

Xtra OIL COMPANY

2307 PACIFIC AVENUE
ALAMEDA, CA 94501
(510) 865-9503 FAX (510) 865-1889

December 15, 2016

Ms. Karel Detterman
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RECEIVED

By Alameda County Environmental Health 11:41 am, Dec 16, 2016

SUBJECT: SITE CONCEPTUAL MODEL CERTIFICATION
County LOP Case Number RO 0002990
Auto Depot
4171 Broadway
Oakland, California

Dear Ms. Detterman:

You will find enclosed one copy of the following site conceptual model prepared by P&D Environmental, Inc. for the subject site

- Site Conceptual Model dated December 15, 2016 (document 0398.R5).

I declare under penalty of perjury that the contents and conclusions in the document are true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to contact me at (510) 865-9506.

Sincerely,

Xtra Oil Company



Keith Simas

Enclosure

0398.L10

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

December 15, 2016
Report 0398.R5

Mr. Ted Simas
Mr. Keith Simas
Xtra Oil Company
2307 Pacific Ave.
Alameda, CA 94501

SUBJECT: SITE CONCEPTUAL MODEL
County LOP Case Number RO 0002990
Auto Depot/Xtra Oil
4171 Broadway
Oakland, California

Gentlemen:

P&D Environmental, Inc. (P&D) has prepared this Site Conceptual Model (SCM) for the subject site in response to a request from Ms. Karel Detterman of the Alameda County Department of Environmental Health (ACDEH) in an email dated May 29, 2015 requesting that a SCM be prepared in tabular format for the subject site.

A 1996 U.S. Geological Survey topographic map showing the location of the subject site is attached with this report as Figure 1; a detail of a 1993 U.S. Geological Survey topographic map with a 2,000-foot radius circle around the site and wells identified in P&D's Sensitive Receptor Survey Report dated December 14, 2016 (document 0398.R4) is attached with this report as Figure 2; a Site Map that shows site features and borehole and soil gas well locations is attached as Figure 3; Figures showing groundwater concentrations of Total Petroleum Hydrocarbons as Diesel, Total Petroleum Hydrocarbons as Gasoline, benzene, and naphthalene are attached with this report as Figures 4 through 7; and a Site Map Showing Soil Gas Well Location and Petroleum and VOC Concentrations in Soil Gas is attached as Figure 8.

DISTRIBUTION

A copy of this report will be uploaded to the ACDEH website, in accordance with ACDEH requirements. In addition, a copy of this report will be uploaded to the GeoTracker database.

LIMITATIONS

This report was prepared solely for the use of the Xtra Oil Company. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections;

interviews with site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgment based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between boreholes and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

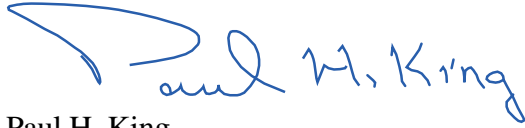
This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgment based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

December 15, 2016
Report 0398.R5

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.



Paul H. King
Professional Geologist #5901
Expires: 12/31/17



Attachments:

Site Conceptual Model (Tabular Format)

Figure 1 - Site Location Map

Figure 2 - Site Location Map Detail Showing Wells Located Within a 2,000-Foot Search Radius

Figure 3 - Site Map Showing Site Features and Borehole and Soil Gas Well Locations

Figure 4 - Site Vicinity Aerial Photograph Showing TPH-D Groundwater Concentrations

Figure 5 - Site Vicinity Aerial Photograph Showing TPH-G Groundwater Concentrations

Figure 6 - Site Vicinity Aerial Photograph Showing Benzene Groundwater Concentrations

Figure 7 - Site Vicinity Aerial Photograph Showing Naphthalene Groundwater Concentrations

Figure 8 - Site Map Showing Soil Gas Well Location and Petroleum and VOC Concentrations in Soil Gas

