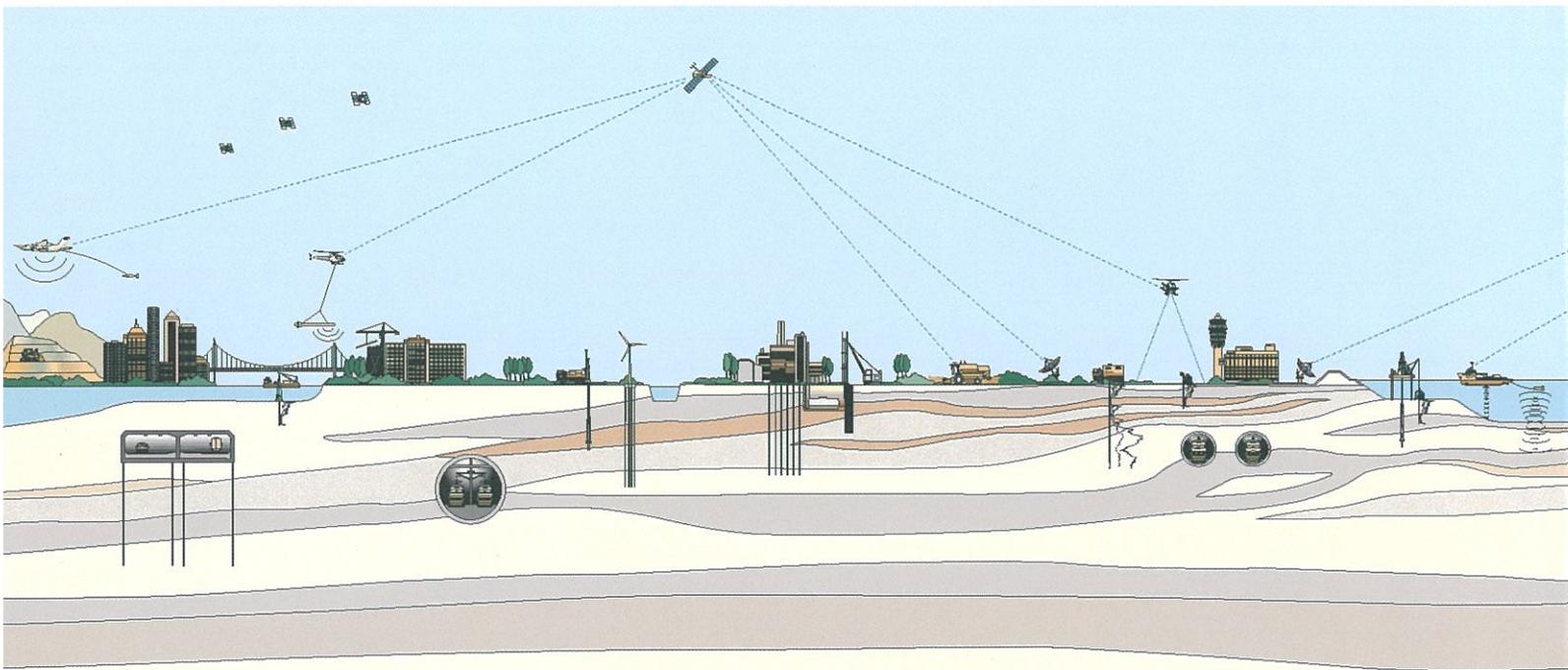


**DATA GAP INVESTIGATION COMPLETION REPORT
MERCURY CLEANERS SITE AREA
1419 16TH STREET
SACRAMENTO, CALIFORNIA**

Prepared on behalf of:
State of California Department of General Services

May 2014
Fugro Project No. 04.72120008, Phase 14





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May 16, 2014
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Regional Water Quality Control Board
Central Valley Region
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Attention: Mr. Nathan Casebeer

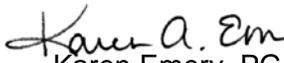
Subject: Data Gap Investigation Completion Report, Mercury Cleaners Site Area,
1416 16th Street, Sacramento, California, File No. 48S0037 (KA)

Dear Mr. Casebeer:

Fugro Consultants, Inc. (Fugro) presents the Data Gap Investigation Completion Report summarizing the site investigation activities conducted at the above-referenced property (Site). Fugro conducted these activities on behalf of California Department of General Services (DGS) in accordance with the Work Plan approved by the Central Valley Regional Water Quality Control Board (CVRWQCB) on December 18, 2013.

If you should have any questions regarding the information present in this report, please feel free to contact the undersigned at (916) 773-2600.

Sincerely,
FUGRO CONSULTANTS, INC.


Karen Emery, PG
Senior Geologist
SCA Environmental, Inc.

A circular professional seal for Karen A. Emery, a Professional Geologist in the State of California. The seal contains the text: "PROFESSIONAL GEOLOGIST", "KAREN A. EMERY", "No. 8788", "Exp. 10/31/2014", and "STATE OF CALIFORNIA".


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JRH/JNA:kae:afp

Copies Submitted: (1 Hardcopy + PDF) Addressee
(5 Hardcopies + PDF on CD), Mr. Daniel O'Brien, DGS



CONTENTS

	Page
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION.....	1
2.0 SITE DESCRIPTION	1
2.1 General Setting.....	1
2.2 Current Site Usage	2
3.0 BACKGROUND.....	4
3.1 General Area Historical Use	4
3.2 Previous Environmental Studies	4
4.0 DATA GAP INVESTIGATION ACTIVITIES.....	8
4.1 General.....	8
4.2 Deviations from the Work Plan.....	9
4.3 Field Activities.....	9
4.3.1 Utility Survey of the N-O Alley	10
4.3.2 Soil Vapor Survey	10
4.3.3 Soil and Grab Groundwater Sampling	13
4.3.4 Soil Sampling	14
4.3.5 Grab Groundwater Sampling.....	15
4.3.6 Building Materials Survey	16
4.3.7 Dry Cleaning Product Sampling	16
4.3.8 Air Quality Survey	17
5.0 FINDINGS	18
5.1 Geology and Hydrogeology	18
5.2 Results of the Utility Survey of the N-O Alley	18
5.3 Results of Chemical Analyses – Soil Vapor	20
5.3.1 Source Area	20
5.3.2 Extent of Release.....	20
5.4 Results of Chemical Analyses - Soil	21
5.5 Results of Chemical Analyses – Grab Groundwater	21
5.6 Results of Silica Gel Treatment Analyses	22
5.7 Results of chemical analysis – Hazardous Building Materials	22
5.8 Results of chemical analyses – Dry Cleaning Room Product.....	23
5.9 Results of chemical analyses – Drain Liquid.....	23
5.10 Results of chemical analyses – Air Quality	23
5.10.1 Mercury Cleaners.....	25



5.10.2	Simon’s Restaurant.....	26
6.0	DISCUSSION TOPICS.....	26
6.1	Preferential Flow/Secondary Release Evaluation	26
6.2	Source Area Conditions.....	27
6.2.1	Petroleum Hydrocarbons.....	27
6.2.2	PCE	27
6.2.3	PCE Degradation Products	28
6.3	Extent of Release	28
6.4	Dry Cleaning Room ProductS and Drain Water Testing.....	28
6.5	Hazardous Building Materials Survey	29
6.6	Air Quality Survey	29
7.0	INITIAL CONCEPTUAL SITE MODEL.....	29
8.0	CONCLUSIONS	32
9.0	RECOMMENDATIONS	33
10.0	LIMITATIONS.....	34
11.0	REFERENCES.....	35

