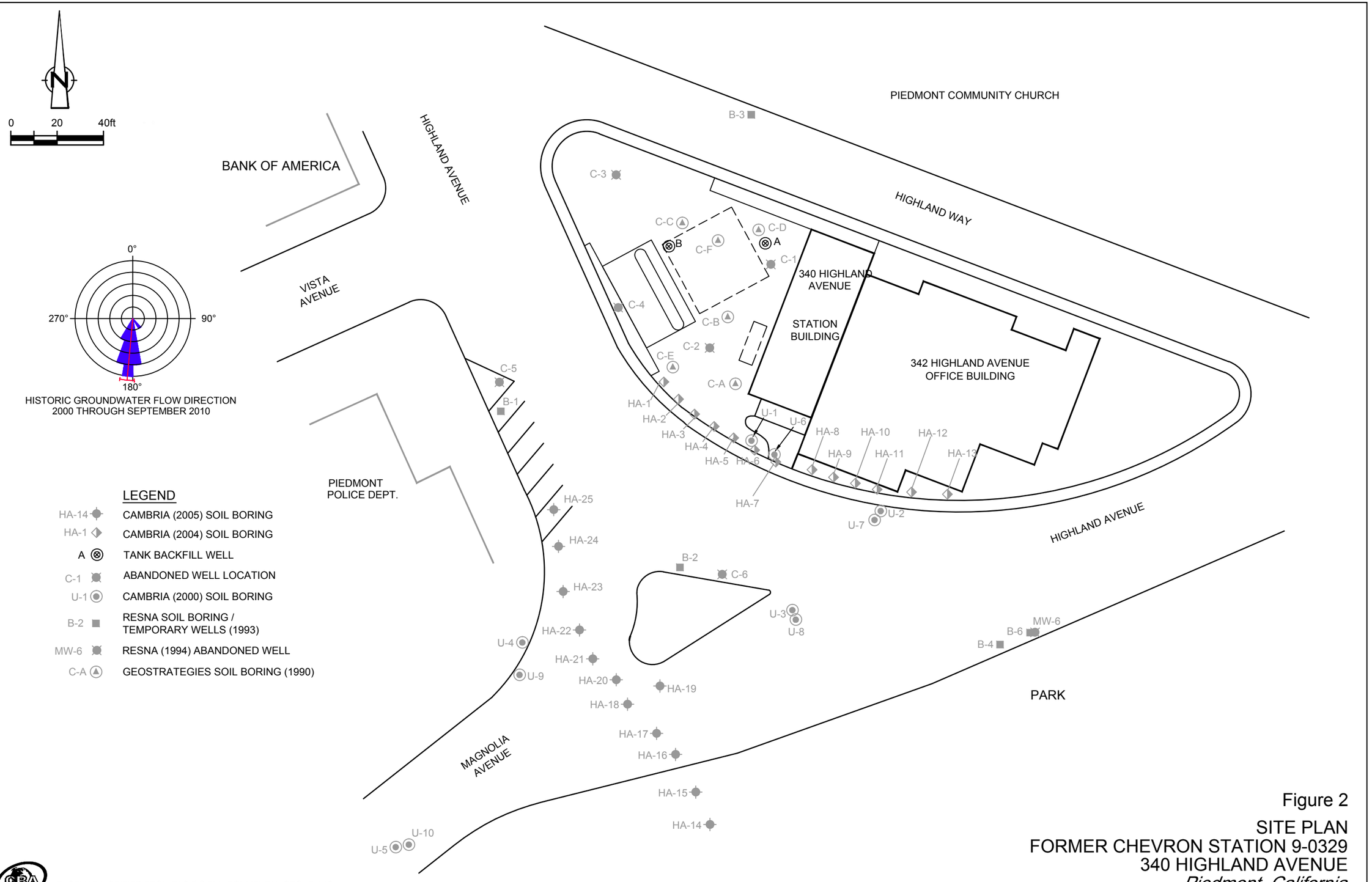


Figure 2

SITE PLAN
FORMER CHEVRON STATION 9-0329
340 HIGHLAND AVENUE
Piedmont, California

BASEMAP MODIFIED FROM PACIFIC ENVIRONMENTAL GROUP, INC.

311776-2014(015)GN-WA002 MAY 28/2014

Attachment A

State of California SWRCB Correspondence

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2013-0003-UST

In the Matter of Underground Storage Tank Case Closure

Pursuant to Health and Safety Code Section 25299.39.2 and the Low Threat Underground Storage Tank Case Closure Policy

---

BY THE EXECUTIVE DIRECTOR[1]:

Pursuant to Health and Safety Code section 25299.39.2, the Manager of the Underground Storage Tank Cleanup Fund (Fund) recommends closure of the underground storage tank (UST) case at the site listed below.[2] The name of the Fund claimant, the Fund claim number, the site name and the applicable site address are as follows:

Chevron Products Company
Claim No. 6001
Chevron #9-0329
340 Highland Ave, Piedmont
Alameda County Environmental Health Department (Local Oversight Program)

I. STATUTORY AND PROCEDURAL BACKGROUND

Section 25299.39.2 directs the Fund manager to review the case history of claims that have been active for five years or more (five-year review), unless there is an objection from the UST owner or operator. This section further authorizes the Fund Manager to make recommendations to the State Water Resources Control Board (State Water Board) for closure of a five-year-review case if the UST owner or operator approves. In response to a recommendation by the Fund Manager, the State Water Board, or in certain cases the State Water Board Executive Director, may close a case or require the closure of a UST case. Closure of a UST case is appropriate where the corrective action ensures the protection of human health, safety, and the environment and where the corrective action is consistent with:

---

[1] State Water Board Resolution No. 2012-0061 delegates to the Executive Director the authority to close or require the closure of any UST case if the case meets the criteria found in the State Water Board's Low Threat Underground Storage Tank Case Closure Policy adopted by State Water Board Resolution No. 2012-0016.

[2] Unless otherwise noted, all references are to the Health and Safety Code.

1) Chapter 6.7 of Division 20 of the Health and Safety Code and implementing regulations; 2) Any applicable waste discharge requirements or other orders issued pursuant to Division 7 of the Water Code; 3) All applicable state policies for water quality control; and 4) All applicable water quality control plans.

The Fund Manager has completed a five-year review of the UST case identified above, and recommends that this case be closed. The recommendation is based upon the facts and circumstances of this particular UST case. A UST Case Closure Review Summary Report has been prepared for the case identified above and the bases for determining compliance with the Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closures (Low-Threat Closure Policy or Policy) are explained in the Case Closure Review Summary Report.

A. Low-Threat Closure Policy

In State Water Board Resolution No. 2012-0016, the State Water Board adopted the Low Threat Closure Policy. The Policy became effective on August 17, 2012. The Policy establishes consistent statewide case closure criteria for certain low-threat petroleum UST sites. In the absence of unique attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents, cases that meet the general and media-specific criteria in the Low-Threat Closure Policy pose a low threat to human health, safety and the environment and are appropriate for closure under Health and Safety Code section 25296.10. The Policy provides that if a regulatory agency determines that a case meets the general and media-specific criteria of the Policy, then the regulatory agency shall notify responsible parties and other specified interested persons that the case is eligible for case closure. Unless the regulatory agency revises its determination based on comments received on the proposed case closure, the Policy provides that the agency shall issue a closure letter as specified in Health and Safety Code section 25296.10. The closure letter may only be issued after the expiration of the 60-day comment period, proper destruction or maintenance of monitoring wells or borings, and removal of waste associated with investigation and remediation of the site.

Health and Safety Code section 25299.57, subdivision (l)(1) provides that claims for reimbursement of corrective action costs that are received by the Fund more than 365 days after the date of a closure letter or a Letter of Commitment, whichever occurs later, shall not be reimbursed unless specified conditions are satisfied. A Letter of Commitment has already been issued on the claim subject to this order and the respective Fund claimant, so the 365-day timeframe for the submittal of claims for corrective action costs will start upon the issuance of the closure letter.