PHK/sjc
0398.R5

Site Conceptual Model					
Former Auto Depot					
4171 Broadway					
Oakland, California					
SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap	How to Address Data Gap
Geology & Hydrogeology	Regional	Based on review of regional geologic maps from U. S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E. J. Helley and K. R. Lajoie, 1979, the subject site is underlain by Late Pleistocene Alluvium (Opa), which is described as weakly consolidated slightly weathered poorly sorted irregularly interbedded clay, silt, sand, and gravel. The south end of a southwesterly trending interfluvial ridge is located immediately to the east of the subject site. The interfluvial ridge is interpreted to prevent the easterly flow of groundwater and to result in a southwesterly groundwater flow at and near the subject site.	n/a	None	n/a
	Site	<p>Geology: Other than the former UST pit backfill materials, the subsurface materials encountered in boreholes at the site consisted almost entirely of clay, silty clay, and sandy clay with the following exceptions:</p> <ul style="list-style-type: none"> o B5 - Gravelly clayey sand from 13.0 to 13.5 ft. o B6 - Clayey sand from 14.0 to 15.5 ft. o B7 - Clayey sand from 10.0 to 12.0 ft. o B8 - Gravelly clayey sand from 8.5 to 11.5 ft., and silty fine sand from 19.8 to 20.0 ft. o B9 - Silty fine sand from 8.0 to 12.0 ft., and from 19.5 to 20.0 ft. o B10 - Gravelly clayey sand from 11.0 to 12.0 ft. o B10A - Gravelly clayey sand from 10.5 to 12.0 ft., and silty fine sand from 19.5 to 20.0 ft. o B11 - Silty fine sand from 11.5 to 12.5 ft., and from 19.5 to 20.0 ft. o B12 - Clayey fine sand from 20.0 to 21.0 ft. o B13 - Silty fine sand from 8.0 to 14.0 ft., and from 19.5 to 20.0 ft. o B14 - Gravelly clayey sand from 12.5 to 14.0 ft., and silty sand from 16.5 to 17.0 ft. o B15 - Gravelly clayey sand from 8.0 to 8.5 ft., and silty fine sand from 21.5 to 22.0 ft. <p>Hydrogeology: Groundwater was encountered in continuously cored borehole B1 through B3 and B5 through B7 at depths of 7.0, 7.0, 12.0, 20.0, 14.0, and 23.0 feet bgs, respectively during drilling on August 22, 2014. Following placement of temporary slotted 1-inch diameter PVC pipe into all of the boreholes, groundwater levels were subsequently measured in boreholes B1 through B3 and B5 through B7 after completion of drilling at depths of 7.4, 7.1, 12.1, 10.6, 13.9 and 7.5 feet bgs, respectively. Groundwater was not encountered in continuously cored borehole B4 during drilling to a depth of 25.0 feet bgs on August 22, 2014. A temporary 1-inch diameter slotted PVC pipe was placed in the borehole and the casing was dry at the end of field activities on August 22, 2014. On August 23, 2014 groundwater was measured in borehole B4 at a depth of 21.3 feet bgs. Groundwater was not encountered during drilling in continuously cored borehole B4A. Groundwater was encountered during drilling on June 2 and 3, 2015 in continuously cored boreholes B8 through B10, B10A, and B11 through B15 at depths of 19.5, 19.5, 11.0, 19.5, 19.5, 20.0, 19.5, 16.5</p>	See P&D's September 30, 2014 Subsurface Investigation Report (document 0398.R1), and P&D's December 12, 2016 Subsurface Investigation Report (document 0398.R2).	None	n/a
		and 21.5 feet bgs, respectively. Following placement of temporary slotted 1-inch diameter PVC pipe into all of the boreholes, groundwater levels were subsequently measured in boreholes B8 through B10, B10A, and B11 through B15 after completion of drilling at depths of 9.6, 12.9, 7.7, 10.6, 9.5, 6.5, 10.5, 8.9, and 13.5 feet bgs, respectively. Review of a nearby LUST case located approximately 1,000 feet to the southeast of the subject site shows that the regional groundwater flow ranges from west-southwest to the southwest.			
Surface Water Bodies		Nearby water surface bodies that are located downgradient from the subject property include Glen Echo Creek, located approximately 3,000 feet to the southeast of the site and Lake Merritt, approximately 7,200 feet to the south. (see Figure 1).	Figure 1	None	n/a
Nearby Wells		P&D performed a 2,000-foot radius well survey and sensitive receptor survey for the subject site documented in P&D's Sensitive Receptor Survey Report dated December 14, 2016 (document 0398.R4). Other than shallow monitoring wells, P&D identified 9 wells in the ACPWA database files within the survey radius, all of which were deeper than 40 feet with the exception of one well that had an unknown depth and one well that was identified as 23 feet deep. The wells were identified as 5 EBMUD cathodic protection wells, 3 irrigation wells, and one domestic well. One of the irrigation wells was identified by ACPWA as being a dry irrigation well. RGA Environmental, Inc. (RGA) also performed a 2,000-foot radius well survey and sensitive receptor survey for the adjacent 4145 Broadway Downtown Toyota property with the results documented in RGA's Well Survey Report dated February 23, 2010 (document 0271.R2). RGA identified 7 wells in the ACPWA database files deeper than 40 feet within the survey radius; 5 EBMUD cathodic protection wells, and 2 irrigation wells. RGA also identified 1 well in the DWR database files deeper than 40	Figure 2	None	n/a
		feet (one of the two irrigation wells identified in the ACPWA database files). Due to the distance of the identified wells and sensitive receptors from the site and the known extent of the site groundwater petroleum plume, none of the wells or sensitive receptors identified within 2,000 feet of the site are considered to be impacted by petroleum hydrocarbon contamination associated with the site.			
Potential Source(s)	On Site	Underground Storage Tanks and associated Piping and Dispensers and Remote Fill Ports: The former gas station six underground storage tanks operating from an unknown time (City of Oakland website says construction date was 1964) was until their removal in 1986. The tanks removed were one 12,000-gallon Diesel UST, four 10,000-gallon Gasoline USTs, and one 500-gallon Waste Oil UST. P&D also identified the locations of former dispenser islands, existing subsurface piping that used to connect to the former USTs and the dispenser islands, and remote fill ports in the sidewalk on the south side of Garnet Street that used to connect to the former fuel USTs.	Figure 3 and see P&D's September 30, 2014 Subsurface Investigation Report (document 0398.R1).	Secondary source removal.	Remove and dispose of piping at the time that contaminated soil and free product in former diesel UST pit is removed.
Release Occurrence	USTs	No mention on the conditions of the former USTs or mention of groundwater in the excavation pits in December 31, 1986 UST removal and disposal report. TPH-D, TPH-G, and benzene concentrations detected in soil and groundwater are consistent with releases from the former diesel and gasoline USTs and from the associated dispensers and piping and remote fill ports.	See Aqua Science Engineers Inc's December 31, 1986 Removal and Disposal of One Underground Diesel Tank, Five Underground Gasoline Tanks, and One Underground Waste Oil Tank Report.	None	n/a