TABLES

		Table
	Summary of Analytical Results – Soil Vapor	1
	Summary of Analytical Results - Soil.....	2
	Summary of Analytical Results – Soil Data Comparison	4
	Summary of Analytical Results – Grab Groundwater	5
	Summary of Analytical Results – Grab Groundwater Data Comparison	6
	Summary of Analytical Results – Air Quality Mercury Cleaners.....	7
	Summary of Analytical Results – Air Quality Simon’s Restaurant.....	8
	Summary of Analytical Results – Dry Cleaner Room Products.....	9
	Summary of Analytical Results – Drain Liquid	10



PLATES

	Plate
Vicinity Map	1
Site Plan	2
Cross-Section A-A'	3
Cross-Section B-B'	4
PCE Concentrations in Soil Vapor.....	5a
TCE Concentrations in Soil Vapor.....	5b
CIS-DCE Concentrations in Soil Vapor	5c
PCE Concentrations in Soil at or above Tier 1 ESL of 0.55 mg/kg	6a
TCE Concentrations in Soil at or above Tier 1 ESL of 0.46 mg/kg.....	6b
CIS-DCE Concentrations in Soil at or above Tier 1 ESL of 0.19 mg/kg	6c
Stoddard Solvent Concentrations in Groundwater.....	7a
PCE Concentrations in Groundwater	7b
TCE Concentrations in Groundwater.....	7c
CIS-DCE Concentrations in Groundwater	7d
Utility Site Exhibit	8

APPENDICES

APPENDIX A	HISTORICAL DATA
APPENDIX B	WORK PLAN AND APPROVAL LETTER, CITY AND COUNTY PERMITS, AND USA TICKET
APPENDIX C	LOGS OF BORINGS
APPENDIX D	KIMLEY-HORN UTILITY SURVEY
APPENDIX E	LABORATORY TEST REPORTS
APPENDIX F	SCA'S HAZARDOUS BUILDING MATERIAL SURVEY



LIST OF ACRONYMS

ATL	Advance Technology Laboratories
ACM	Asbestos Containing Material
bgs	Below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CADA	Capitol Area Development Authority
CalOSHA	California Division of Occupational Safety and Health
CHHSLs	California Human Health Screening Levels
Cascade	Cascade Drilling, L.P.
Castle	Castle Analytical Laboratory
CVRWQCB	Central Valley Regional Water Quality Control Board
CIH	Certified Industrial Hygienist
COC	Chain-of-Custody
cis-DCE	cis-1,2-dichloroethene
City	City of Sacramento
Cruz Bros	Cruz Brother Locators
cc	cubic centimeter
DCA	1,2-dichloroethane
DGS	Department of General Services
DOT	Department of Transportation
DNAPL	Dense Non-Aqueous Phase Liquid
E&E	Ecology and Environment, Inc.
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
ESLs	Environmental Screening Levels
FB	Fugro Boring
Fugro	Fugro Consultants, Inc.
GRO	Gasoline Range Organics
Geocon	Geocon Consultants Inc.
HnH	Hand-in-Hand Child Development Center
HSP	Health and Safety Plan
ISA	Initial Site Assessment
IDW	Investigation Derived Waste
Kimley-Horn	Kimley-Horn Associates
LBP	Lead-Based Paint
LNAPL	Light Non-Aqueous Phase Liquid
McC Campbell	McC Campbell Analytical Inc.
MCLs	Maximum Contaminant Levels
mg/kg	milligrams per kilogram
mg/L	milligrams per liter

mL	milliliter
mmHg	millimeter of mercury
MTBE	methyl tert-butyl ether
MTA	Moore Twining Associates
NVLAP	National Volunteer Laboratory Accreditation Program
Ninyo & Moore	Ninyo & Moore Geotechnical and Environmental Sciences Consultants
OEHHA	Office of Environmental Health Hazard Assessment
ppm	Parts per million
PCE	Tetrachloroethene or Perchloroethene
PID	Photoionization Detector
PCBs	Polychlorinated Biphenyls
QA	Quality Assurance
QC	Quality Control
RL	Reporting Limit
REC	Recognized Environmental Condition
RWQCB	Regional Water Quality Control Board
RACM	Regulate Asbestos Containing Material
SCA	SCA Environmental, Inc.
SCEMD	Sacramento County Environmental Management Department
SFRWQCB	San Francisco Regional Water Quality Control Board
Simon's	Simon's Restaurant
Site	Mercury Cleaners
Site building	Mercury Cleaner building
SCM	Site Conceptual Model
SVOCs	Semi-Volatile Organic Compounds
TCA	1,1,1-trichloroethane
TCE	trichloroethene
TEG	TEG North America
TEM	TEM Laboratories Inc.
TIC	Tentatively Identified Compounds
TPHd	Total Petroleum Hydrocarbons as diesel
TPHg	Total Petroleum Hydrocarbons as gasoline
TPHmo	Total Petroleum Hydrocarbons as motor oil
trans-DCE	trans-1,2-dichloroethene
µg/kg	micrograms per kilograms
µg/L	micrograms per Liter
USA	Underground Services Alert
USCS	Unified Soil Classification System
UST	Underground Storage Tank
VES	Vapor Encroachment Screening



Vickers
VOCs

Vickers Concrete Sawing Inc.
Volatile Organic Compounds

EXECUTIVE SUMMARY

This report presents the results of data gap investigation activities conducted by Fugro Consultants, Inc., (Fugro) at the State of California (State)-owned Mercury Cleaners property located at 1419 16th Street in Sacramento, California (Site). The Site occupies the southeast corner of the intersection of 16th Street and the N-O Alley in downtown Sacramento as shown on Plate 1. The Site encompasses an approximately 0.29 acre level lot in a densely developed urban setting.

The Site has operated as a commercial dry cleaning business since at least the late 1940's. Evidence suggests that operators of the business have used both chlorinated solvents (tetrachlorethene or perchloroethene (PCE)) and petroleum hydrocarbon based solvents (such as Stoddard solvent) as dry cleaning liquids. Previous Site studies have documented that releases to the subsurface environment have occurred and volatilization of chemicals of potential concern have been measured in enclosed structures overlying the contaminant plume.

Further investigation was undertaken on behalf of the Department of General Services, Real Estate Services Division (DGS, RESD) in accordance with the Work Plan dated December 6, 2013, and as approved by the Central Valley Regional Water Quality Control Board (CVRWQCB) on December 18, 2013. The objective of the study was to collect additional subsurface data to allow further definition of the source area(s) and boundary conditions. The study also evaluated various potential preferential pathways near the Site and evaluated air quality in the Site building and the adjoining Simon's restaurant building. In general, there were no significant deviations from the approved Work Plan, although changes in location of data collection points and the testing program did occur. Given Site occupancy, utility obstructions, right-of-way work requirements, and internal DGS requirements, Site work was completed on consecutive weekends and a few weekdays over a five to seven week schedule. In addition, to meet internal reporting requirements chemical analyses were completed by multiple laboratories.

