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2:15 pm, Nov 13, 2007

Alameda County  
Environmental Health

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November 13, 2007

Mr. Jerry Wickham  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Re: **Monitoring Well and Vapor Point Installation Work Plan**  
Former Shell Service Station  
2703 Martin Luther King Jr. Way  
Oakland, California  
SAP Code 129449  
Incident No. 97093397

Dear Mr. Wickham:

Conestoga-Rovers & Associates (CRA) prepared this work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell). This work plan was requested in a September 21, 2007 Alameda County Environmental Health (ACEH) Department letter to Shell. The work will be performed in accordance with ACEH and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) guidelines.

## **SITE LOCATION AND DESCRIPTION**

The site is a former service station located on the northwest corner of Martin Luther King Jr. Way and 27<sup>th</sup> Street in a commercial and residential area of Oakland, California (Figure 1). A Shell service station operated on the property from approximately 1959 to 1979. The site layout consisted of a service station building, two dispenser islands, three underground fuel storage tanks (USTs), associated product piping, and a waste oil UST (Figure 2). The fueling equipment associated with the former Shell service station was removed after Shell terminated operations at the site. In 1979, Acme West Ambulance Company (Acme) purchased the site and installed a 2,000-gallon UST for gasoline storage. Acme sold the property to Auto-Tech West (ATW) in 1986. According to an August 25, 1986 ACEH inspector's report, ATW reportedly never used the UST, although a 150-gallon aboveground waste oil tank, a 15-gallon carburetor cleaner tank, and a parts cleaning tank with solvent were reportedly in use. Currently, the site is occupied by ATW and is utilized as an automotive repair shop. The current site operator uses portions of the property and the wooden car port for storage of such things as non-operational automobiles, portable gasoline containers, tires, and drums used for waste oil collection and storage.

A detailed discussion of the project investigation history was presented in CRA's August 27, 2007 *Plume Delineation and Soil Vapor Sampling Report*.

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## TECHNICAL RATIONALE

- Groundwater monitoring wells are recommended to confirm plume delineation to the northwest, west, and southwest of the site. Five groundwater monitoring wells (MW-9, MW-10, MW-11, MW-13, and MW-15) will be installed.
- Benzene concentrations in soil vapor collected from vapor probe VP-6 exceed the RWQCB Environmental Screening Level (ESL) for potential vapor intrusion from soil vapor to indoor air. One vapor probe (VP-9) will be installed north of VP-6 to evaluate the extent of benzene in soil vapor between vapor probe VP-6 and the nearest residence.
- Benzene concentrations in shallow groundwater collected from boring CPT-10 exceed the RWQCB Environmental Screening Level (ESL) for potential vapor intrusion from groundwater to indoor air. One vapor point (VP-10) will be installed in the vicinity of boring CPT-10 to monitor soil vapor concentrations.
- Right-of-entry agreements will be required for all of the proposed work.

## WORK TASKS

**Access Negotiations:** Shell will need to negotiate access to several offsite properties for the proposed work. Current vapor probe VP-6 is near the intersection of the site parcel and two additional parcels. CRA recommends contacting property owners for both adjoining parcels. Previous attempts to negotiate access with these property owners have been unsuccessful, and CRA may request the aid of ACEH in negotiating access for the installation of vapor probe VP-9.

**Permits:** Once access agreements are in place, CRA, on behalf of Shell, will obtain the appropriate drilling permits from Alameda County Public Works Department.

**Site Safety Plan:** CRA will prepare a site safety plan to protect site workers.

**Utility Clearance:** CRA will mark proposed drilling locations, and the locations will be cleared through Underground Service Alert prior to drilling. Additionally, a private utility locating service will be used to further assess whether subsurface utilities or structures are present at each proposed location prior to breaking ground.

**Site Investigation:** Five well borings (MW-9, MW-10, MW-11, MW-13, and MW-15) and two vapor probe borings (VP-9 and VP-10) are proposed at the locations shown on Figure 3. A CRA geologist will supervise the drilling, and soil samples will be collected from the well borings at 5-foot intervals, and from the vapor probe borings continuously, for soil description, and screening for organic vapors using a photo-ionization detector (PID). CRA will prepare an exploratory boring log for each well and vapor



probe boring, and PID measurements will be recorded on the logs. No soil samples are anticipated to be submitted for chemical analysis because numerous onsite soil samples have previously been collected from this site, offsite soil impact is not anticipated, and because groundwater is relatively shallow. If, however, impacted shallow soil is observed during the hand clearing activities, a soil sample will be collected for chemical analysis.