Site Conceptual Model					
Former Auto Depot					
4171 Broadway					
Oakland, California					
SCM Element	SCM Sub-Element	Description	Figures & Tables Reference	Data Gap	How to Address Data Gap
Constituents of Concern		The constituents of concern are Total Petroleum Hydrocarbons as Diesel (TPH-D), Total Petroleum Hydrocarbons as Gasoline (TPH-G), benzene, toluene, ethylbenzene, and xylenes (BTEX), and naphthalene. MTBE has not been detected in any soil or groundwater or soil gas samples to date. Soil samples collected from the former fill port, former dispenser, and boreholes B1 through B7 were analyzed for total lead and based on a maximum detected concentration of 17 mg/kg lead is not considered a constituent of concern.	See P&D's September 30, 2014 Subsurface Investigation Report (document 0398.R1), and P&D's December 12, 2016 Subsurface Investigation Report (document 0398.R2).	None	n/a
Nature and Extent of Impacts	Impacts in Soil	Based on soil sample results to date, petroleum hydrocarbon contamination (including BTEX and other associated petroleum VOCs) in soil appears to be limited to between the depths of approximately 4 and 12 feet below the ground surface (bgs), and is encountered at concentrations exceeding ESL values predominantly at the remote fill ports and dispenser islands. None of the detected benzene, ethylbenzene, or naphthalene concentrations exceed Table 1 LTCP values for direct exposure or volatilization to outdoor air in a commercial/industrial land use scenario, or for utility worker exposure.	See P&D's December 12, 2016 Subsurface Investigation Report (document 0398.R2).	Need further horizontal delineation in soil in the vicinity of areas where soil ESLs are exceeded.	Drill boreholes and collect soil samples at locations surrounding the site.
		Soil samples were also analyzed for lead, MTBE, and other VOCs (including HVOCs), and are not considered constituents of concern, except for BTEX and naphthalene. Additionally, soil samples collected from borehole B4A (adjacent to former waste oil UST) were analyzed for SVOCs (including PAHs) which were not detected.			
	Impacts in Groundwater	Groundwater at the site is impacted by petroleum hydrocarbons and associated VOCs (BTEX and naphthalene) and the contaminant plume is currently undefined to the south, southeast, and north of the site.	Figures 4 through 7	Define groundwater plume to the south, southeast, and north.	Drill boreholes and collect groundwater samples at locations surrounding the site.
		Free product was observed on the groundwater encountered in borehole B1 in the former diesel UST pit and sheen was observed on the groundwater sample collected from borehole B10 located adjacent to the former diesel UST pit. Sheen was also observed at the time of groundwater sample collection at boreholes B2 and B3 located in the former gasoline UST pit. The extent of free product in the vicinity of the former diesel UST pit was defined by boreholes B8, B9, and B11. The extent of sheen in the vicinity of the former gasoline UST pit was defined by boreholes B4A, B12, and B15.	n/a	None	n/a
	Impacts in Vapor Phase	Permanent soil gas well SG1 was installed adjacent to the former Gasoline UST pit and adjacent to the existing portion of the Downtown Toyota building that is located to the west of the subject site. TPH-G, TPH-D, and benzene were detected at concentrations of 140,000,000, 2,400,000, and 19,000 ug/m ³ , respectively. Ethylbenzene and naphthalene were not detected. None of the detected soil gas concentrations exceed the LTCP Appendix 4 soil gas values for commercial/industrial land use with a bioattenuation zone. Conditions encountered at and near soil gas well SG1 indicate that a bioattenuation zone is present. Soil gas ESL values are exceeded, requiring further investigation of the extent of soil gas concentrations that could result in unacceptable levels of risk and hazard associated with vapor intrusion.	Figure 8	Potential vapor intrusion.	Install a Vapor Pin inside the Downtown Toyota building adjacent to SG1 and collect a sub-slab soil gas sample.
Migration Pathways	Preferential Pathways / Conduits	P&D's December 15, 2016 Preferential Pathway Survey Report (document 0398.R3) for the subject site shows that Seasonal fluctuations in groundwater levels appear to have historically intersected the bottom of the sanitary sewer trenches located on the western and eastern sides of Broadway, and the abandoned sanitary sewer trench located near the center of Broadway. Similarly, seasonal fluctuations in groundwater levels appear to have historically intersected the sanitary sewer trench located in Garnet Street.	See P&D's December 15, 2016 Sensitive Receptor Survey Report (document 0398.R4).	Possible preferential movement of contaminants in utility trenches.	Complete delineation of extent of petroleum in groundwater and evaluate if extent of petroleum intersects utility trenches affected by seasonal water level fluctuations.
Potential Receptors & Risks	On Site	Site is a paved open air parking lot used by Downtown Toyota. No complete exposure pathways are identified other than for construction workers. No development of the property is known at this time. Parking attendants, sales people, and customers are not considered to be exposed to unacceptable levels of risk at the site related to subsurface hydrocarbons.	n/a	None	n/a
	Off Site	Potential vapor intrusion in Downtown Toyota building in the vicinity of the property boundaries with the subject site.	Figure 8	Potential vapor intrusion.	Install a Vapor Pin inside the building adjacent to SG1 and collect a sub-slab soil gas sample.

FIGURES

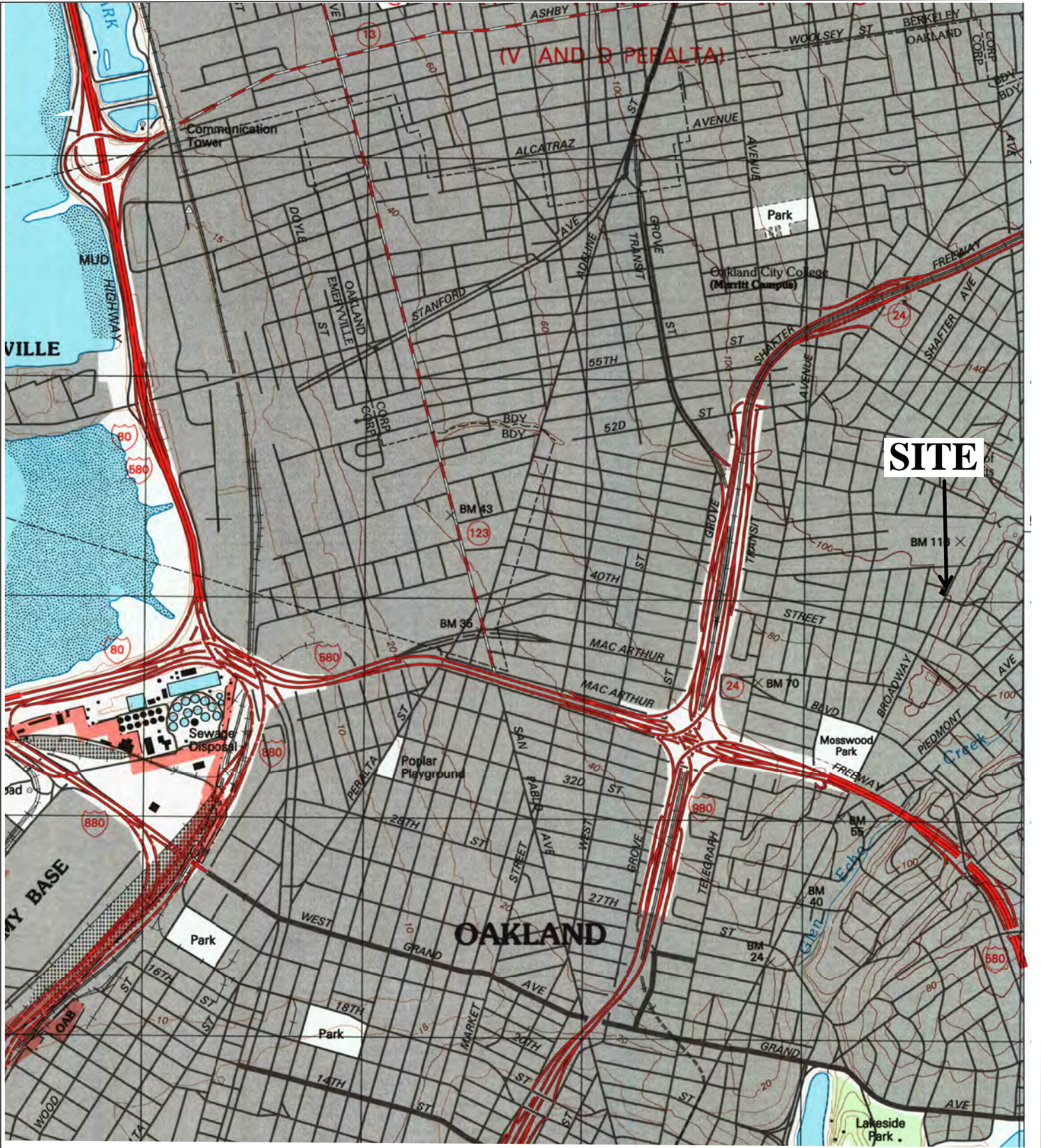
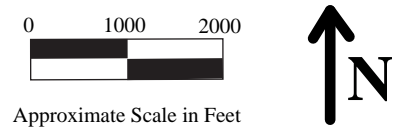