II. FINDINGS

Based upon the UST Case Closure Review Summary Report prepared for the case attached hereto as Exhibit A, the State Water Board finds that corrective action taken to address the unauthorized release of petroleum at the UST release site identified as:

Claim No. 6001

Chevron #9-0329

ensures protection of human health, safety and the environment and is consistent with Chapter 6.7 of Division 20 of the Health and Safety Code and implementing regulations, the Low-Threat Closure Policy and other water quality control policies and applicable water quality control plans.

Pursuant to the Low-Threat Closure Policy, notification has been provided to all entities that are required to receive notice of the proposed case closure, a 60-day comment period has been provided to notified parties, and any comments received have been considered by the Board in determining that the case should be closed.

The UST case identified above may be the subject of orders issued by the Regional Water Quality Control Water Board (Regional Water Board) pursuant to Division 7 of the Water Code. Any orders that have been issued by the Regional Water Board pursuant to Division 7 of the Water Code, or directives issued by a Local Oversight Program agency for this case should be rescinded to the extent they are inconsistent with this Order.

III. ORDER

IT IS THEREFORE ORDERED that:

A. The UST case identified in Section II of this Order, meeting the general and media-specific criteria established in the Low-Threat Closure Policy, be closed in accordance with the following conditions and after the following actions are complete. Prior to the issuance of a closure letter, the Fund claimant is ordered to:

1. Properly destroy monitoring wells and borings unless the owner of real property on which the well or boring is located certifies that the wells or borings will be maintained in accordance with local or state requirements;

2. Properly remove from the site and manage all waste piles, drums, debris, and other investigation and remediation derived materials in accordance with local or state requirements; and

3. Within six months of the date of this Order, submit documentation to the regulatory agency overseeing the UST case identified in section II of this Order that the tasks in subparagraphs (1) and (2) have been completed.

B. The tasks in subparagraphs (1) and (2) of Paragraph (A) are ordered pursuant to Health and Safety Code section 25296.10 and failure to comply with these requirements may result in the imposition of civil penalties pursuant to Health and Safety Code section 25299 subdivision (d)(1). Penalties may be imposed administratively by the State Water Board or Regional Water Board.

C. Within 30 days of receipt of proper documentation from the Fund claimant that requirements in subparagraphs (1) and (2) of Paragraph (A) are complete, the regulatory agency that is responsible for oversight of the UST case identified in Section II of this Order shall notify the State Water Board that the tasks have been satisfactorily completed.

D. Within 30 days of notification from the regulatory agency that the tasks are complete pursuant to Paragraph (C), the Deputy Director of the Division of Financial Assistance shall issue a closure letter consistent with Health and Safety Code, section 25296.10, subdivision (g) and upload the closure letter and UST Case Closure Review Summary Report to GeoTracker.

E. As specified in Health and Safety Code section 25299.39.2 subdivision (a) (2), corrective action costs incurred after a recommendation of closure shall be limited to $10,000 per year unless the Board or its delegated representative agrees that corrective action in excess of that amount is necessary to meet closure requirements, or additional corrective actions are necessary pursuant to section 25296.10 subdivision (a) and (b). Pursuant to section 25299.57, subdivision (l) (1), and except in specified circumstances, all claims for reimbursement of corrective action costs must be received by the Fund within 365 days of issuance of the closure letter in order for the costs to be considered.

F. Any Regional Water Board or Local Oversight Program Agency directive or order that directs corrective action or other action inconsistent with case closure for the UST case identified in Section II is rescinded, but only to the extent the Regional Water Board order or Local Oversight Program Agency directive is inconsistent with this Order.

Thomas Howard
Executive Director

3/14/13
Date

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: Alameda County Environmental Health Department (Local Oversight Program (County)	Address: 1131 Harbor Bay Parkway, Alameda, CA 94502
Agency Caseworker: Mark Detterman	Case No. RO0000269

Case Information

USTCF Claim No.: 6001	Global ID: T0600101885
Site Name: Chevron #9-0329	Site Address: 340 Highland Avenue, Piedmont, CA 94611
Responsible Party: Chevron Environmental Management Company	Address: 6111 Bollinger Canyon Rd. San Ramon, CA 94583
USTCF Expenditures to Date: $214,832	Number of Years Case Open: 29

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600101885

Summary

The Low-Threat Underground Storage Tank Case Closure Policy (Low-Threat Policy) contains general and media-specific criteria, and cases that meet those criteria are appropriate for closure pursuant to the Low-Threat Policy. This case meets all of the required criteria of the Low-Threat Policy. A summary evaluation of compliance with the Low-Threat Policy is shown in **Attachment 1: Closure of Underground Storage Tank Sites' Checklist for Compliance with State Water Board Policies and State Law**. The Conceptual Site Model upon which the evaluation of the case has been made is described in **Attachment 2: Summary of Basic Site Information.** Highlights of the Conceptual Site Model of the case follow:

This is currently an active service station. A leak was reported in 1983. Since 1983, nine monitoring wells have been installed, and contaminated soil excavated. No soil or groundwater remedial actions have been implemented. According to groundwater data, water quality objectives have been achieved for all constituents except for TPH gasoline (TPHg) in three wells (C-2, C-3 & C-4), total petroleum hydrocarbons diesel (TPHd) in one well (C-3 off Site source), benzene in one well (C-2), and MTBE in one well (C-2). No public supply wells regulated by the California Department of Public Health (CDPH) within ½ mile of the Site. A total of 41 domestic, irrigation, cathodic protection, and monitoring wells have been identified within a one mile radius of the Site. These wells are not at risk because the residual petroleum hydrocarbons at the Site do not leave the Site. Water is provided to water users near the Site by the East Bay Municipal Utility District. It is highly unlikely that any groundwater that may be impacted will be used as a source of drinking water or other beneficial use in the foreseeable future.

The petroleum release is limited to the shallow soil and groundwater. The affected groundwater is not currently being used as a source of drinking water or for any other beneficial use, and it is highly unlikely that the affected groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable future. Public supply wells are usually constructed with competent sanitary seals and intake screens that are in deeper more protected aquifers. Other designated beneficial uses of impacted groundwater are not threatened and it is highly unlikely that they will be considering these factors in the context of the Site setting. Remaining petroleum hydrocarbon constituents are limited, stable and concentrations declining. Remedial actions have been implemented and further remediation would be ineffective and expensive. Additional assessment/monitoring will not likely change the conceptual model. Any remaining petroleum hydrocarbon constituents do not pose significant risk to human health, safety or the environment. The corrective action performed is protective of human health, safety, and the environment.

Rationale for Closure under the Low-Threat Policy

- General Criteria – Meets all eight general criteria.
- Groundwater – Site-specific analysis, using Groundwater-Specific Criterion (5)a, shows that under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment, and water quality objectives will be achieved within a reasonable timeframe.
- Vapor Intrusion to Indoor Air – Soil vapor evaluation is not required because site is an active commercial petroleum fueling facility.
- Direct Contact and Outdoor Air Exposure – This case meets Policy Criterion 3.B. A professional assessment of site-specific risk from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.

Objections to Closure

The County states the following:

- Possibility of undocumented filled UST excavations at the site. Because the size of the undocumented UST complex is unknown the groundwater investigation at the Site is incomplete. The County has requested a work plan to locate the size and depth of the unknown USTs and conduct another soil vapor and sub-slab vapor assessment.
- Groundwater monitoring wells have submerged well screens so reported concentrations of contaminants may be lower than actual concentrations.
- Significant source remains based on the concentrations in one well (C-2) and five very shallow soil borings (0.5 to 1.5 feet below ground surface (bgs)) which indicates a significant source.
- Significant dissolved concentrations are flowing off site in seepage at the surface, preferential pathways, or storm drains.

Response to Objections to Closure

- A geophysical survey report was submitted on July 27, 2012, documenting that no other undocumented UST excavations are present at the Site.
- The wells have had submerged screens since 1983 and the County has accepted the data for 29 years and only recently raised a concern. During sampling activities, well

C-2 regularly is pumped dry during purging; the resulting sample, collected during recharge of the well, should be fairly representative of the groundwater conditions.