**Monitoring Well Installation:** Well construction specifications will be determined in the field based on the nature of subsurface material encountered. It is anticipated that perforated intervals of the proposed wells will extend from 5 to 20 fbg using 0.020-inch screen. A sand filter-pack will be placed from the bottom of the well up to two feet above the top of the well screen followed by a two-foot thick bentonite seal and cement grout to grade. Each well located in an area of vehicular traffic will be secured with a locking cap under a traffic-rated well box. At locations where traffic is not a concern, the wells may be finished above grade, protected by a locking stovepipe monument.

**Well Development and Sampling:** Blaine Tech Services, Inc. (Blaine) of San Jose, California will develop the new groundwater monitoring wells prior to sampling. After well development, Blaine will sample the site groundwater monitoring wells according to the existing sampling schedule and submit the samples to a State of California certified laboratory for chemical analyses.

**Wellhead Survey Activities:** Following monitoring well installation, a licensed surveyor will survey wellhead elevations relative to mean sea level and the latitude and longitude of each well location.

**Groundwater Chemical Analyses:** Groundwater samples from the new groundwater monitoring wells will be analyzed for total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015M or 8260B, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260B. A standard two-week turn-around time will be requested for laboratory results.

**Soil Vapor Probe Installation:** The vapor probes will be installed using hand auger equipment. One interval will be screened at each location at approximately 4.75 to 5.0 fbg. If encountered, zones of higher permeability will be targeted for screening. The soil will be screened with a photo-ionization detector (PID) and the PID readings will be noted on the boring logs.

Each probe will consist of 0.25-inch inside diameter Teflon tubing, with no greater than 3-inch lengths of perforated screen. Each point will use a 3-inch screen interval manufactured by Geoprobe attached to the Teflon tubing. One-inch diameter tremie pipe will be used to install the vapor probe to ensure appropriate placement of the screen interval. A clean, fine-grained silica sand filter pack will be installed



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from 1.5-inches below to 1.5-inches above the screened interval. Three inches of bentonite pellets will be placed on top of the filter pack sand (4.25 to 4.5 fbg) and the remaining boring will be filled with bentonite slurry. Each vapor probe will be sealed from the surface using a traffic-rated well box, in the same manner described for monitoring wells.

**Soil-Vapor Sampling:** At least two weeks after probe installation, soil vapor samples will be collected from each sampling point in summa canisters according to CRA's vapor sampling protocol. A tracer gas will be used at each sampling location to insure that the samples are not representative of ambient air. For sampling, a flow meter/controller will regulate the flow of air extracted from the tubing by a purge pump. Approximately three tubing volumes will be purged from each vapor point over a period of approximately 10 minutes prior to sample collection. Immediately after purging, soil-vapor samples will be collected over an approximate 30-minute period using 1-liter Summa canisters.

**Soil-Vapor Chemical Analyses:** The vapor samples will be kept at ambient temperature and submitted under chain-of-custody to a state certified analytical laboratory for analysis. The samples will be analyzed for BTEX by EPA Method TO-14A Modified and for TPHg by EPA Method TO-3 Modified.

**Report Preparation:** Following the receipt of analytical results from the laboratory, CRA will prepare a written report which will include the site history, the field procedures, tabulated laboratory results, figures showing sample locations, boring logs, findings, and conclusions. The certified laboratory reports and chain-of-custody documentation will be included with the report.

## CLOSING

If you have any questions regarding the contents of this document, please call Ana Friel at (707) 268-3812.