Figure 1
 Site Location Map
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map From:
 US Geological Survey Oakland West,
 California 7.5-Minute Quadrangles
 Map updated 1996

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



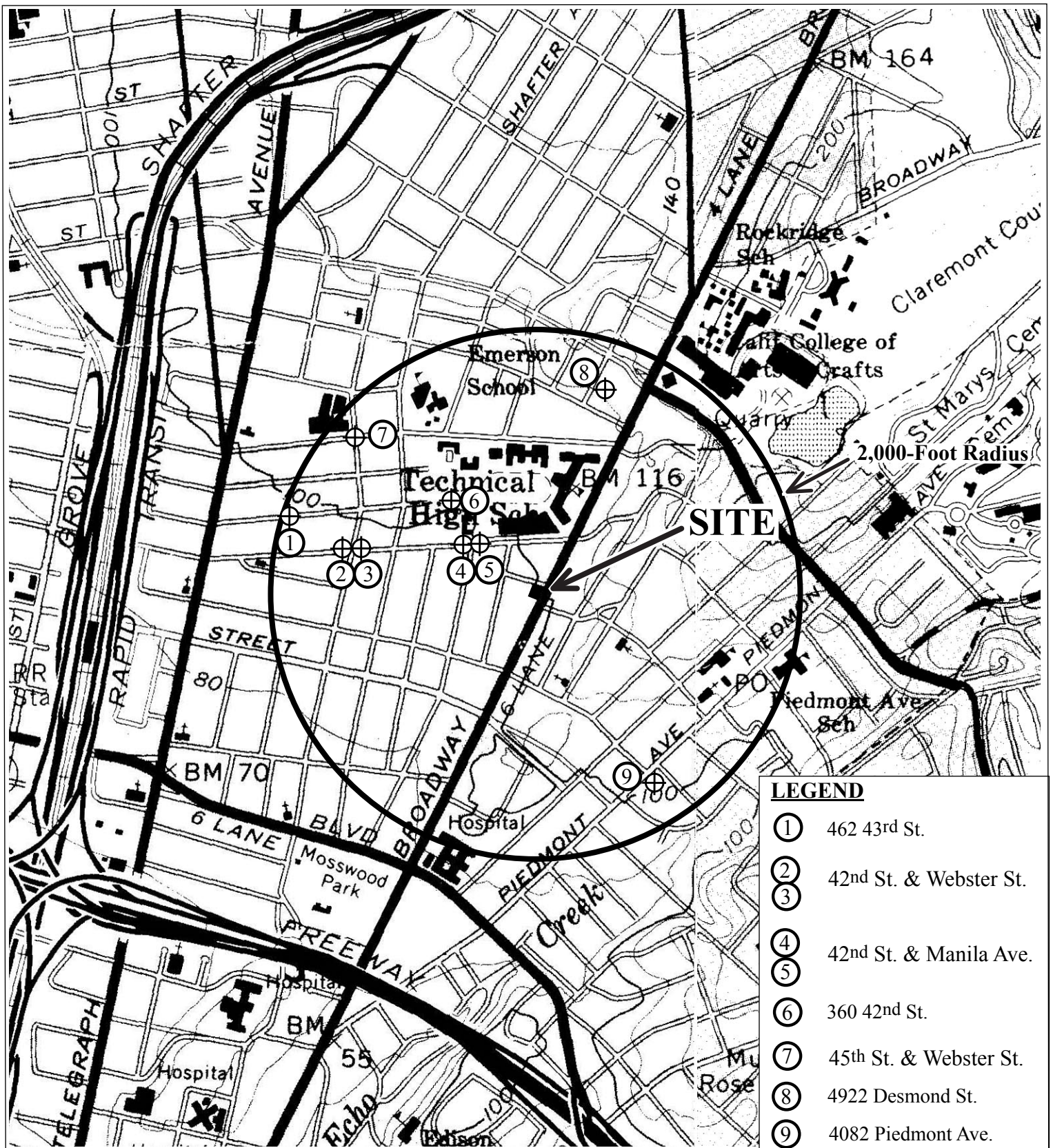
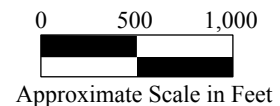


Figure 2
 Site Location Map Detail Showing Wells Located Within a 2,000-Foot Search Radius
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map from:
 US Geological Survey
 Oakland West and Oakland East, California
 7.5 Minute Quadrangles
 Photorevised 1993