- Remaining concentrations in well C-2 are relatively low and decreasing. Contaminant plume is defined, stable and decreasing.
- In 2006, Cambria, conducted a Water Seep Assessment that reported that the primary constituents of concern when evaluating the risk associated with exposure to gasoline are the benzene, toluene, eythylbenzene, and toluene components. The results of the analysis of water ponded at the site during periods of seepage found that the ponded water does not pose significant risk to public health, safety or the environment. The dermal and vapor intrusion were also evaluated and did not meet the threshold criteria indicating adverse impact to indoor air quality.

Fund Manager Recommendation for Closure

Based on available information, residual petroleum hydrocarbons at the Site do not pose significant risks to human health, safety, or the environment, and the case meets the requirements of the Low-Threat Policy. Accordingly, the Fund Manager recommends that the case be closed. The State Water Board is conducting public notification. The County has the regulatory responsibility to supervise the abandonment of monitoring wells.

Lisa Babcock

Lisa Babcock, P.G. 3939, C.E.G. 1235

8/31/12

Date

ATTACHMENT 1: COMPLIANCE WITH STATE WATER BOARD POLICIES AND STATE LAW

The site complies with the State Water Resources Control Board policies and state law. Section 25296.10 of the Health and Safety Code requires that sites be cleaned up to protect human health, safety, and the environment. Based on available information, any residual petroleum constituents at the site do not pose significant risk to human health, safety, or the environment.

The site complies with the requirements of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.[1]

Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations? The corrective action provisions contained in Chapter 6.7 of the Health and Safety Code and the implementing regulations govern the entire corrective action process at leaking UST sites. If it is determined, at any stage in the corrective action process, that UST case closure is appropriate, further compliance with corrective action requirements is not necessary. Corrective action at this site has been consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations and, since this case meets applicable case-closure requirements, further corrective action is not necessary, unless the activity is necessary for case closure.	☒ Yes ☐ No
Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this site?	☐ Yes ☒ No
If so, was the corrective action performed consistent with any order? There was an order issued for this site. The corrective action performed in the past is consistent with that order. Since this case meets applicable case-closure requirements, further corrective action under the order that is not necessary, unless the activity is necessary for case closure.	☐ Yes ☐ No ☒ NA
General Criteria General criteria that must be satisfied by all candidate sites:	
Is the unauthorized release located within the service area of a public water system?	☒ Yes ☐ No
Does the unauthorized release consist only of petroleum?	☒ Yes ☐ No
Has the unauthorized ("primary") release from the UST system been stopped?	☒ Yes ☐ No
Has free product been removed to the maximum extent practicable?	☒ Yes ☐ No ☐ NA

[1] Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.

	PASS
Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No
Has secondary source been removed to the extent practicable?	☒ Yes ☐ No
Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?	☒ Yes ☐ No
Nuisance as defined by Water Code section 13050 does not exist at the site?	☒ Yes ☐ No
Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?	☐ Yes ☒ No
Media-Specific Criteria Candidate sites must satisfy all three of these media-specific criteria: **1. Groundwater:** To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites: **Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?**	☒ Yes ☐ No ☐ NA
Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites? If YES, check applicable class: ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☒ **5**	☒ Yes ☐ No ☐ NA
Do site soils contain insufficient mobile constituents (leachate, vapors, or light non-aqueous phase liquids) to threaten groundwater?	☒ Yes ☐ No ☐ NA
2. Petroleum Vapor Intrusion to Indoor Air: The site is considered low-threat for vapor intrusion to indoor air if site-specific conditions satisfy all of the characteristics of one of the three classes of sites (a through c) or if the exception for active commercial fueling facilities applies. **Is the site an active commercial petroleum fueling facility?** Exception: Satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk.	☒ Yes ☐ No
a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: ☐ **1** ☐ **2** ☐ **3** ☐ **4**	☐Yes ☐ No ☒ NA

b. Has a site-specific risk assessment for the vapor intrusion pathway been conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency?	☐ Yes ☐ No ☒ NA
c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?	☐ Yes ☐ No ☒ NA
3. Direct Contact and Outdoor Air Exposure: The site is considered low-threat for direct contact and outdoor air exposure if site-specific conditions satisfy one of the three classes of sites (a through c).	
a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?	☐ Yes ☐ No ☒ NA
b. Are maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?	☒ Yes ☐ No ☐ NA
c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?	☐ Yes ☐ No ☒ NA

ATTACHMENT 2: SUMMARY OF BASIC SITE INFORMATION (Conceptual Site Model)

Site Location/History

- The Site is currently an active service station operating at the corner of Highland Avenue and Highland Way in the City of Piedmont. The Site was formerly owned and operated by Chevron but was sold in 1990 to the Hoffman Investment Company.
- The land use in the immediate vicinity of the Site is commercial.
- In June 1983, soil contamination was identified.
- Nine monitoring wells have been installed and monitored regularly.
- Site map showing the location of the Site facilities, monitoring wells, and groundwater level contours is included at the end of this summary.

Pollutant Source

- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source, Date reported, and Status of Release: UST system, January 1983, USTs removed in 1989. A second source, City of Piedmont City Hall, is responsible for the diesel in the immediate area which is upgradient of the Site.
- Neither diesel nor oxygenated fuels were sold on this Site during Chevron's operation of the service station.
- Free-Phase Hydrocarbons: Historically, none currently.

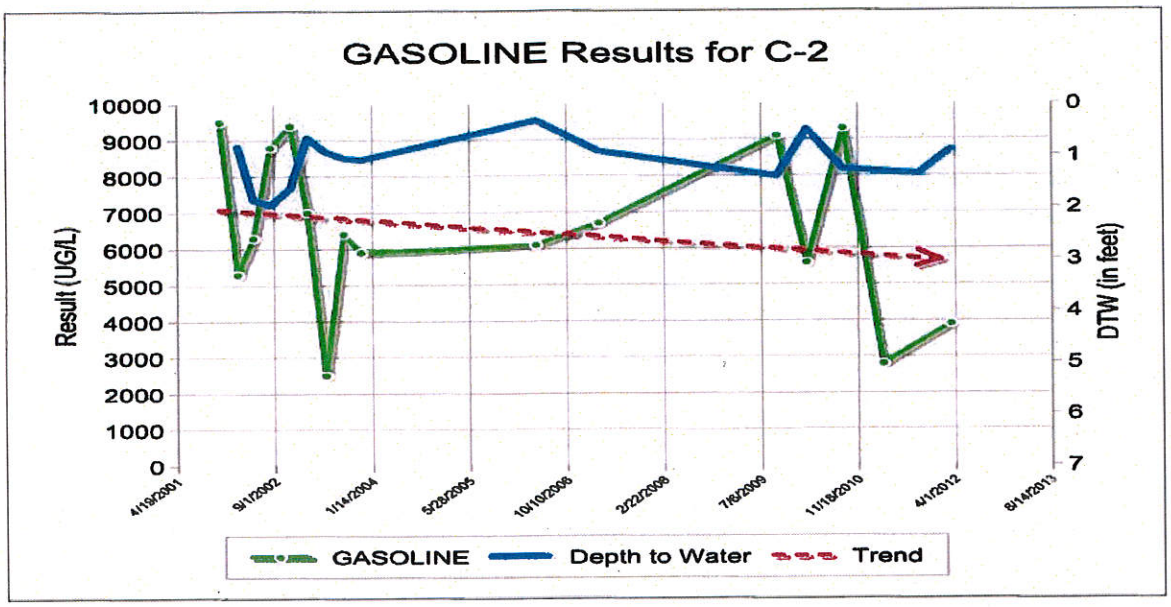
Geology/Hydrogeology

- Stratigraphy: A thin 2.5 to 5.0 foot-thick veneer of silts and sands is underlain by shallow bedrock, sandstone.
- Maximum Sample Depth: 18 feet bgs.
- Minimum Groundwater Depth: Artesian at monitoring well MW-6.
- Maximum Groundwater Depth: 6.4 feet (bgs) at monitoring well C-4.
- Current Average Depth to Groundwater: 1.5 feet bgs.
- Saturated Zones(s) Studied: Surface to 18 feet bgs.
- Groundwater Flow Direction: Southerly with an average gradient of 0.04 feet/foot (ft/ft) (March 2012).