The results of the study documented the following significant data findings:

- Confirmed that releases of both PCE and Stoddard Solvent coincide with the locations of historic dry cleaning activities within the Site building, thus strongly suggesting that the impacts to soil, soil vapor, groundwater and indoor air quality at the Mercury Cleaners site are predominately the result of onsite releases.
- The primary human health risk driver at the Site is the presence of chlorinated solvents which readily volatilize and migrate into enclosed spaces. Modification and renovation of ventilation systems have not been successful in reducing contaminant concentrations to below commercial worker screening levels (ESLs).
- The size of the commingled PCE/Stoddard solvent plume appears to have expanded compared to data collected in 2008, likely the result of water/waste water discharge during ongoing use of the floor drains and water/waste conveyance improvements.
- The commingled plume does extend offsite, however concentrations decrease significantly with distance from the main onsite source area.

- The presence of the commingled plume, coupled with relatively low permeability subsurface materials and the presence of hardscape at the Site, sufficiently affects the Site's natural attenuation of the contamination. These conditions specifically suggest that an anaerobic state is likely present as evidenced by the presence of initial chlorinated solvent biodegradation end-products.
- Although PCE has reportedly not been in substantial use at the Site since 2004/2005, remnant PCE concentrations are still detectable in water conveyance improvements located onsite. Possible sources of PCE in the water conveyance improvements include continued use of spotting compounds containing PCE, continued use of aged equipment and improvements previously contaminated by PCE use, and the presence of subsurface PCE source material.
- The main sanitary sewer line does not extend within the historic groundwater fluctuation zone and data collected suggests that the portion of the sewer which has been investigated is not a primary source of PCE or Stoddard Solvent releases. Although it is possible that historic releases may have occurred from the sewer line which have not been detected by studies conducted to date.
- Elevated soil vapor results correlate well with the location of the groundwater contaminant plume.
- The adjacent N-O Alley is a congested utility corridor which will hamper the investigation of impacts in the area.

PCE and naphthalene (related to Stoddard Solvent) are contaminants of concern related to onsite releases, and the 2014 levels of these contaminants in indoor air samples at the site are elevated. Measured contaminant concentrations were documented to be above screening criteria (ESL) for an exposure at a commercial site by a factor of 4 to 10 for PCE and by a factor of 2 to 10 for naphthalene. Without additional mitigation or remediation, risks posed to human health will continue.

Interior mitigation measures are immediately needed to protect human health and the environment. These measures may include further modification of the existing ventilation system, sealing the floor throughout the dry cleaning and conventional washing work areas, and modification of the wash water collection and conveyance system including remedial efforts to remove stagnant fluids and to flush the system clean. Implementation of the interior mitigation measures would require that the tenant be moved out of the building.

Interim remediation may include UST removal, waste and drainage conveyance pipeline and sump closure/removal and a forensic assessment of points of release, and source area soil and possibly groundwater removal, treatment and disposal.

Additional data gap studies will be required to expand the study area in an attempt to confirm the lateral and vertical extent of impacts and to generate feasibility data for future remedial alternatives evaluation. Studies may include Membrane Interface Probe studies to identify if the Site is impacted by dense non-aqueous phase liquid, shallow and deep groundwater well installation and monitoring, soil vapor and indoor air quality assessments, further assessment of preferential pathways, pilot scale testing of selective remedial responses including insitu biological and chemical remedial technologies and soil vapor extraction. Once



additional data is collected a feasibility study of remedial alternatives and a human health risk assessment should be conducted to facilitate preparation and implementation of a remedial action plan.



1.0 INTRODUCTION

This report presents the results of data gap investigation activities conducted by Fugro Consultants, Inc., (Fugro) at the State of California (State)-owned Mercury Cleaners property located at 1419 16th Street in Sacramento, California (Site). This investigation was conducted on behalf of DGS, in accordance with the Work Plan dated December 6, 2013, approved by the Central Valley Regional Water Quality Control Board (CVRWQCB) on December 18, 2013. The purpose of the data gap investigation was to further evaluate source area(s) and boundary conditions for Site releases, and to assess preferential migration pathways.

2.0 SITE DESCRIPTION

2.1 GENERAL SETTING

The Site is identified as Sacramento County Assessors Parcel Number (APN) 006-0233-023-000. The Site occupies the southeast corner of the intersection of 16th Street and the N-O Alley in downtown Sacramento as shown on Plate 1. The Site encompasses an approximately 0.29 acre level lot in a densely developed urban setting which has been used for dry cleaning since at least the late 1940's.

The Site is developed with a commercial building, approximately 6,200 square foot in size and varying in height from one to two stories, and a parking lot. The Mercury Cleaner building (Site building) is comprised of a two-story wood frame structure with a partial basement in the northwest corner of the lot, a high one story wood framed structure located south of the two story structure and north of the parking lot, and two small attached masonry block structures that extend toward the east from the two-story structure. Several underground storage tanks (USTs) are known to be present below a concrete slab currently used as a carport along the northern portion of the Site.

North of the N-O Alley is Simon's Restaurant and Bar (Simon's). Simon's occupies an approximately 0.07-acre level lot in a commercial building constructed on a concrete slab; no basement is present. A restaurant, bar, kitchen, and restrooms are located within the building. A covered patio area was added to the southeastern corner of the lot approximately two years ago.

East of Simon's on the north side of the N-O Alley is the Hand-in-Hand Child Development Center (HnH). HnH occupies an approximately 0.3-acre level lot. The main building is a former Victorian-style residential structure converted in 1992/93 to its current day care use. The structure is a wood framed building with a raised floor which creates a crawl space between the structure and the underlying ground surface. The HnH property is also improved with three outdoor play areas, a small storage shed and asphalt paved parking stalls on the north side of the N-O Alley. According to information obtained from the Director of the HnH, two of the large play areas are situated directly over soil, and the third play area and storage shed are situated directly over asphalt. The rest of HnH site is covered with asphalt pavement or grass/trees.

Directly east of the Site is a multi-story apartment complex with gated and non-gated parking lot areas situated immediately adjacent to the Site building. The apartment building is located southeast from the Site building.

To the south of the Site, across O Street, is a multi-story mixed use building. The first floor is occupied by the restaurant Pronto and the remaining floors are residential apartments. To the west of the Site, across 16th Street, is a recently constructed, mixed use building. The first floor is vacant retail space and the remaining floors are residential apartments. Golden Gate Cleaners is located northwest of the Site, across 16th Street within another older mixed-use residential and commercial area

The City of Sacramento has provided water and sewer services to the Site since the property was first developed. The City's water supply comes from the local streams and rivers as well as from groundwater supply wells in the Sacramento area. The water supplies in the Sacramento area typically come from private water companies and public utilities. The sanitary sewer utility service is provided to the Sacramento public by the County of Sacramento Sewer District.