Sincerely,  
**Conestoga-Rovers & Associates**

Ana Friel, PG  
Project Manager





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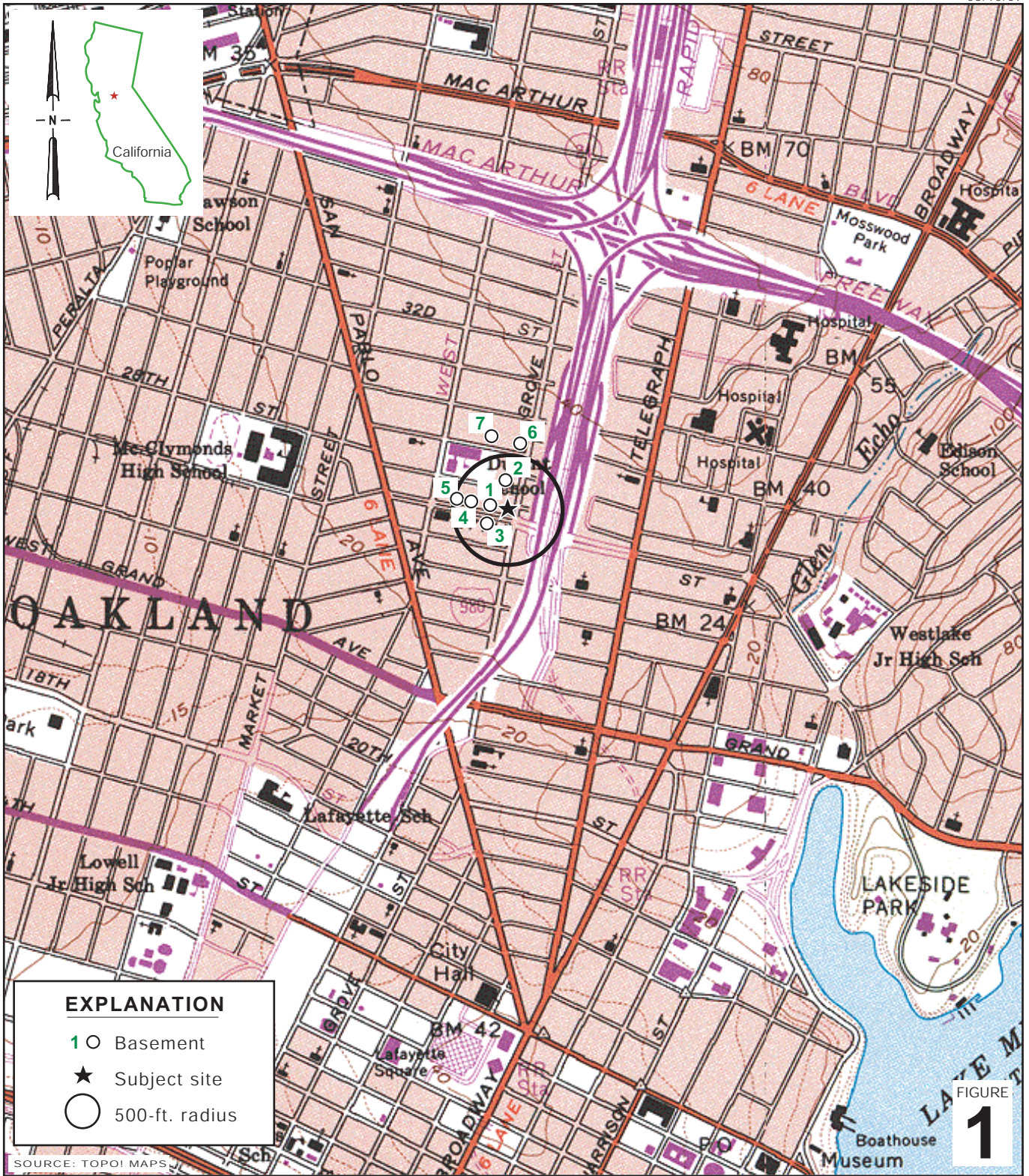
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Figures:           1 - Vicinity Map  
                      2 - Site Plan  
                      3 - Proposed Monitoring Well and Vapor Probe Location Map

cc:    Denis Brown, Shell Oil Products US  
       Rodney & Janet Kwan, property owners of subject site  
       Monique Oates, property owner at 670 27<sup>th</sup> Street in Oakland  
       Scott Merillat, property owner at 664 27<sup>th</sup> Street in Oakland