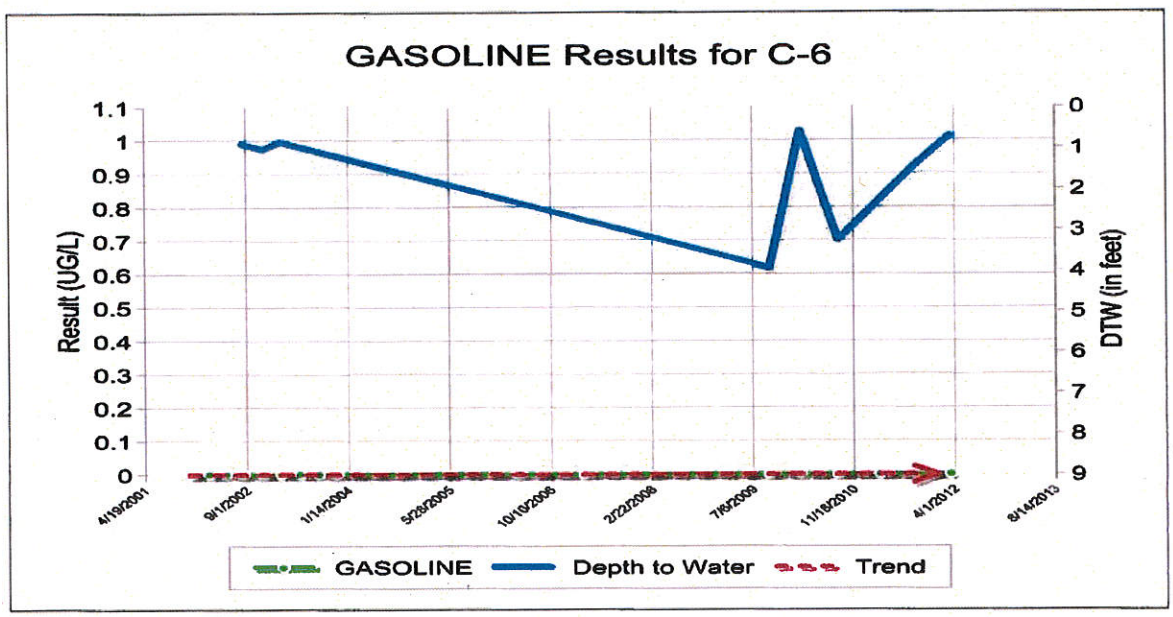
Groundwater Trends:

- There are 29 years of groundwater monitoring data for this Site that demonstrates the concentrations are decreasing and the plume is stable. Well C-2 is in the source area and well C-6 is 90 feet downgradient.

Source Area Well



Down Gradient Well



Receptors

- GW Basin: Santa Clara Valley - South Bay - East Bay Cities.
- Beneficial Uses: Municipal and Domestic Supply.
- Land Use Designation: Commercial.
- Public Water System: East Bay Municipal Utility District.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by CDPH within ½ mile of the Site. City of Piedmont Well #4 is located approximately 0.11 miles south of the Site and is used as an irrigation well for the City Park. Thirteen domestic and 28 other (monitoring, cathodic protection and irrigation) private wells were identified within a one mile radius of the Site.
- Distance to Nearest Surface Water: An intermittent creek is located in Piedmont Park approximately 336 feet south of the Site.

Risk Criteria

- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/Groundwater tested for MTBE: Yes, see table below.
- Plume Length, Extent and Mobility: Petroleum hydrocarbon constituents are limited to a very small area downgradient of the former USTs near well C-2. The constituents of petroleum hydrocarbons present are a combination of upgradient sources (City Hall), possible fill material imported (not typical TPHd), current operations (MTBE and benzene) and past operations. This mix of sources indicates the petroleum hydrocarbons are moderately mobile in the thin veneer of soil overlying bedrock.
- Contaminated Zone(s) Used for Drinking Water: No.
- Risk from Residual Petroleum Hydrocarbon: RBCA Tier 2 evaluation completed, in 2002, for possible use as future residential land use. Using the residential risk factor of 1×10^{6} and the site conditions, contaminants indicate the risk was acceptable except for the ingestion pathway. Groundwater is not used in the area for a drinking water source. In 2006, soil vapors were resampled and were at concentrations below the environmental screening level for petroleum hydrocarbon constituents. The most current soil concentrations are below the thresholds in Table 1 of the Policy. However, there are no results in GeoTracker for naphthalene. The amount of naphthalene in gasoline is very low – generally on the order of 0.25 percent (Potter and Simmons, 1998). The amount of benzene, however, is on the order of 3 percent (ten times greater). Since the concentrations of benzene at this Site are lower than the Table 1 naphthalene threshold concentration, it is highly unlikely that naphthalene concentrations in soil at the Site, if any, exceed that threshold. Further, the Site is paved and accidental access to site soils is prevented. As an active gas station, any construction worker working at the Site or adjacent to the Site will be prepared for exposure in their normal daily work.

Remediation Summary (Secondary Source Removal)

- Free Product: Noted in C-2 (up to 0.75 inches) in 1987.
- Soil Excavation: Impacted soil was removed from the Site.
- In-Situ Soil and Groundwater Remediation: No remediation activities were implemented.

Chevron #9-0329
Claim No. 6001

August 2012

Supporting Site Data

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	550	Used Oil	Removed	September 1999
2	Unknown	Unknown	Removed	July 2012 Geophysical Survey

Monitoring Well Information

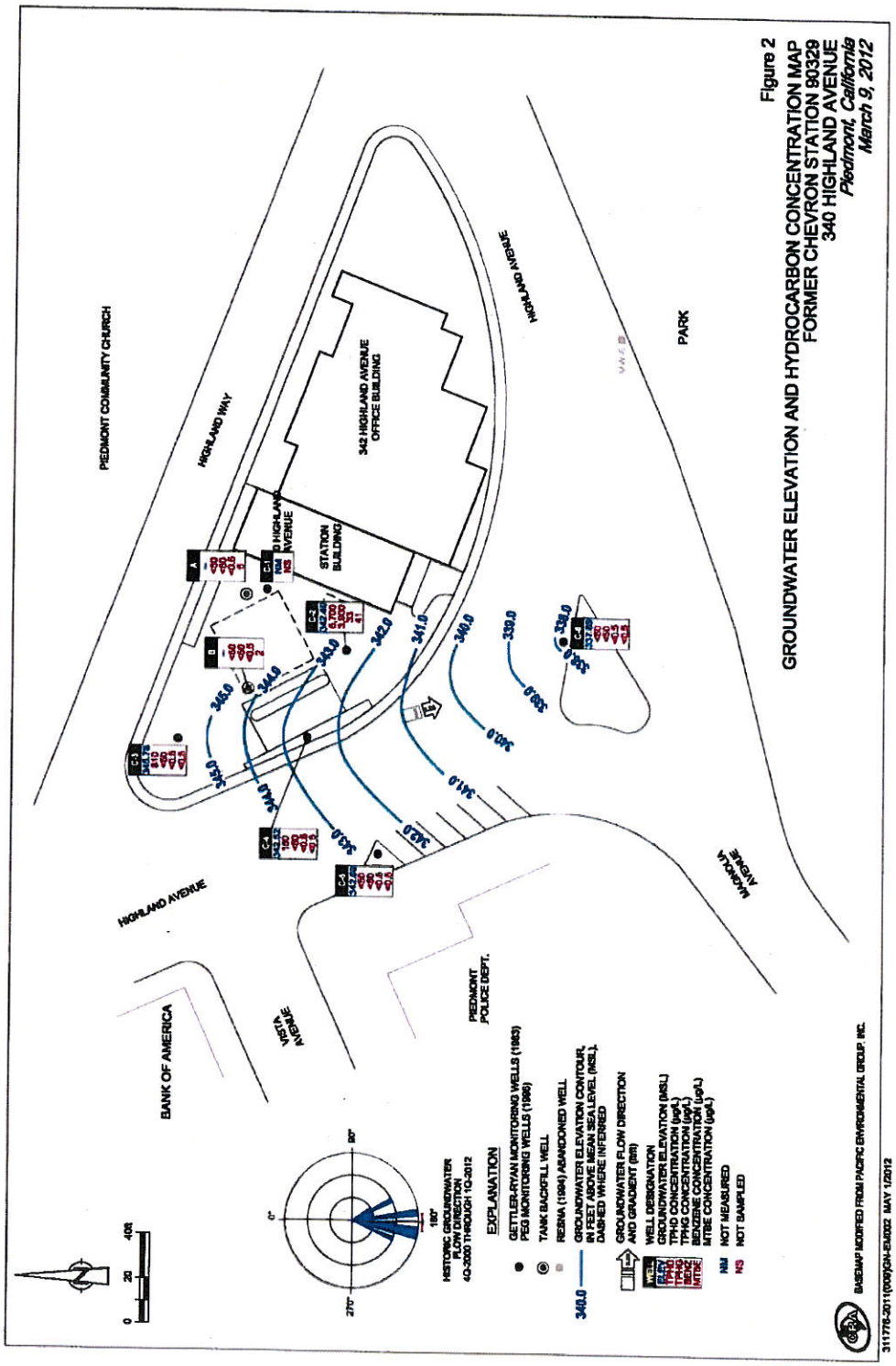
Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (3/9/2012)
A	1983	Open bottom	1.37
B	1983	Open bottom	3.60
C-1	1983	7-17	Abandoned 1991
C-2[a]	1983	7-17	0.90
C-3	1983	7-17	1.42
C-4	1983	3-13	2.42
C-5	1996	3-18	2.45
C-6	1996	2.5-17.5	0.72
MW-6	1996	Unknown	Destroyed soon after installation due to artisan flow