2.2 CURRENT SITE USAGE

Mercury Cleaners, a commercial dry cleaning business, occupies the lower floor areas throughout the Site structure; one other professional service tenant occupies the second floor space. Most of the building is constructed with an at-grade slab-on-grade floor; however a basement previously used as a workshop and for miscellaneous storage is situated below a portion of the northernmost part of the structure (adjacent to the N-O Alley).

The western most room of the two-story building is a reception area for the dry cleaning business. This room is accessed from 16th Street and has a tiled concrete floor. To the east of the reception area is the clothes room where clothes hang on a conveyor rack system until they are processed for cleaning, mending or they are picked up.

To the north of the clothes room and the reception area is an office area. This area extends from 16th Street to the east wall of the two-story building. The eastern portion of the office area and the northern part of the clothes room are located over the partial basement. To access the basement, stairs are provided on the west side of the carport.

The pressing room is located in the high one story structure, which is located south of the reception area, conventional wash area, and the former dry cleaning areas. This room contains three pressing tables and storage areas. The floor is predominately exposed concrete and concrete lined utility trenches believed to be steam transfer lines are located in this room. Within the pressing room is a restroom along the south wall.

The conventional wash area of the dry cleaning business is directly east of the clothes room and inside a one story concrete block room. The conventional wash area includes a partially bermed area that contains conventional washing machines. Within the partially bermed area are drain corridors that convey conventional wash water into a manhole. The manhole is located on the northeast corner of the concrete bermed area. A floor drain on the north side of the bermed area appears to be connected to the manhole feature by a subsurface pipe. This drain contained approximately four inches of water and debris as observed during the current study, however the point of discharge of this manhole was not readily discernible.

The boiler room forms the west border of the conventional wash area. The boiler room contains one steam boiler.

The former dry cleaning room is located directly east of the conventional wash area inside another concrete block room. The former dry cleaning room has a concrete floor. One older model out-of-service dry cleaning machine and a tumbler were observed in the former dry cleaning room. Neither piece of equipment appeared to be in operation as they were observed to be disconnected from electrical power.

The current dry cleaning room is located in the northeast corner of the building in a one story masonry block room. The dry cleaning room contains the active dry cleaning machine located near the center of the room. A storage cabinet is located on the west wall, north of the dry cleaning machine and houses used filters. Adjacent to the cabinet is the staging area for hazardous materials. On the south wall is a spotting table. The spotting table utilizes compressed steam, air, and a vacuum. The dry cleaning room has a concrete floor and concrete lined trenches covered by metal grates.

A UST area is located in a building recess used as a carport, between the dry cleaning room and the office area, adjacent to the N-O Alley. Four USTs, believed to be previously associated with the dry cleaning business, exist in this area. These USTs are inactive and have reportedly been out of service since at least 2000. Records suggest that the tank capacities are as follows: one-550 gallon horizontal tank, two-550 gallon vertical tanks with cone bottoms, and one-275 gallon horizontal tank. The tanks were checked for the presence of product by Geocon in 2011; reportedly three of the four tanks were found to be dry and one tank contained some clear liquid which was chemically tested to contain 5.3 micrograms per liter ($\mu\text{g/L}$) of tetrachlorethene or perchloroethene (PCE) and 0.5 $\mu\text{g/L}$ of Stoddard Solvent.

A paved parking lot extends from the south wall of the Site building to the north sidewalk of O Street. The parking lot spans the entire width of the Site with two entry/exit points; one on 16th Street located adjacent to the south Site building wall and the other located along O Street. The parking lot is a multi-parking stall lot managed by the Capital Area Development Authority (CADA).

Based on information previously provided by CADA, we understand that Mercury Cleaners ceased using PCE to clean garments in about 2004 and switched to petroleum based cleaning products in 2005. Based on limited research conducted during this study, it appears that the existing dry cleaning machine is manufactured for use with petroleum based dry cleaning fluids. Older dry cleaning equipment remains in the Site building as well. Floor cracks and floor patches from previous machine equipment are visible throughout the dry cleaning and conventional washing areas. The concrete floors are in poor condition and are deteriorating in the east and northeast portions of the Site where dry cleaning and washing activities have historically been performed. Additionally, the concrete floor throughout the building is traversed by shallow concrete trench drains/utility corridors, some of which are partially covered by metal grates, and some of the trenches contained rusted pipes. Reportedly, the drains were used to channel dry cleaning and conventional wash water to filters and then into the sanitary sewer system, likely at a time when the City of Sacramento was using a combined sanitary/storm sewer system. It has been observed that some of the drains are still used to convey conventional wash water and condensates from the Site. The current dry cleaning equipment is a self-contained system. The dry cleaning waste stream is periodically removed from the Site by a hazardous waste hauler.

3.0 BACKGROUND

3.1 GENERAL AREA HISTORICAL USE

According to our review of historical documents, the Site was occupied by residential buildings from 1895 through at least 1915. These buildings included two small apartment buildings and one dwelling. By 1950 the two-story building is present at the northwest corner of the Site and it is occupied by a retail business. The attached one story building is shown to be occupied by an auto repair facility, one of the masonry additions in the eastern portion of the Site (currently the conventional wash room) is shown to be occupied by a dry cleaner, the southern portion of the site was shown to be occupied by two apartments, and a dwelling is shown to be present in 1950. By 1960 the auto repair building expanded to the east and the second masonry building is observed to be present at the northeast corner of the Site and utilized as another retail business. At some point between 1960 and 1999 the southern portion of the Site was improved with a paved parking lot. The Site has been operating as a dry cleaner since the late 1940's and has been operating as "Mercury Cleaners" since 1952.

According to historical documents, the automotive repair shop generally stored and used gasoline, diesel, waste oil and engine cleaning solvents onsite. However, there is no evidence that these materials were stored in USTs, as no evidence of USTs for this purpose has been identified to date. The Kang family, the current operator of the Mercury Cleaners business, has been onsite since 1995 operating under a lease with CADA, who manages the property for the State.

Simon's has been operating as a restaurant on the property to the north across the N-O Alley since at least 1952, with the current tenant onsite since 1984. Prior to 1952, available reports indicate that the Site was developed with one residence from at least 1895 to 1915. Sometime after 1915, the residence was removed; the current building was then constructed and was occupied by a plumbing business until at least 1950.

The HnH property was previously used as residential housing. The main building is a former Victorian-style residential structure converted in 1992/93 by the current lessee, CADA, to facilitate use as a day care. The structure is a wood framed building with a raised floor which creates a crawl space between the structure and the underlying ground surface. The Site also contains three outdoor play areas, a small storage shed and asphalt-paved parking stalls on the north side of the N-O Alley.

The adjacent property to the east is a multi-family apartment building. A new mixed use building is located across 16th Street to the west.

3.2 PREVIOUS ENVIRONMENTAL STUDIES

Several previous investigations have detected releases of PCE and its degradation by-products and total petroleum hydrocarbons in soil vapor, soil and groundwater at the Site. A summary of previous investigations is provided below. Selected previous report tables and plates are presented in Appendix A.