P&D Environmental, Inc.
 55 Santa Clara Ave., Suite 240
 Oakland, CA 94610



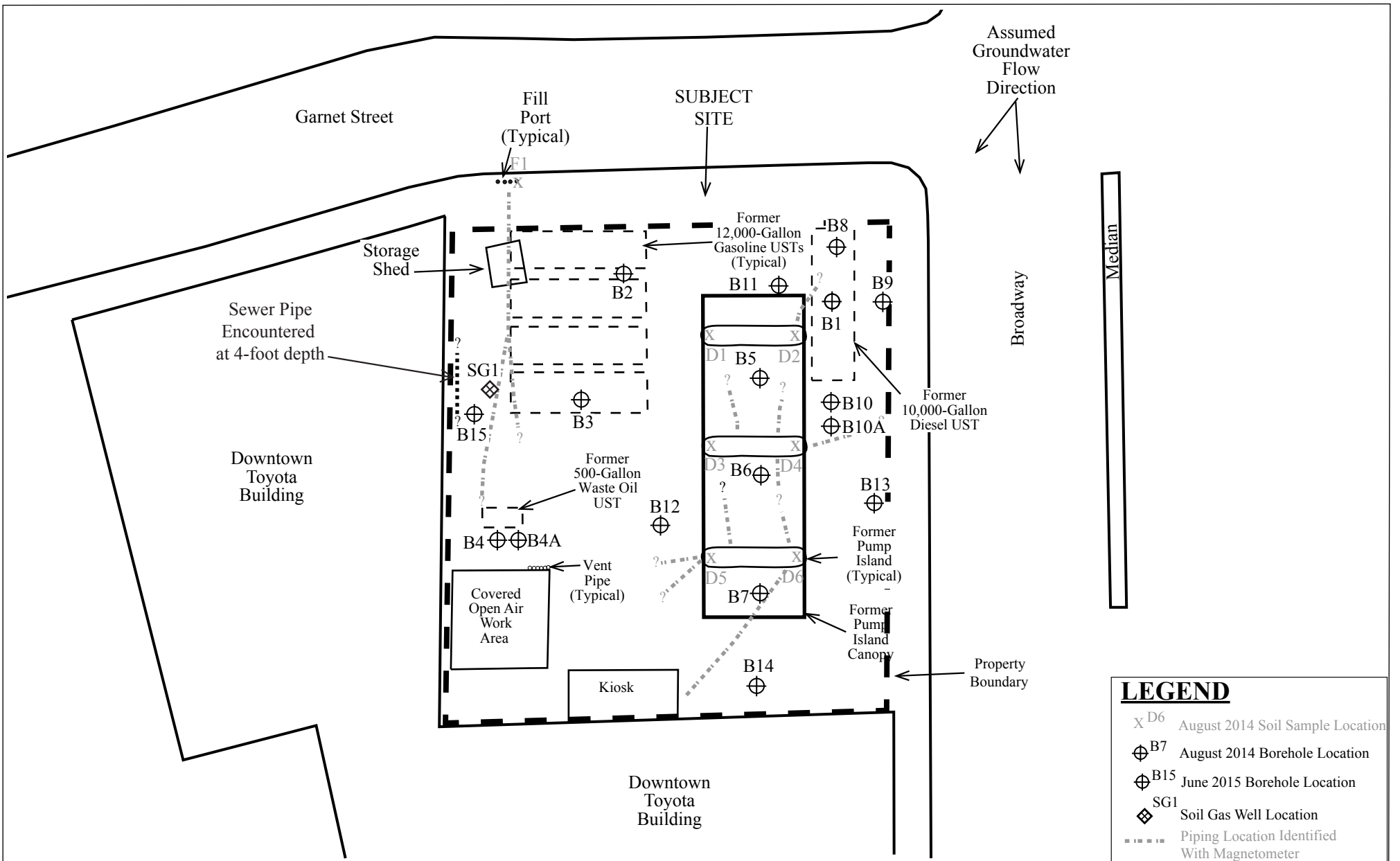
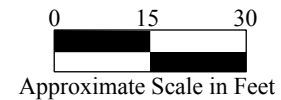


Figure 3
 Site Map Showing Site Features and Borehole and Soil Gas Well Locations
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map from:
 Auqua Science Engineers, Inc., dated 12/31/1986,
 Google Earth, 2014