[a] Note C-2 had 0.75 inches of free product last reported in 1987

Petroleum Hydrocarbon Constituent Concentration

Contaminant	Soil (mg/kg)		Water (ug/L)		WQOs (ug/L)
	Maximum 0-5 ft bgs [a]	Maximum 5-10 ft bgs [a]	Maximum [b]	Latest (3/9/2012)	
TPHg	5,800	1,600	56,000	3,900	NL
TPHd	NA	NA	5,900	5,700	NL
Benzene	0.23	0.16	2,500	33	1
Toluene	0.002	1.2	750	2	300
Ethylbenzene	7.1	12	800	3	700
Xylenes	7.9	37	6,000	5	1,750
MTBE	0.5	NA	210	41	5
TBA	0.14	NA	890	NA	1,200[c]
Naphthalene	NA	NA	NA	NA	170[d]

NA: Not Analyzed, Not Applicable or Data Not Available
NL: Not listed
mg/kg: milligrams per kilogram, parts per million
ug/L: micrograms per liter, parts per billion
WQOs: Water Quality Objectives, Region 2 Basin Plan
[a] According to Reports, soil
[b] According to Geotracker, wells
[c] CA Department of Health Services Notification Level
[d] CA Department of Health Services Action Level in drinking water


GROUNDWATER ELEVATION AND HYDROCARBON CONCENTRATION MAP
FORMER CHEVRON STATION 90329
340 HIGHLAND AVENUE
Piedmont, California
March 9, 2012
Figure 2
PIEDMONT COMMUNITY CHURCH
HIGHLAND WAY
342 HIGHLAND AVENUE OFFICE BUILDING
340 HIGHLAND AVENUE STATION BUILDING
HIGHLAND AVENUE
PARK
BANK OF AMERICA
VISTA AVENUE
PIEDMONT POLICE DEPT.
MAGNOLIA AVENUE
EXPLANATION
GETTLER-RYAN MONITORING WELLS (1993)
PEG MONITORING WELLS (1999)
TANK BACKFILL WELL
RESNA (1994) ABANDONED WELL
GROUNDWATER ELEVATION CONTOUR, IN FEET ABOVE MEAN SEA LEVEL (MSL). DASHED WHERE INFERRED
GROUNDWATER FLOW DIRECTION AND GRADIENT (ft/ft)
WELL DESIGNATION
GROUNDWATER ELEVATION (MSL)
TPHD CONCENTRATION (µg/L)
TPHG CONCENTRATION (µg/L)
BENZENE CONCENTRATION (µg/L)
MTBE CONCENTRATION (µg/L)
NM NOT MEASURED
NS NOT SAMPLED
HISTORIC GROUNDWATER FLOW DIRECTION 4Q-2000 THROUGH 1Q-2012
BASEMAP MODIFIED FROM PACIFIC ENVIRONMENTAL GROUP, INC.
311778-2011(009)GN-EM002 MAY 1/2012

Attachment B

Permits

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

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

Application Approved on: 04/17/2014 By jamesy

Permit Numbers: W2014-0380 to W2014-0384
Permits Valid from 05/19/2014 to 05/20/2014

Application Id: 1397515179664 **City of Project Site:** Piedmont
Site Location: 340 Highland Avenue
Piedmont, California 94611
Project Start Date: 05/19/2014 **Completion Date:** 05/20/2014
Assigned Inspector: Contact Steve Miller at (510) 670-5517 or stevem@acpwa.org

Applicant: Conestoga-Rovers & Associates - Charley Austin
2300 Clayton Road, Suite 920, Concord, CA 94520 **Phone:** 225-907-5910
Property Owner: Bains Tarvinder
6111 Turnberry Court, Dublin, CA 94568 **Phone:** --
Client: Chevron Environmental Management Company
n/a
6001 Bollinger Canyon Road, San Ramon, CA 94583 **Phone:** --
Contact: Charley Austin **Cell:** --

Total Due: $1985.00
Receipt Number: WR2014-0145 **Total Amount Paid:** $1985.00
Payer Name : Conestoga-Rovers & Paid By: CHECK **PAID IN FULL**
Associates

Works Requesting Permits:

Well Destruction-Monitoring - 5 Wells
Driller: Vapor Tech Services - Lic #: 916085 - Method: press **Work Total: $1985.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2014-0380	04/17/2014	08/17/2014	C-2	8.00 in.	2.00 in.	0.50 ft	17.00 ft	No Records	No Records	No Records
W2014-0381	04/17/2014	08/17/2014	C-3	8.00 in.	2.00 in.	0.50 ft	17.00 ft	No Records	No Records	No Records
W2014-0382	04/17/2014	08/17/2014	C-4	8.00 in.	2.00 in.	1.50 ft	13.00 ft	No Records	No Records	No Records
W2014-0383	04/17/2014	08/17/2014	C-5	8.00 in.	2.00 in.	1.50 ft	18.00 ft	No Records	No Records	No Records
W2014-0384	04/17/2014	08/17/2014	C-6	8.00 in.	2.00 in.	1.50 ft	17.50 ft	No Records	No Records	No Records

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. 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.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Include permit number and site map.

4. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

5. 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 and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

6. Applicant shall contact Steve Miller for an inspection time at (510) 670-5517 or email to stevem@acpwa.org 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.

7. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

8. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

9. 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.

PLANNING APPROVAL CODE

PLANNING APPROVAL DATE

BUILDING APPROVAL DATE

CITY OF PIEDMONT
DEPARTMENT OF PUBLIC WORKS

120 VISTA AVE. / PIEDMONT, CA 94611
PH (510) 420-3050
FAX (510) 658-3167

PERMIT NUMBER
EX14-00007

APPLICATION RECEIVED:
4/17/2014

ISSUE DATE
4/23/2014

JOB ADDRESS:	340 HIGHLAND	**APN:**	462300601	**VALUATION:**	0.00
PERMIT TYPE:	BUILDING **ZONE**	**OCC:**		**CON. TYPE:**	

OWNER

NAME	BAINS TARVINDER, TRUST		
ADDRESS	6111 TURNBERRY CT		
CITY/STATE/ZIP	DUBLING	CA	94566
PHONE			

CONTRACTOR

NAME	CONESTOGA-ROVERS & ASSOCIATES			
ADDRESS	2300 CLAYTON RD, #920			
CITY/STATE/ZIP	CONCORD	CA	94520	BUS LIC
PHONE	9258491017			LICENSE

ARCHITECT/ENGINEER/DESIGNER

NAME		
ADDRESS		
CITY/STATE/ZIP		BUS LIC
PHONE		LICENSE

JOB DESCRIPTION

ELIMINATE GROUNDWATER MONITORING WELLS #C-5 & C-6 IN FRONT OF 340 HIGHLAND AVE.