Phase I Environmental Site Assessment (ESA) by Ecology and Environment, Inc. dated November 1999 (Mercury Cleaners Property)

A limited Phase I Environmental Site Assessment (ESA) was conducted in the area of the Site in November 1999, by Ecology and Environment, Inc. (E&E) for CADA. E&E's ESA was part of an area wide study. The ESA identified the past uses of the Site to be a mix of residential, retail, auto repair shop, and dry cleaner operations. There were no industrial or manufacturing land uses identified. The ESA identified the presence of dry cleaning chemicals at the Site. The Recognized Environmental Conditions (REC) for the Site included chemical use areas, and the associated floor drains in the Site building and the former operation of an auto repair shop. E&E noted that there is a possible concern of releases of solvents and petroleum products. E&E's recommended that "a field investigation of subsurface soil contamination" be conducted.

Limited Phase II ESA 1419 16th Street by Ninyo & Moore dated September 2006 (Mercury Cleaners Property).

Ninyo & Moore Geotechnical and Environmental Sciences Consultants, Inc. (Ninyo & Moore) conducted a Limited Phase II ESA for CADA, which was documented in a report dated September 2006. Ninyo and Moore installed eight borings, and conducted soil vapor sampling, soil sampling and grab groundwater collection. Soil vapor, soil, and/or groundwater samples were tested for volatile organic compounds (VOC), and total petroleum hydrocarbon as gasoline (TPHg), total petroleum hydrocarbon as diesel (TPHd) and total petroleum hydrocarbon as motor oil (TPHmo). The detected concentrations in the soil vapor indicated the presence of various chlorinated solvents including PCE and trichloroethene (TCE). TPHd and TPHmo were detected in soil samples, however the laboratory noted that the fingerprint did not resemble the TPHd standard chromatograph. PCE and cis-1,2-Dichloroethene (cis-DCE) were detected in shallow soil sample. TPHg was detected in groundwater and the laboratory further noted that the fingerprint did not resemble the TPHg standard chromatograph. Also PCE, TCE, and cis-DCE were detected in groundwater samples. Based on the result of their investigation Ninyo & Moore recommended additional sampling and testing be conducted, and suggested that the report be provided to the local regulatory agency, Sacramento County Environmental Management Division (SCEMD).

Additional Site Investigation 1419 16th Street by Geocon dated February 2008 (Mercury Cleaners Property).

Geocon Consultants, Inc. (Geocon) was retained by CADA to conduct an Additional Site Investigation at Mercury Cleaners which was documented in a report dated February 2008. This additional site investigation included six soil borings to collect soil vapor, soil, and groundwater samples and three indoor air samples. The results of the soil vapor testing detected elevated levels of PCE, TCE, cis-DCE, and trans-1,2-Dichloroethene (trans-DCE) with the highest concentration detected in boring DP1 at 2,600,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), 480,000 $\mu\text{g}/\text{m}^3$, 670,000 $\mu\text{g}/\text{m}^3$, and 10,000 $\mu\text{g}/\text{m}^3$, respectively. Boring DP-1 was installed in the conventional wash room area. The results of groundwater sampling detected TPHg, PCE, TCE, DCE, cis-DCE, and trans-DCE with the highest concentration detected in sample DP2. Boring DP2 was located in the former dry cleaning room. PCE was detected in groundwater samples collected from borings DP4 and DP5, located on the east side of 16th

Street at 120 µg/L, and 98 µg/L. Indoor air samples were collected within the Site building near the dry cleaning equipment. The results of the indoor air samples detected elevated levels of PCE at a high concentration of 20 parts per billion (ppb). Based on this Additional Site Investigation, Geocon recommended to CADA that the report be provided to SCEMD. In addition, they recommended that the vertical and lateral extent of VOCs in the groundwater be defined and potential presence of USTs be evaluated. They further recommended removal of USTs from the Site, and that CADA consider remedial action to reduce the mass of contamination present.

Additional Indoor Air Investigation 1419 16th Street by Geocon dated January 2011 (Mercury Cleaners Property).

Geocon documented Additional Indoor Air Investigation in a report dated January 2011. This report documented the collection of indoor air samples in 2007 and 2010, as well as drum testing and UST sampling at the Site. In December 2007 Geocon collected three indoor air samples as discussed above. In June 2010 they collected six indoor air samples and in November 2010 they collected six more indoor air samples. The results of the indoor air samples indicated the presence of elevated PCE in the indoor air at location IA3 with a high concentration of 20 parts per billion by volume (ppbv) in 2007 and at location IA11 with a high concentration of 9.2 ppbv. In addition to the indoor air sampling, Geocon also sampled various containers onsite including dry cleaning equipment waste discharge, UST contents, and drummed waste contents. The results of the additional sampling indicated the presence of PCE and Stoddard solvent in the drummed waste, dry cleaning equipment discharge, and the UST liquid. Geocon sampled the existing USTs onsite to check for the presence of product in 2011; reportedly three of the four tanks were found to be dry and one tank contained some clear liquid which was chemically tested to contain 5.3 µg/L of PCE and 0.5 µg/L of Stoddard Solvent.

Geocon conducted a Human Health Risk Assessment to calculate commercial site worker risks due to the highest detected concentrations of VOCs in indoor air samples. The calculated risk was presented as being within the acceptable risk management range, and Geocon further indicated that indoor air concentrations were several orders of magnitude below the permissible exposure level for commercial workers. Even though their risk assessment suggested that the risk posed to site occupants was within an acceptable range, Geocon recommended to CADA that upgrades to the Site's ventilation system were needed "to dilute and divert indoor air contaminants."

Phase I ESA and Phase II Testing 1610 and 1614 N Street by Geocon dated June 2011 (HnH Property).

In June 2011 Geocon submitted a Phase I ESA and Phase II testing report for 1610 and 1614 N Street, located at the HnH property. The Phase I ESA identified two REC requiring further study: a former gasoline station, located to the west (1601 16th Street) and operated from the early 1930s to 1970; and the southeast adjoining Mercury Cleaners property where documented releases of PCE, TCE and other volatile organic compounds have been detected. Based on these RECs and a completed vapor encroachment screening, Geocon collected soil vapor samples from three, five-foot deep soil vapor probes installed in exterior locations of the site. PCE was detected in all three soil vapor samples. PCE concentrations were highest at location SV-2 in the southwest portion of this property and closest to Mercury Cleaners.



Concentrations of PCE decreased with distance from the Mercury Cleaners Site. The report concluded that concentrations beneath the HnH were likely within acceptable levels.

Air Quality Surveys at 1401 16th Street, 1413 16th Street, 1419 16th Street, 1610-1614 N Street by Fugro dated May 2012, and UST Area Assessment in August 2012 (Mercury Cleaners Property).