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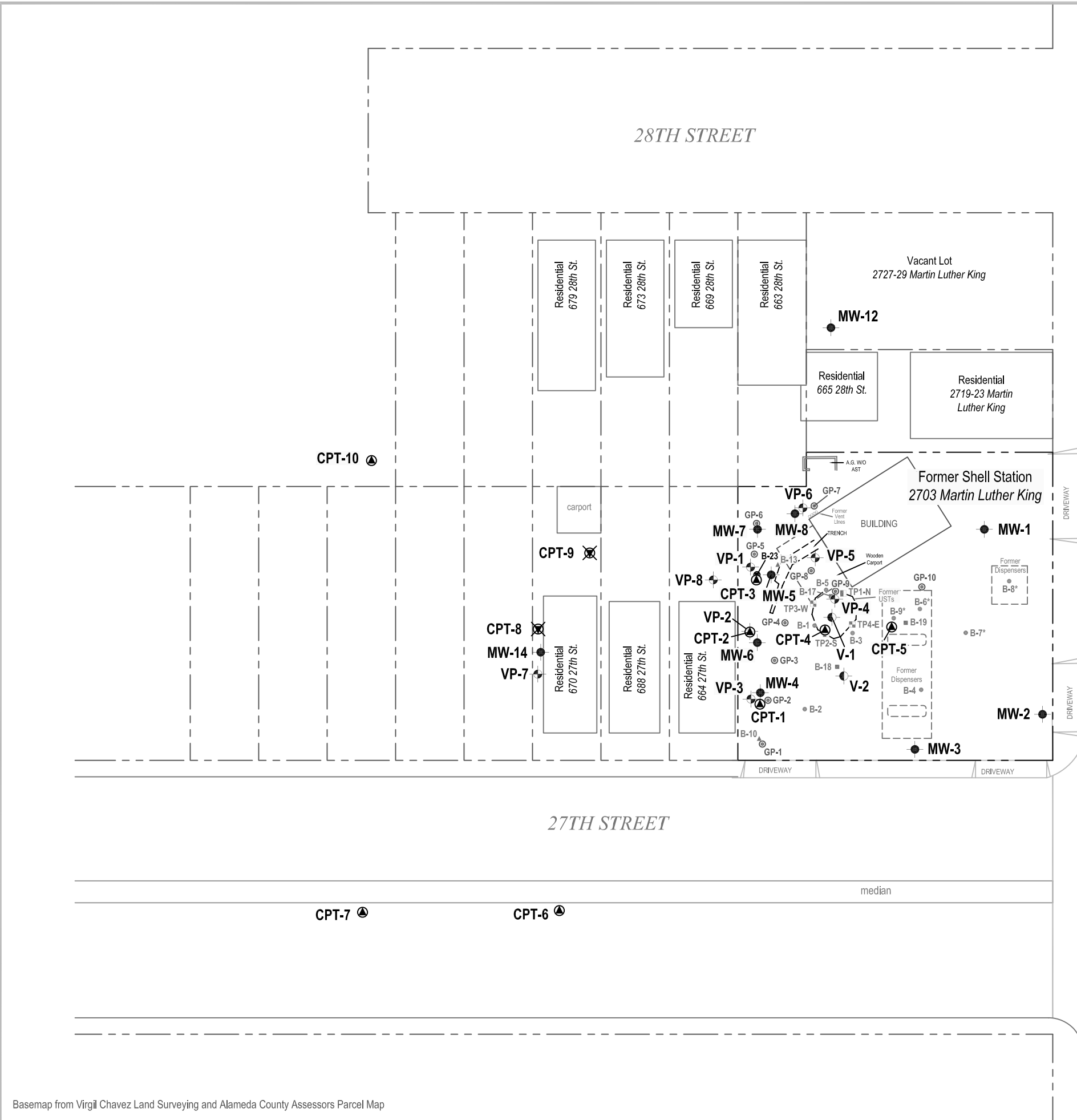
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 Oakland, California



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**Vicinity Map**

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EXPLANATION	
VP-7	Vapor probe location (5-6/07)
CPT-6	CPT boring location (5-6/07)
CPT-8	Attempted CPT boring location (5-6/07)
CPT-1	CPT boring location (10/06)
VP-1	Vapor probe location (1/06)
V-1	Soil vapor well location (7/96)
MW-1	Monitoring well location (7/96-2/06)
B-23	Soil boring location (1/06)
GP-1	Soil boring location (8/05)
B-20	Soil boring location (4/02)
B-17	Soil boring location (11/00)
B-10	Soil boring location (7/96)
TP3-W	UST excavation samples (3/96)
B-1	Soil boring location (5/95)
*	Not surveyed
TP1-N	UST excavation samples (10/94)