SIDEWALK INSPECTION mandatory upon submittal of permit application in amount of $5,000 or more, or the sale of real estate.
SPARK ARRESTER mandatory on every chimney when any permit in excess of $1,000 is issued.
SMOKE DETECTOR installation mandatory when any permit in excess of $1,000 is issued.
Contractors or Owner/Builder must provide containment & removal of any & all liquid or solid waste in accordance with the provisions of the ALAMEDA COUNTY CLEAN WATER PROGRAM. Dumping in gutter or street catch basin is prohibited.

Any recipient of VARIANCE or DESIGN REVIEW must use exact materials, plans, & elevations as approved. No substitutions of materials or plans is allowed unless City approval is obtained prior to construction.

As property owner I declare that these proposed improvements ____ will ____will not create or contribute to the creation of a second unit.

Date _____ Property Owner(s) _____

FEES:

TOTAL FEES $

OWNER/BUILDER DECLARATION

I hereby affirm that I am exempt from the Contractor's License Law for the following reason :

___ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale . (Sec. 7044 (a)) , Business and Professions Code : The Contractor's License Law does not apply to an owner of the property who builds or improves thereon, and who does such work themselves or through their own employees, provided that such improvements are not intended or offered for sale .

___ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project .

___ I am exempt under Sec. _____, B. & P.C. for this reason : _____

SIGNATURE OF OWNER/BUILDER **DATE**

WORKER'S COMPENSATION DECLARATION

I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California and agree that if I should become subject to the Worker's Compensation provisions of the Labor Code, I shall forthwith comply with these provisions or this permit shall be deemed revoked.

SIGNATURE OF OWNER/BUILDER **DATE**

I hereby affirm that I have a certificate of consent to self - insure , or a certificate of Workers' Compensation Insurance, as required by Section 3700, Labor Code for the performance of the work for which this permit is issued .

SIGNATURE OF CONTRACTOR **DATE**

UNIFORM BUILDING CODE

Permit Expiration (Sec. 106.4.4). Every permit issued by the building official under the provisions of this code shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building or work authorized by such permit is suspended, abandoned, or not inspected at any time after the work is commenced for a period of 180 days. Before such work can be recommended, a new permit shall be first obtained to do so, and the fee therefore shall be one - half the amount required for a new permit for such work, provided no changes have been made or will be made in the original plans and specifications for such work, and provided further that such suspension or abandonedment has not exceeded one year . In order to renew action on a permit after expiration, the permittee shall pay a new full permit fee.

Any permittee holding an unexpired permit may apply for an extension of the time within which work may commence under that permit when the permittee is unable to commence work within the time required by this section for good and satisfactory reasons. The building official may extend the time for action by the permittee for a period not exceeding 180 days on written request by the permittee showing that circumstances beyond the control of the permittee have prevented action from being taken. No building permit shall be extended more than once.

OWNER - CONTRACTOR - AGENT

I CERTIFY THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION GIVEN IS TRUE AND CORRECT. I AGREE TO COMPLY WITH ALL LOCAL ORDINANCES AND STATE LAWS RELATING TO BUILDING CONSTRUCTION AND I MAKE THIS STATEMENT UNDER PENALTY OF LAW. I HEREBY AUTHORIZE REPRESENTATIVES OF THIS CITY/COUNTY TO ENTER UPON THE ABOVE MENTIONED PROPERTY FOR INSPECTION PURPOSES. DO NOT CONCEAL OR COVER ANY CONSTRUCTION UNTIL THE WORK IS INSPECTED AND THE INSPECTION IS RECORDED.

SIGNATURE OF OWNER/ CONTRACTOR/AGENT **DATE**

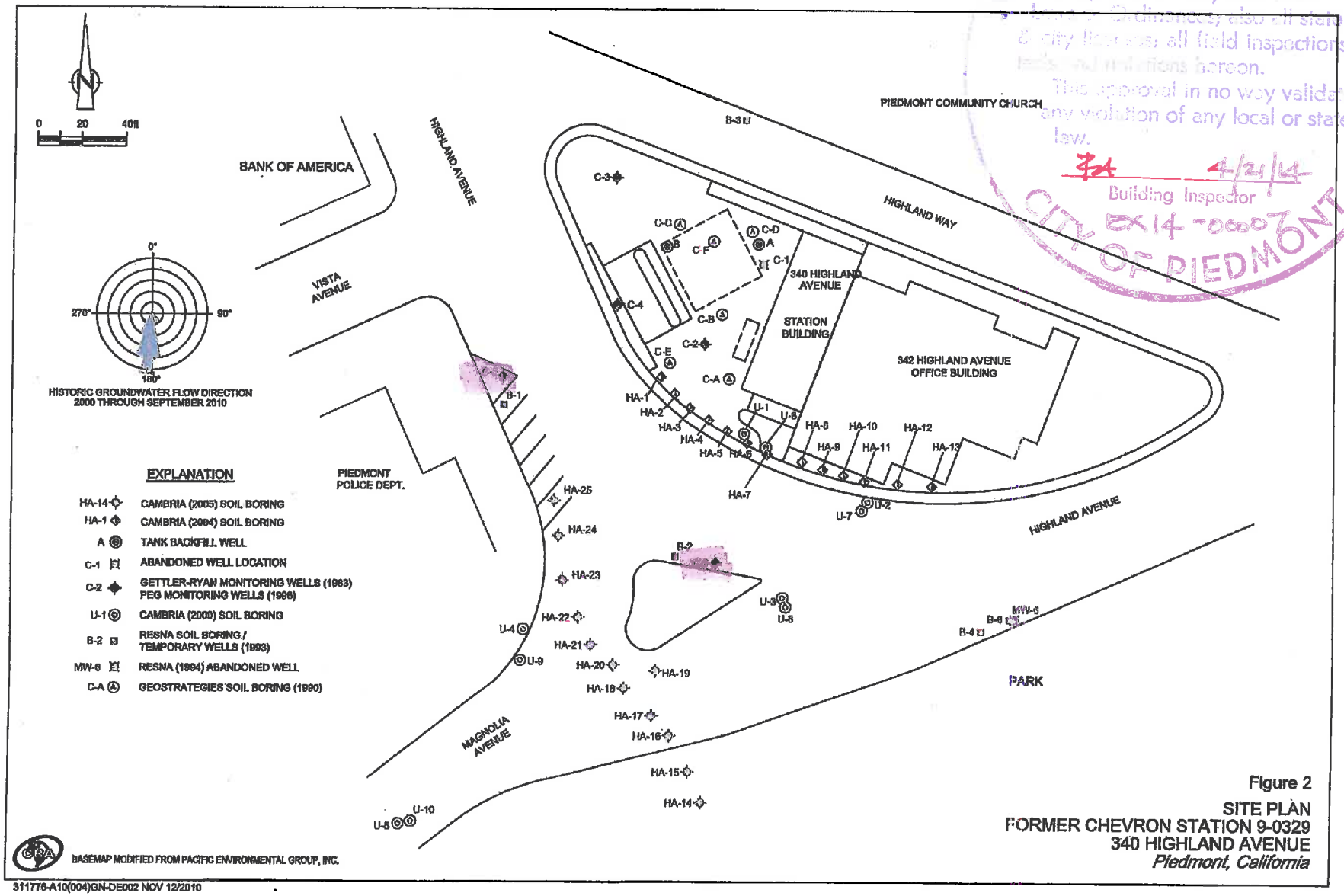


Figure 2
SITE PLAN
FORMER CHEVRON STATION 9-0329
340 HIGHLAND AVENUE
Piedmont, California