In May 2012 Fugro conducted an Air Quality Survey to assess several interior spaces and the outdoor areas of HnH property. Fugro collected one sample from the Site building, one sample plus a duplicate from the Simon's building, one sample inside of the Enterprise Rent-a-Car (Enterprise) building, located at 1401 16th Street and two outdoor air samples from the HnH. The Air Quality samples at HnH were collected from the playground situated between the HnH building and the Site building. A background sample was collected on the north side of the HnH property. The background sample was labeled BKG-1. The results detected PCE at 40 $\mu\text{g}/\text{m}^3$ in the sample from an interior location within the Mercury Cleaners building, and 1.3 $\mu\text{g}/\text{m}^3$ in the sample from within the Simon's building. The sample from the Enterprise Building did not contain PCE or its breakdown compounds above the laboratory reporting limits. Outdoor samples collected at HnH did not contain PCE or its breakdown compounds above the laboratory reporting limits. The background sample did not contain PCE or its breakdown compounds above laboratory reporting limits. All samples contained benzene, toluene, ethylbenzene and xylenes (BTEX) and carbon tetrachloride including the background samples. No indoor samples were collected at HnH because the HnH is supported on piers with a ventilated crawl space below the building. Fugro recommended ventilation improvements inside the Mercury Cleaners Site building, as well as additional air quality surveying. Fugro recommended an improvement to the Simon's building ventilation system to increase the air exchange rate.

In August 2012, Fugro conducted a field assessment of the Mercury Cleaners USTs. The tank ports were opened and checked for the presence of liquid and two of the tanks contained 1 to 2 inches of clear liquid; no analytical testing was conducted. The tanks were noted to vary from 9 to 13 feet deep.

Report of Findings, 1422 16th Street by Wallace Kuhl & Associates dated October 2001; results of Limited Soil and Groundwater Investigation 1422 16th Street and 1510 16th Street by EEI dated June 2005 (Property Located to the West, South West of the Mercury Cleaners Property).

These two reports were prepared on behalf of CADA as part of their due diligence prior to redevelopment of this adjacent site. During the site investigations select samples were collected and tested for chlorinated solvents to assess whether impacts from the Mercury Cleaners or other area sites may have adversely impacted the property. Groundwater samples collected in 2001 and 2005 contained relatively low concentrations of PCE. Concentrations of PCE detected between the two sampling dates did not change substantially. Neither consulting firm recommended any further study based on the VOC data and the site obtained regulatory closure following the completion of other remedial activities unrelated to the VOCs.

4.0 DATA GAP INVESTIGATION ACTIVITIES

4.1 GENERAL

Studies conducted to date have not fully characterized Site conditions sufficiently to allow preparation of a remedial action plan. Fugro conducted this multi-media investigation to further evaluate source area(s) and boundary conditions, as well as to evaluate preferential migration pathways along the N-O Alley. Fugro conducted this Investigation in general conformance with the Work Plan dated December 6, 2013.

The data gap investigation was incremental in nature and started with a USA notification and field meet with local utility providers and field screening by a private utility locator given the number of surface features and old utility mappings observed within the N-O Alley. Research was also conducted for available utility maps and plans to aid in identifying the location, size and depth of various wet and dry utilities within the N-O Alley. Soil vapor sampling and mobile laboratory testing were conducted ahead of soil and groundwater sample collection so that source area(s) information could be considered in defining field data collection points. In addition, a camera survey and ground surveying were conducted within the main sanitary sewer alignment to identify the depth and direction of the flow line and the location of observed imperfections.

To complete a screening level assessment of the data collected the analytical results have been compared to the Environmental Screening Levels (ESLs) established by the San Francisco Regional Water Quality Control Board (SFRWQCB), updated in December 2013. The ESLs were used in lieu of the California Human Health Screening Levels (CHHSL), established by the California Department of Toxic Substance Control in 2010, because the ESLs are judged by most within the environmental consultant and regulatory community to be based on more reasonable and updated human health risk criteria. In addition, ESLs provide screening levels for TPH compounds while CHHSLs are silent on TPH, and TPH is known to be present at the Site. Given Site occupancy, utility obstructions, right-of-way work requirements, Site work was completed on consecutive weekends and a few week days over a five to seven week schedule.

To meet DGS internal reporting goals, chemical analysis were completed by multiple laboratories. This presented a unique opportunity to evaluate various Stoddard solvent standards used by the laboratories, due to the industry acknowledged overlap of the gasoline range and diesel range fraction of Stoddard Solvent materials.

In addition, this phase of work investigation included a hazardous building material survey and sampling of chemicals in use at the operating dry cleaners. The pre-demolition building materials survey was conducted to identify the presence of asbestos containing material (ACM) and lead containing material, as well as other potentially hazardous materials. The dry cleaning room was observed for dry cleaner products in current use. Fugro identified and sampled several different products, and the chemical fingerprints of these products were used for comparison to the existing contamination onsite. While sampling these products Fugro also collected a sample of drain water present in a floor drain of the conventional wash room.

4.2 DEVIATIONS FROM THE WORK PLAN

In general, Fugro made reasonable attempts to adhere to the Work Plan, and requests outlined in the CVRWQCB Work Plan approval letter dated December 18, 2013. While there were no significant deviations from the approved Work Plan, various specific deviations were warranted to accommodate Site and utility corridor constraints, tenant space logistics, and DGS data requirements. A copy of the Work Plan and CVRWQCB approval letter are presented in Appendix B. Specific deviations are discussed below. These deviations were deemed appropriate and consistent with the intent of the Work Plan.

- Twenty-five soil vapor probes were conducted, an increase of 6 over the number proposed in the Work Plan.
- Due to the high level of soil vapor concentrations detected during the initial phase of this work, additional soil and grab groundwater sampling points were sampled during this study. The work plan had indicated that up to 12 soil and groundwater sampling points would be installed. Sixteen soil borings were completed; fifteen of which were also sampled for groundwater.
- Due to sampling restrictions along the north side of the N-O Alley, samples were not collected immediately adjacent to the Simon's Restaurant structure during this phase of work.
- Based on restricted physical access and budget constraints, video surveys of the building laterals extending to the sanitary sewer mainline were not completed during this phase of work.
- Attempts were made to open all visible ports/utility caps in the carport area and interior of the building, however, most could not be opened using basic tools during the field effort for this phase of work.
- The testing program was modified to include naphthalene analyses and naphtha analyses were not conducted. In addition, most samples analyzed for petroleum hydrocarbons were tested without conducting a silica gel cleanup as recommended by the CVRWQCB.
- Most of the 24 hour air quality samples were not tested due to a concern that the samples may not represent good quality samples. The laboratory indicated that there appeared to be a malfunction of the canister regulators.
- A hazardous materials survey was conducted at the request of the DGS, and the results are presented in this report. This study was not described in the Work Plan.
- Several dry cleaning product samples and one drain liquid samples were collected and tested. The collection and testing of these samples were not previously discussed in the Work Plan.

4.3 FIELD ACTIVITIES

Prior to commencement of field activities Fugro obtained a drilling permit from the SCEMD. Once the SCEMD permit was received Fugro prepared an application package which included a traffic control plan and a copy of the SCEMD permit, to facilitate obtaining a City of Sacramento encroachment permit for work within the N-O Alley. Fugro also retained a private



utility locator to clear all proposed sampling locations and alerted USA at least 48 hours prior to intrusive field activities. Copies of all permits are presented in Appendix B.

All soil borings were conducted by State of California licensed drilling contractors including TEG Inc. (TEG), Moore Twining and Associates (MTA), and Cascade Drilling (Cascade). Standard industry practices for sample collection, sample handling, equipment decontamination, and worker health and safety were followed. All boring locations were backfilled with neat cement grout up to five feet below ground surface (bgs), filled with clean fill to 1 foot bgs and surfaced patched to match existing grade upon completion.