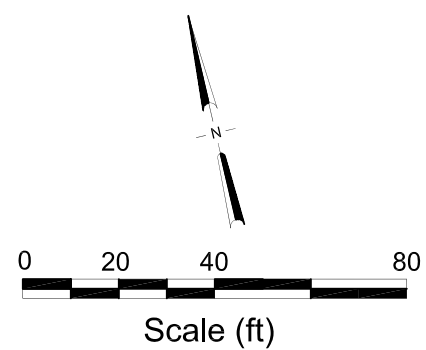


FIGURE 2

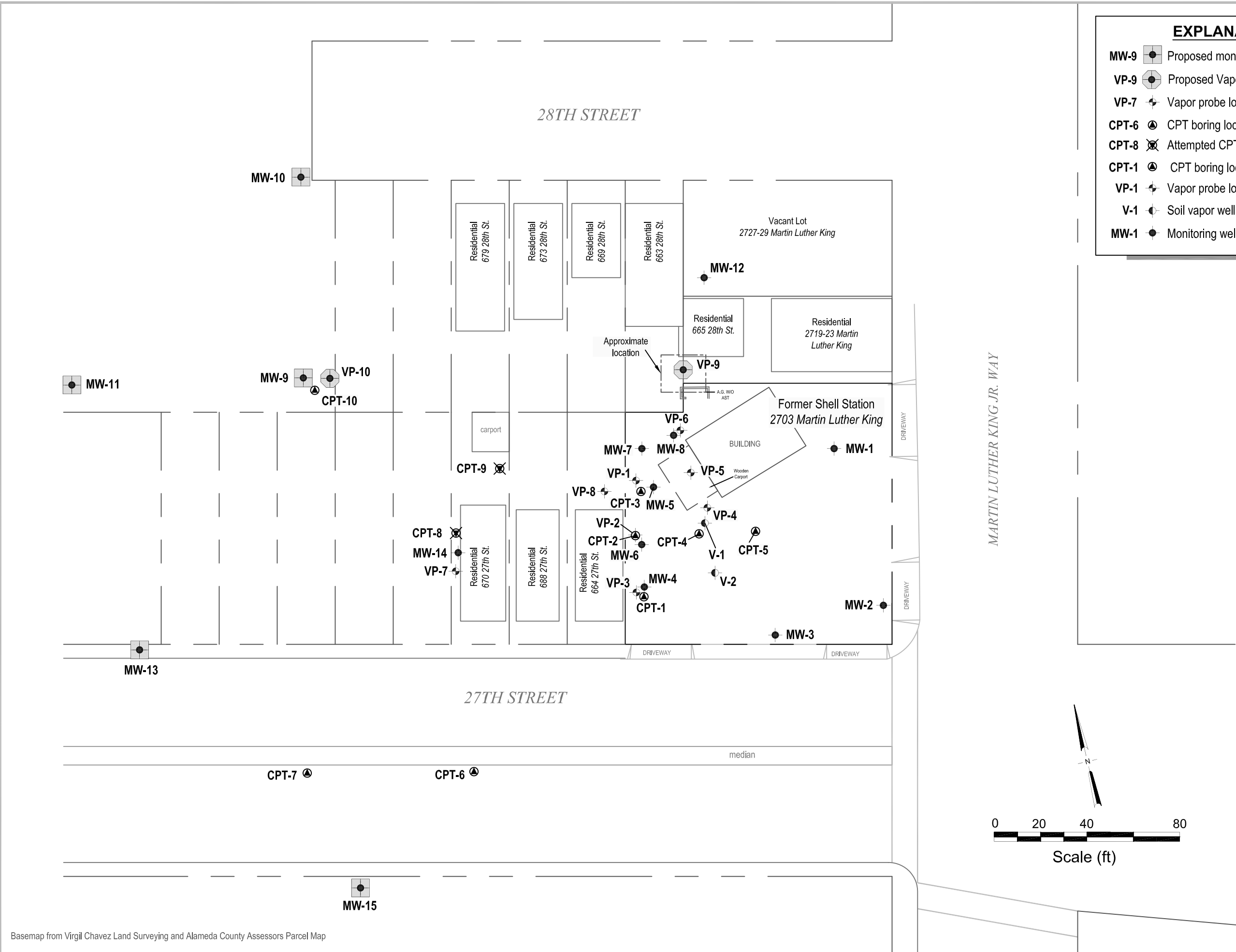
Basemap from Virgil Chavez Land Surveying and Alameda County Assessors Parcel Map

Site Plan



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 2703 Martin Luther King Jr Way  
 Oakland, California

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**EXPLANATION**

- MW-9 Proposed monitoring well location
- VP-9 Proposed Vapor Probe location
- VP-7 Vapor probe location (5-6/07)
- CPT-6 CPT boring location (5-6/07)
- CPT-8 Attempted CPT boring location (5-6/07)
- CPT-1 CPT boring location (10/06)
- VP-1 Vapor probe location (1/06)
- V-1 Soil vapor well location (7/96)
- MW-1 Monitoring well location (7/96-2/06)

**Proposed Monitoring Well and Vapor Probe Location Map**



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FIGURE **3**

Basemap from Virgil Chavez Land Surveying and Alameda County Assessors Parcel Map