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



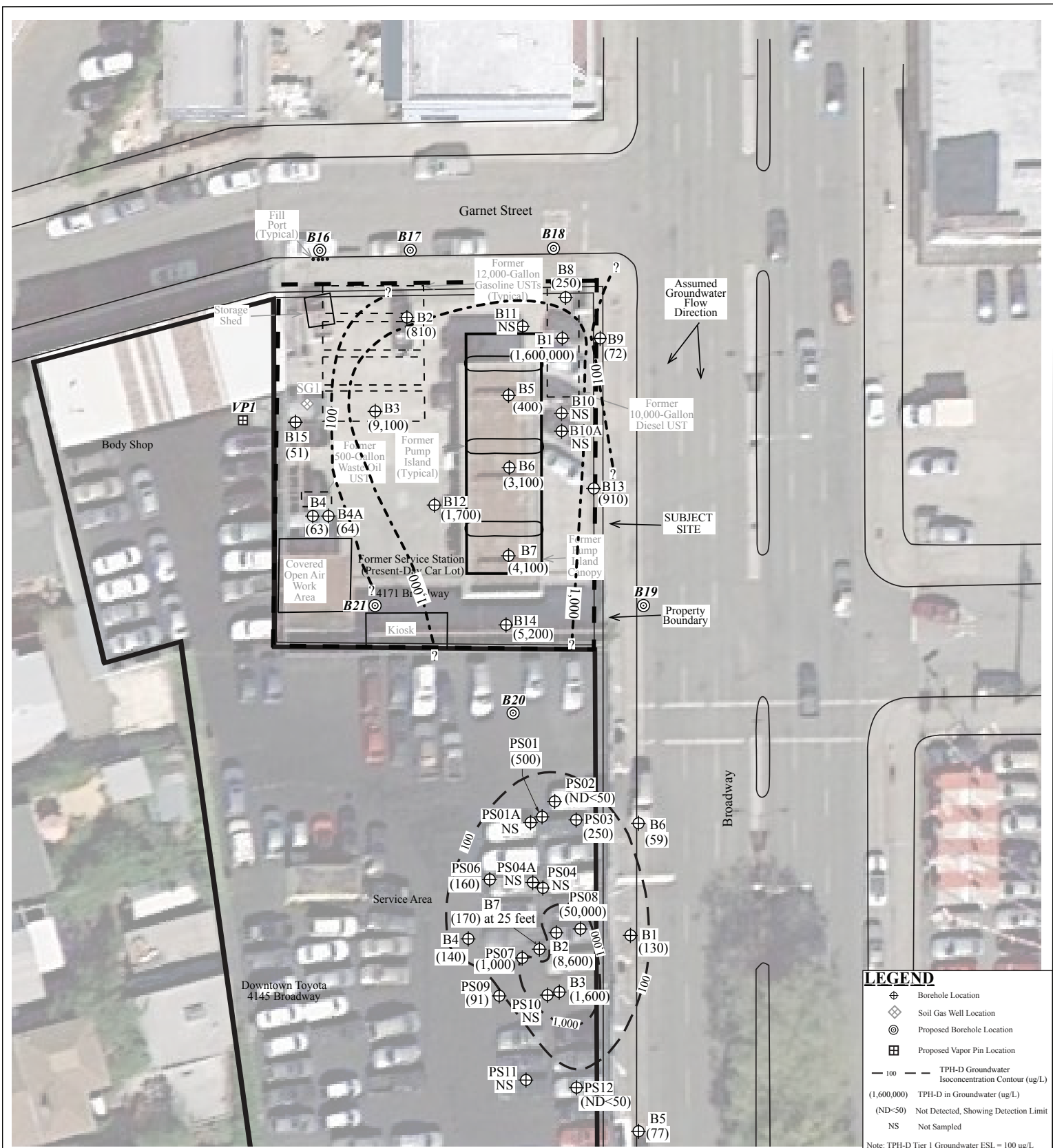
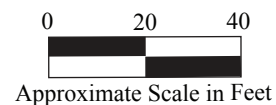
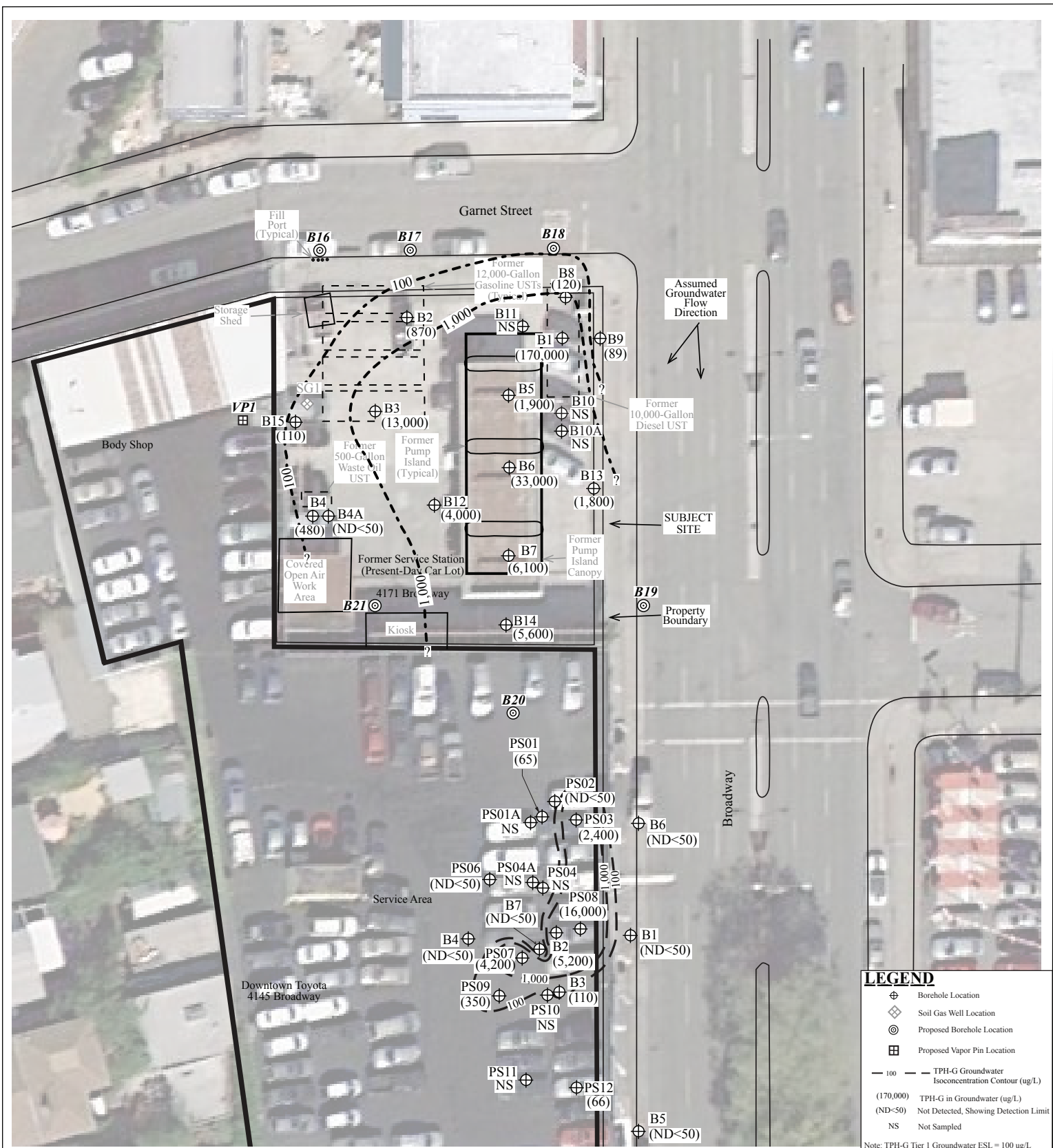


Figure 4
 Site Vicinity Aerial Photograph Showing TPH-D Groundwater Concentrations
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map From:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan, June 1966, and
 Google Earth, image dated October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610





LEGEND

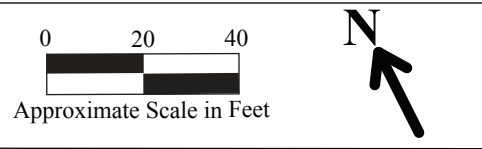
- ⊕ Borehole Location
- ⊕ Soil Gas Well Location
- ⊙ Proposed Borehole Location
- ⊕ Proposed Vapor Pin Location
- TPH-G Groundwater Isoconcentration Contour (ug/L)
- (170,000) TPH-G in Groundwater (ug/L)
- (ND<50) Not Detected, Showing Detection Limit
- NS Not Sampled

Note: TPH-G Tier 1 Groundwater ESL = 100 ug/L

Figure 5
 Site Vicinity Aerial Photograph Showing TPH-G Groundwater Concentrations
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map From:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan, June 1966, and
 Google Earth, image dated October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