4.3.1 Utility Survey of the N-O Alley

Prior to commencement of intrusive activities, Fugro utilized USA to locate underground utilities within the N-O Alley. Fugro also utilized Cruz Bros, a private utility locator, to perform an independent utility survey and to mark the utility locations in the N-O Street Alley, the UST area, around the outside of Site building, and in the parking areas at Mercury and near Simon's. Fugro made multiple site visits to confirm and meet individual utility representatives to insure the placement of borings were not going to conflict with utility locations. During this activity it became clear that borings proposed within the north side of the N-O Alley were not going to be completed during this phase of work. Intrusive work in this area will require special procedures including excavation to expose the utilities with full time observation by the vendor utility company.

Fugro retained Kimley-Horn to perform research to identify wet and dry utility lines within the N-O Alley and 16th Street right-of-ways near the Site. Kimley-Horn mapped the utility alignments, and provided Fugro information regarding flow line depths, size of pipelines, service connection points, and points of intersection of pipeline trenches. In addition, Kimley-Horn coordinated a video survey by Coastline of the sanitary sewer mainline within a portion of the N-O Alley near the Site. On February 4, 2014, Coastline opened manhole #711 located approximately 160 feet west and upstream from the Site building in the N-O Street Alley between 16th and 15th street. Coastline opened the manhole and temporarily plugged the flow and allowed some lag time for the flow level to dissipate. Then they proceeded to install a multi-rotational camera capable of multiple angles, attached to a cable with wheels. The camera advanced through the sewer taking stills and video documentation of deficiencies in the sewer line.

4.3.2 Soil Vapor Survey

Based on historical research into building and room use, sewer pipe locations, the soil vapor sample locations were selected to evaluate the source area(s) and extent of the release. The sample locations are presented in the following table.



Source Area

Location ID	Media	Location Description
FB-1	Soil Vapor	North-west corner of the dry cleaning room.
FB-2	Soil Vapor	North-east corner of the dry cleaning room.
FB-3	Soil Vapor	South-east corner of the dry cleaning room.
FB-4	Soil Vapor	South-west corner of the dry cleaning room.
FB-5	Soil Vapor	North-west corner of the former dry cleaning area.
FB-6	Soil Vapor	South-east corner of the former dry cleaning area.
FB-7	Soil Vapor	Adjacent to middle of the east wall of the conventional wash area within bermed area.
FB-8	Soil Vapor	South-west portion of conventional wash area within bermed area.
FB-9	Soil Vapor	Adjacent to the outside north-east corner of the boiler room in conventional wash room.
FB-10	Soil Vapor	North-west portion of conventional wash area.
FB-11	Soil Vapor	Northern portion of pressing room, in line with the south-east boiler room corner.
FB-12	Soil Vapor	South-east corner of the clothes room adjacent to the east wall.

Extent of Releases

Location ID	Media	Location Description
FB-13	Soil Vapor	North-central portion of clothes room (approximately 17 feet north of the south clothes wall 8 feet west of the east clothes room wall).
FB-15	Soil Vapor	South-east corner of the UST area.
FB-16	Soil Vapor	North-east corner of the UST area.
FB-19	Soil Vapor	Within the N-O Street alley, approximately 7 feet north of and 10 feet west of the north-west corner UST area. Near active sewer lateral.
FB-20	Soil Vapor	Within the N-O Street alley, approximately 7 feet north of and 2 feet west of the north-west corner UST area. Near sewer line breaks.
FB-21	Soil Vapor	Within the N-O Street alley, approximately 7 feet north of and 11 feet east of the north-east corner UST area. Near active sewer lateral.
FB-22	Soil Vapor	Approximately 3 feet north of and 2 feet west of the north-east corner Site building. Near sewer line breaks.



Extent of Releases

Location ID	Media	Location Description
FB-14	Soil Vapor	Approximately 6 feet east and 23 feet north of the north-east corner Site building.
FB-17	Soil Vapor	Approximately 5 feet south and 19 feet east of the south-west corner Site building.
FB-18SV	Soil Vapor	Approximately 10 feet south and 14 feet west of the south-east corner Site building.
FB-23	Soil Vapor	Approximately 27 feet north and 2 feet east of the south-east corner Site building.
FB-24	Soil Vapor	Approximately 15 feet north and 2 feet east of the south-east corner Site building.
FB-25	Soil Vapor	North-west portion of clothes room (approximately 17 feet north the cloths room south wall and 7 feet east the clothes room west wall).
FB-26	Soil Vapor	Approximately 34 feet south and 43 feet east of the south-west corner Site building.

On January 4 and 5, 2014 Fugro was onsite to conduct the interior portion of the soil vapor survey. Cruz Bros arrived onsite to clear the individual probes inside the Site building. After each probe location was cleared, Vickers cored a 2-inch diameter hole through the concrete floor to facilitate installing individual soil vapor sampling probe. Soil vapor probes were installed at locations around the exterior and the interior of Site building (see Plate 2). TEG's mobile laboratory was onsite to facilitate the immediate analyses of each soil vapor sample. No cuttings or cores were produced during the installation of the soil vapor probes; therefore, no bore logs were generated.

TEG installed each soil-vapor probe at a depth of 5 feet bgs. TEG utilized a roto-hammer to drive two, four-foot long, 1 inch diameter drill rods to the specified depth of 5 feet. At depth, the rod was removed and a 3/4-inch diameter PVC pipe marked at six-inch intervals was inserted into the boring. Sand was poured into the pipe to a depth of 4.5 feet bgs. A 1/4-inch Teflon tube fitted with a 1/4 inch diameter sampling point affixed with a compression fitting was placed down the PVC pipe and another six-inches of sand was poured into the boring through the pipe. Next, TEG added six inches of bentonite chips and hydrated the bentonite with eight-ounces of water. This step was repeated in six-inch lifts until reaching the surface. Each probe was allowed to equilibrate for 30-minutes or more prior to purging or sampling.

Each probe was fitted with a particulate filter and flow regulator placed in-line to maintain a 100-200 CC (ml) per minute purging and sampling flow rate and prevent influx of soil particles into the sample containers while purging or collecting.

At the first sampling location, TEG performed a purge test of one, three, and ten soil vapor probe volumes to determine the Site-specific draw volume for the remainder of the soil vapor sampling. The soil vapor samples were purged and collected using a 50 cc glass syringe.

The test procedures included obtaining three separate volumes from the first probe location, and testing each volume to determine which purge volume yields the most representative data. In this case the draw volume of ten volumes was selected based on the in-field purge test results being the highest and most representative of actual soil vapor conditions. The results of the in-field purge test are presented in Table 1.