311776-A10(004)GN-DE002 NOV 12/2010

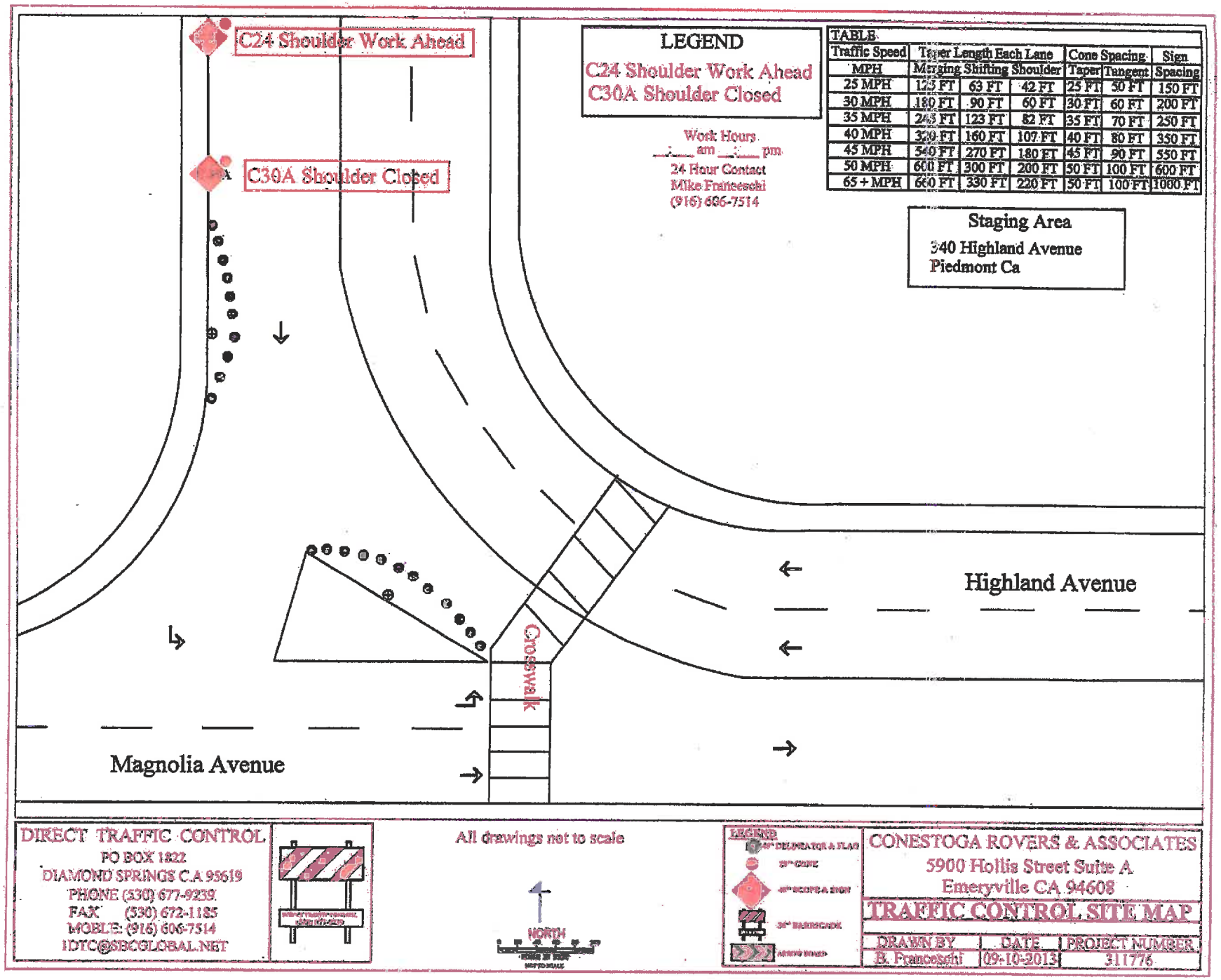


TABLE						
Traffic Speed	Taper Length Each Lane			Cone Spacing		Sign
MPH	Merging	Shifting	Shoulder	Taper	Tangent	Spacing
25 MPH	125 FT	63 FT	42 FT	25 FT	50 FT	150 FT
30 MPH	180 FT	90 FT	60 FT	30 FT	60 FT	200 FT
35 MPH	245 FT	123 FT	82 FT	35 FT	70 FT	250 FT
40 MPH	320 FT	160 FT	107 FT	40 FT	80 FT	350 FT
45 MPH	540 FT	270 FT	180 FT	45 FT	90 FT	550 FT
50 MPH	600 FT	300 FT	200 FT	50 FT	100 FT	600 FT
65 + MPH	660 FT	330 FT	220 FT	50 FT	100 FT	1000 FT

DIRECT TRAFFIC CONTROL
PO BOX 1822
DIAMOND SPRINGS C.A 95619
PHONE (530) 677-9239
FAX (530) 672-1185
MOBILE (916) 606-7514
IDTC@SBCGLOBAL.NET

All drawings not to scale

CONESTOGA ROVERS & ASSOCIATES
5900 Hollis Street Suite A
Emeryville CA 94608

TRAFFIC CONTROL SITE MAP

DRAWN BY	DATE	PROJECT NUMBER
B. Franceschi	09-10-2013	311776

90329

RECORDING REQUESTED BY
and when recorded return to:

Director of Public Works
City of Piedmont
120 Vista Avenue
Piedmont, CA 94611

CITY OF PIEDMONT
ENCROACHMENT PERMIT

The City of Piedmont ("City") permits Chevron Products Company (responsible well owner) who has operated from real property at 340 Highland Avenue Piedmont, California to [construct/maintain] two groundwater monitoring wells (C-5 and C-6). Each well will be drilled to an approx. depth of 20' and finished by inserting 2" Sch 40 PVC [on city property/in a city easement] subject to the following conditions: ***

1. Proper permits and approvals have been obtained from the City for the encroaching improvements. If no permit is required by the Piedmont Building Code or Chapter 17, drawings of the improvement have been submitted.

2. No change in the encroaching improvement may be made without the written consent of the Director of Public Works prior to alteration.

3. The City retains all existing rights in the real property being encroached upon by the property owner.

4. Subject to the provisions of Section 6 below, City has the right to require the property owner to remove all or part of the improvements encroaching upon city property by giving at least thirty (30) days' prior written notice to property owner at the property owner's address.

***See Attachment A for further details concerning well installation and sampling protocol.

5. If the property owner fails to remove the improvements as set forth in the written notice within thirty (30) days after the date the notice was mailed or personally delivered by the City to the property owner at the above address, the City may then remove the improvements at City's expense. Whenever the City removes improvements after the property owner fails to do so within the thirty-day period described above, the property owner shall reimburse the City for all costs of removal incurred by the City.

6. If the Director of Public Works determines that circumstances in or near the city property constitute an immediate threat to public health or safety, the City shall have the right to remove so much of the encroaching structure as is deemed necessary by the City without prior notice to property owner. In such a case, the City shall give the property owner written notice of the decision to remove some or all of the encroachment within 24 hours after commencement of the removal process. The notice shall describe the reasons for the emergency action. All costs of emergency removal by the City shall be reimbursed to the City by the property owner.

7. Costs of removal borne by the City for which the property owner fails to reimburse the City shall constitute a special assessment against the property. The City may record a notice of lien against the property for the amount of the assessment, which shall be collected in the same manner as a lien for the abatement of a nuisance as set forth in Section 6.16.2 of the Piedmont City Code and any successor statutes or ordinances. In addition, after being recorded, the lien may be foreclosed by judicial or other sale in the manner and means provided by law. The City shall also have the right to collect such sums by any other means provided by law. Property owner shall pay to the City an amount equal to the costs incurred by the City in efforts to collect the amounts due under this agreement, including attorneys' fees.

8. The City is not responsible for replacing or reimbursing property owner for any structures or improvements or anything else removed from encroaching on the City real property.

9. Property owner shall be responsible for any damage caused to the City property or easement by anything whatsoever placed upon City property or easement by or on behalf of property owner. Property owner further agrees to hold the City of Piedmont harmless and defend the City at the sole expense of property owner, against any claims, damages, injuries or lawsuits whatsoever from other persons or entities relating to damages or injuries caused by or resulting from the placing of anything over the City real property or easement by or on behalf of property owner.