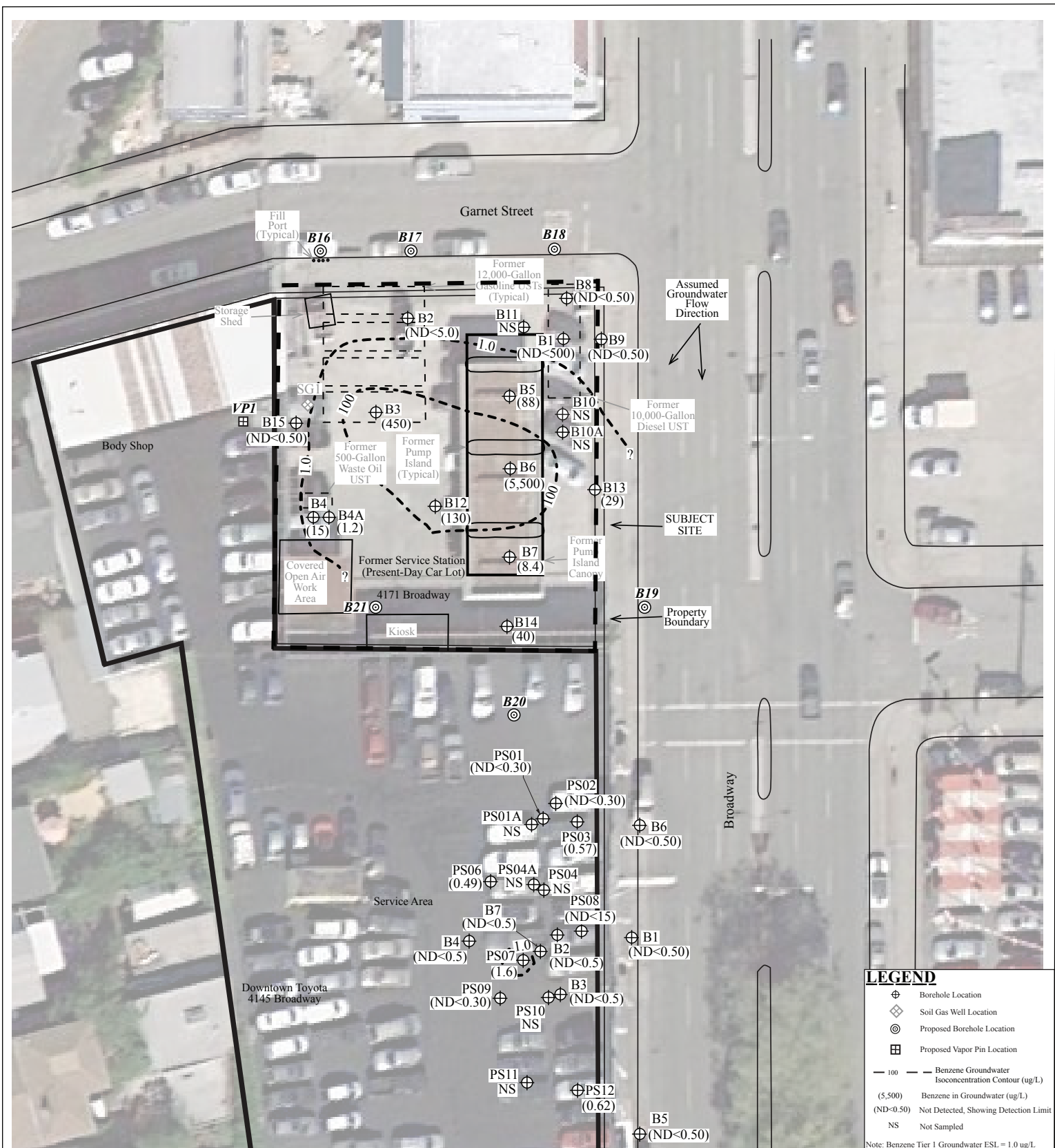
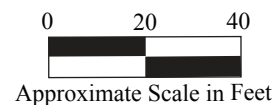


Figure 6
Site Vicinity Aerial Photograph Showing Benzene Groundwater Concentrations
Auto Depot
4171 Broadway
Oakland, California

Base Map From:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan, June 1966, and
 Google Earth, image dated October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



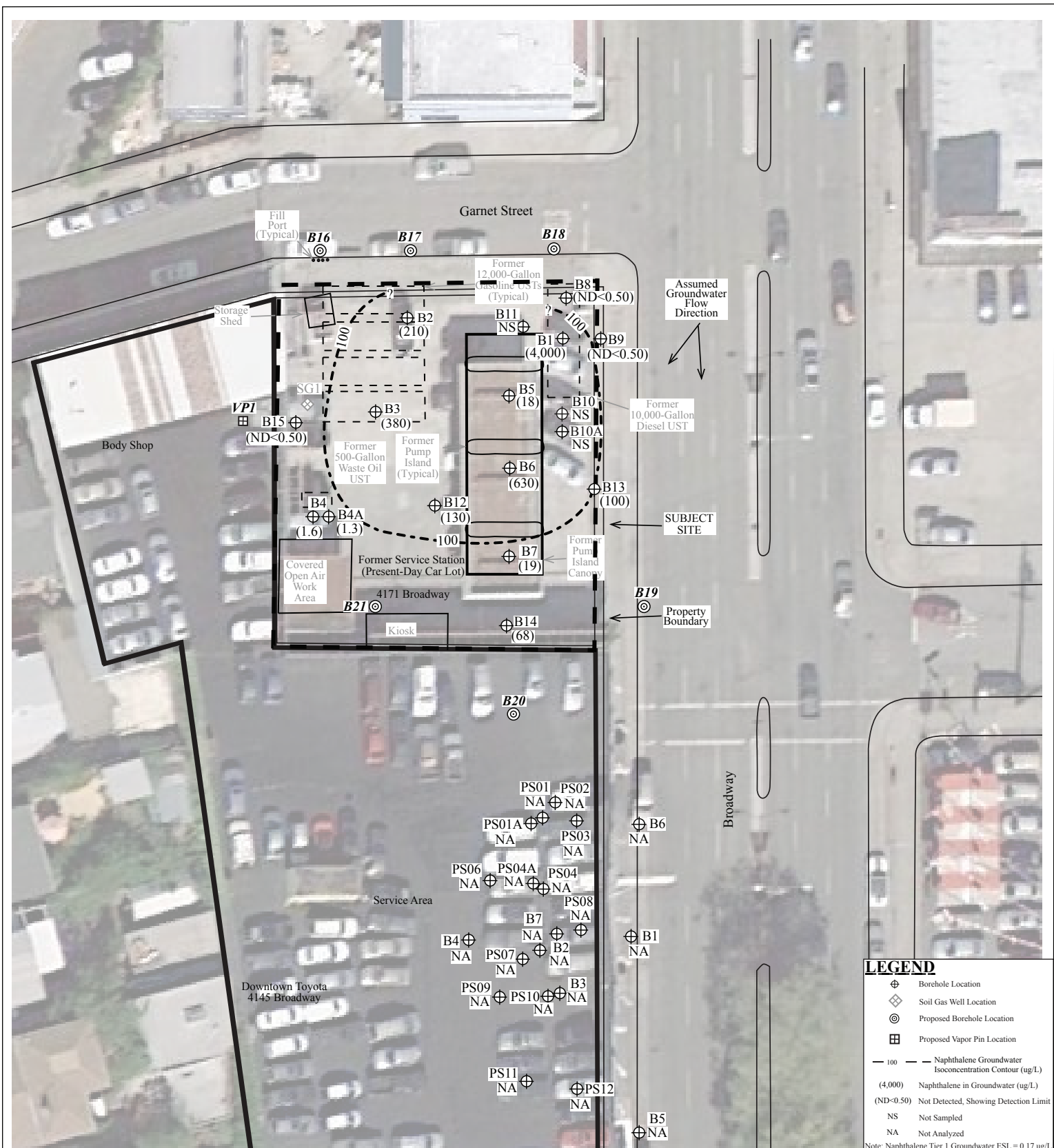
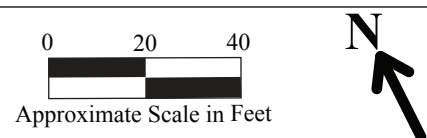


Figure 7
 Site Vicinity Aerial Photograph Showing Naphthalene Groundwater Concentrations
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map From:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan, June 1966, and
 Google Earth, image dated October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



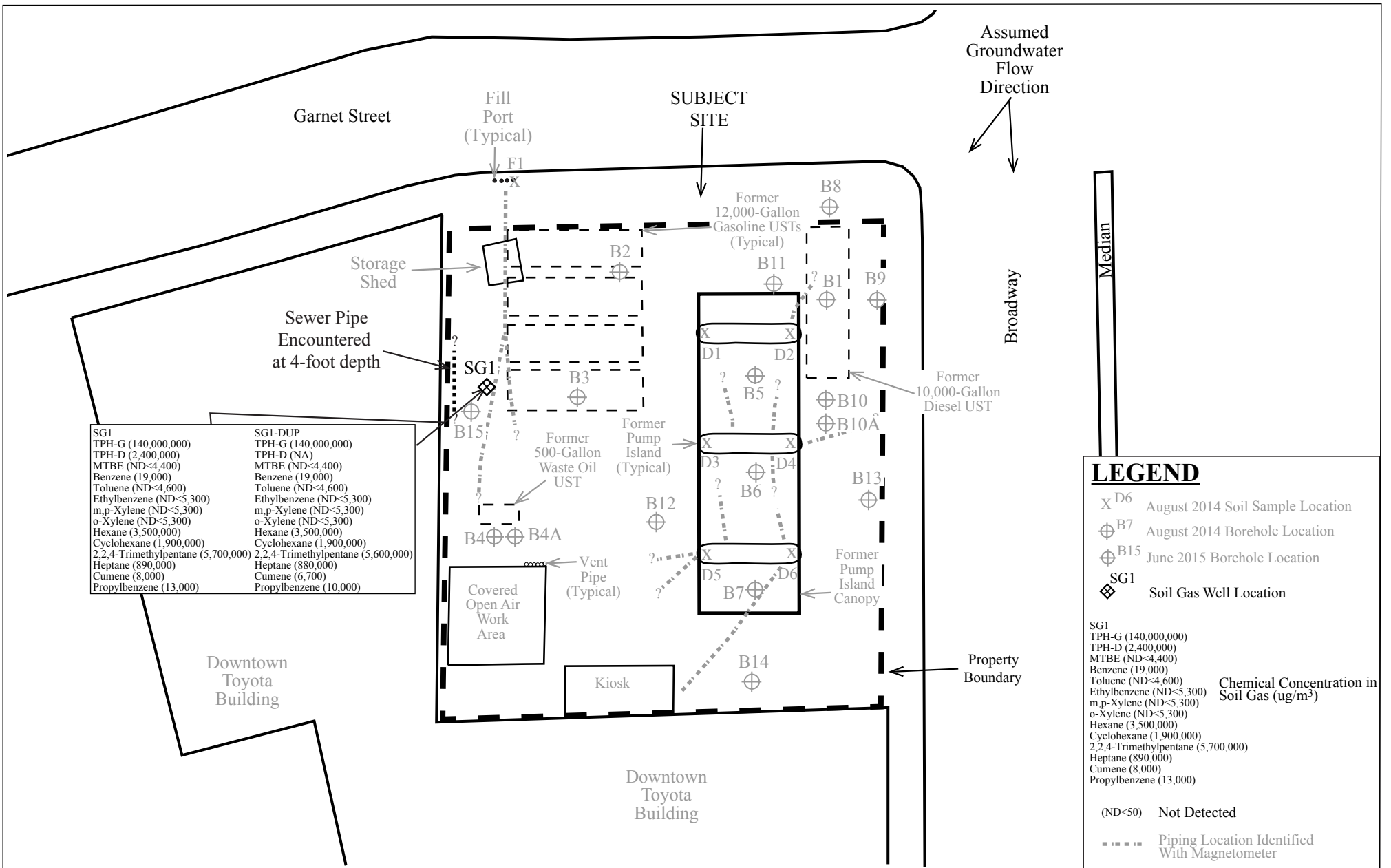


Figure 8
Site Map Showing Soil Gas Well Location and Petroleum and VOC Concentrations in Soil Gas
Auto Depot
4171 Broadway
Oakland, California

Base Map from:
 Auqua Science Engineers, Inc., dated 12/31/1986,
 Google Earth, 2014

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610