10. The terms of this permit are binding upon the property owner's assigns and successors in interest.

Date: CITY OF PIEDMONT

Date: 10-4-96 :

RESPONSIBLE WELL OWNER

Chevron Products Company Philip R Briggs

PROPERTY OWNER

Chevron Products Company Philip R Briggs

State of California)
County of Alameda)

On _____ before me, the undersigned City Clerk of the City of Piedmont, personally appeared _____ _____ personally known to me to be the person(s) whose name(s) is are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

_____

Ann Swift, City Clerk
City of Piedmont

STATE OF CALIFORNIA)
County of _____)

On _____, before me the undersigned, a Notary Public for the State of California,

personally appeared _____
personally known to me or proved to me on the basis of satisfactory evidence to be the person(s) whose name is subscribed to the within instrument, and acknowledged that he/she executed the same.

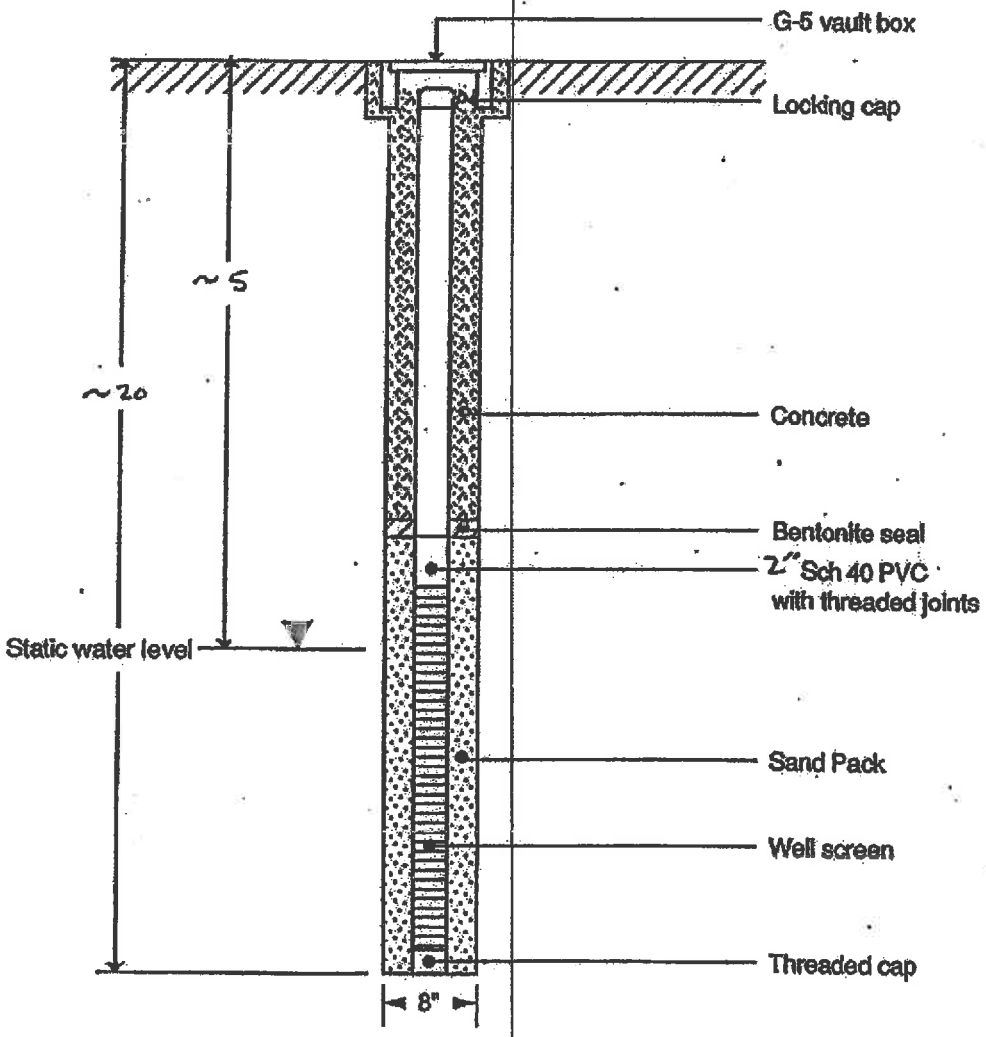
_____
NOTARY PUBLIC FOR CALIFORNIA

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

Groundwater Monitoring Well Installation

The soil borings will be drilled using 8-inch hollow-stem auger drilling equipment and logged by a Pacific Environmental Group, Inc. geologist using the Unified Soil Classification System and standard geologic techniques. Total depth of the borings is anticipated to be 20 feet and will be completed by inserting 2 inch Sch 40 PVC. Soil samples for logging will be collected at 5-foot depth intervals using a California-modified split-spoon sampler. The sampler will be driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. Soil samples for chemical analysis will be retained in brass liners, capped with Teflon® squares and plastic end caps, taped, and sealed in clean zip-lock bags. The samples will be placed on ice for transport to the laboratory accompanied by chain-of-custody documentation. Down-hole drilling and sampling equipment will be steam-cleaned following the completion of each soil boring. Down-hole sampling equipment will be washed in a tri-sodium phosphate solution between samples.

Each of the wells will finished flush with ground surface and secured by a traffic rated G-5 Vault Box. Monitoring of the wells will be performed on a quarterly basis.



NOT TO SCALE

PACIFIC ENVIRONMENTAL GROUP, INC.

Chevron Station
340 Highland Ave
Piedmont, CA

WELL DETAIL

FIGURE: 1

PROJECT: 320-1601A

State of California

City of San Ramon

County of Contra Costa

On October 4, 1996, before me, Mary Joseph McLaughlin, a Notary Public in and for the State of California, personally appeared Philip R. Briggs, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he or she executed the within instrument in his or her authorized capacity, and that by his or her signature on the within instrument, the person or the entity upon behalf of which the person acted executed the within instrument.

WITNESS my hand and official seal.

Signature Mary Joseph McLaughlin

Attachment C

Standard Field Procedures

STANDARD FIELD PROCEDURES FOR WELL AND VAPOR PROBE DESTRUCTION

This document presents standard field procedures for properly destroying groundwater monitoring wells. The objective of well destruction is to destroy wells in a manner that is protective of potential water resources. The two procedures most commonly used are pressure grouting and drilling out the well. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Pressure Grouting

Pressure grouting consists of injecting neat Portland cement through a tremie pipe under pressure to the bottom of the well. The cement is composed of about five gallons of water to a 94 pound sack of Portland I/II Cement. Once the well casing is full of grout, it is pressurized for five minutes by applying a pressure of 25 pounds per square inch (psi) with a grout pump. The well casing can also be pressurized by extending the well casing to the appropriate height and filling it with grout. In either case, the additional pressure allows the grout to be forced into the sand pack. After grouting the sand pack and casing, the well vault is removed and the area resurfaced or backfilled as required.

Well Drill Out

When well drill out is required, the well location is cleared for subsurface utilities and a hollow-stem auger (or other appropriate) drilling rig is used to drill out the well casing and filter pack materials. First, drill rods are placed down the well and used to guide the augers as they drill out the well. A guide auger is used in place of the drill rods if feasible. Once the well is drilled out, the boring is filled with Portland cement injected through the augers or a tremmie pipe under pressure to the bottom of the boring. The well vault is removed and the area resurfaced or backfilled as required.

Vapor Probe Destruction

Vapor probes are destroyed by manually removing the tubing from the ground. The probe construction material (sand pack and bentonite seal) are removed by either hand auger, air knife, or drill rig. The probe tubing and construction materials are stored in DOT approved containers for waste profiling and disposal. The open borings are backfilled with Portland Type I/II cement through a tremie pipe at the bottom of the boring. The probe vault is removed and the area resurfaced as required to match the existing surface conditions.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles and composited at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples in addition to any analytes required by the receiving disposal facility. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.