During the sampling of each soil vapor probe, a tracer compound was used to evaluate any leak of ambient air around the ground surface and near the syringe. A shroud was placed over the probe and the annular space was filled with the tracer compound prior to sampling to check for leaks. Each soil vapor probe was screened using a PID to evaluate the approximate laboratory dilutions to complete analysis. After the collection of a sample from each soil vapor probe the sample was labeled and immediately taken to TEG's mobile laboratory for analysis. TEG operates a state of California certified mobile testing laboratory. The soil vapor samples were analyzed for some or all of the following:

- TPHd using EPA Method 8015m; and
- VOCs and TPHg using EPA Method 8260

After completion and acceptance of analytical results from each soil vapor probe, each probe was removed and backfilled with clean fill (sand) to approximately 1 foot bgs and filled with concrete to match existing grade. All investigation derived waste (IDW) was placed into a labeled DOT 55-gallon drum and stored onsite until they were removed by American Integrated Services (AIS) under manifest in February 2014. Based on the results from the soil vapor sampling of the weekend of January 4 and 5, additional soil vapor samples were collected on January 11 and 12, 2014 using the same methods.

4.3.3 Soil and Grab Groundwater Sampling

Based on the results of the soil vapor sampling activity and utility survey, Fugro advanced additional borings to facilitate collection of soil and grab groundwater samples. The locations of the sample locations placed are presented in the table below:



Source Area

Location ID	Media	Location Description
FB-3	Soil / Groundwater	South-east corner of the dry cleaning room.
FB-4	Soil / Groundwater	South-west corner of the dry cleaning room.
FB-5	Soil / Groundwater	North-west corner of the former dry cleaning are.
FB-7	Soil / Groundwater	Adjacent to middle of the east wall of the conventional wash area within bermed area.
FB-9	Soil / Groundwater	Adjacent to the outside north-east corner of the boiler room in conventional wash room.
FB-10	Soil / Groundwater	North-west portion of conventional wash area.
FB-12	Soil / Groundwater	South-east corner of the clothes room adjacent to the east wall.
FB-15	Soil / Groundwater	South-east corner of the UST area.
FB-19	Soil / Groundwater	Within the N-O Street alley, approximately 7 feet north of and 10 feet west of the north-west corner UST area. Near active sewer lateral.
FB-20	Soil / Groundwater	Within the N-O Street alley, approximately 7 feet north of and 2 feet west of the north-west corner UST area. Near sewer line breaks.
FB-21	Soil / Groundwater	Within the N-O Street alley, approximately 7 feet north of and 11 feet east of the north-east corner UST area. Near active sewer lateral.
FB-22	Soil / Groundwater	Approximately 3 feet north of and 2 feet west of the north-east corner Site building. Near sewer line.

Extent of Releases

Location ID	Media	Location Description
FB-14	Soil / Groundwater	Approximately 6 feet east and 23 feet north of the north-east corner Site building.
FB-17	Soil / Groundwater	Approximately 5 feet south and 19 feet east of the south-west corner Site building.
FB-18	Soil / Groundwater	Approximately 10 feet south of and 14 feet west of the south-east corner Site building.
FB-26	Soil / Groundwater	Approximately 34 feet south and 43 feet east of the south-west corner Site building.

4.3.4 Soil Sampling

On January 6 and 7, 2014, Fugro observed MTA's advancement of soil borings in the N-O Street Alley sample locations (see Plate 2). Due to the high density of underground utilities in the N-O Street Alley, MTA utilized hand augering to drill the alley borings (see Plate 2).



On January 11 and 12, 2014 Fugro was onsite with TEG, MTA and Cascade to continue with the soil and grab groundwater sampling activities. MTA and Cascade completed seven interior concrete cores and soil borings. A four inch concrete corer was utilized to core through the concrete slab at each boring. Due to the low clearance inside the Site building, Cascade utilized a Geoprobe 420M limited access rig with a low profile working height to advance all interior borings. TEG completed five exterior locations utilizing a Power Probe 9500 PTO. All soil borings were advanced using a direct push rig equipped with a 2.25 inch diameter macrocore sampler.

All soil and grab groundwater boring locations were placed as companion borings to selected soil vapor probe locations. In general these borings were advanced within 2 feet of the soil vapor sample locations. All borings were completed to a maximum depth of 20.5 to 24 feet bgs. Each boring was logged according to Unified Soil Classification System (USCS). The soil was screened using visual and olfactory methods, as well as a PID. The soil samples were retained in acetate liners, capped with Teflon sheets and plastic end caps. Soil samples were stored in ice-chilled coolers pending transport to under chain of custody (COC) documentation to MTA and Castle Laboratories, both of which are State of California certified testing laboratories. Soil samples were analyzed for some or all of the following:

- TPHg using EPA Method 8015b/8260b;
- Total Petroleum Hydrocarbon as diesel, motor oil, and Stoddard solvent (TPHd and TPHmo) using EPA Method 8015b, with and without silica gel cleanup;
- VOCs using EPA Method 8260b; and
- SVOCs using EPA Method 8270c.

4.3.5 Grab Groundwater Sampling

Groundwater was encountered in every boring location. Once the boring reached completion depth a temporary pre-cleaned 1-inch diameter PVC casing with ten feet of machine slotted well screen and fifteen feet of blank casing was placed into the boring. Grab groundwater samples were collected using one of the following methods: disposable bailer, peristaltic pump, and check valve poly tubing depending on the subcontractor collecting the sample. Samples were retained in laboratory cleaned containers and placed in ice chilled coolers pending delivery to a laboratory.

As part of Fugro's QC program the grab groundwater samples collected on the weekend of January 11th and 12th, 2014 were analyzed by TEG's mobile laboratory onsite. Grab groundwater samples were transported under COC documentation. At these State of California certified testing laboratories, the grab groundwater samples were analyzed for some or all of the following:

- TPHg using EPA Method 8015b/8260b;
- TPHd, TPHmo and Stoddard Solvent using EPA Method 8015b, both with and without silica gel cleanup;
- VOCs using EPA Method 8260b;
- SVOCs using EPA Method 8270c; and
- pH using SM4500-HB.

Following the collection of each grab-groundwater sample each boring was backfilled with neat cement grout by tremie pipe to approximately five feet bgs, the tremie pipe was removed and clean fill (sand) was placed to one foot bgs under observation and approval by the SCEMD grout inspector. Quick drying concrete was then placed into the remaining hole to match existing grade. For borings within an asphalt area, the concrete was dyed with lamp black to match existing asphalt grades. All IDW was placed into a labeled DOT 55-gallon drum and stored onsite pending offsite disposal.

4.3.6 Building Materials Survey

Fugro retained SCA to perform the building materials survey. On January 11, 2014, SCA was onsite to perform the building survey of the Site building. The survey was limited to building construction materials only. SCA collected samples from the partial basement, first floor, second floor, and the roof. Since the building was currently occupied at the time of the survey, some materials were not sampled and assumed to be ACM in order to minimize damage to the building for the current occupants. These materials include but are not limited to, wall and mirror mastics and potential vapor barriers under slabs.

The building material survey samples were sent to Asbestos TEM Laboratories Inc. a National Voluntary Laboratory Accreditation Program (NVLAP) and Environmental Laboratory Accreditation Program (ELAP) accredited laboratory and to McCampbell Analytical Inc. an ELAP accredited laboratory. The building material samples were analyzed for some or all of the following:

- Asbestos PLM using EPA Method 600/R-93/116 or 600/M4-82-020,
- Lead using EPA Method EPA 6010B, and
- PCBs using EPA Method 8082.

4.3.7 Dry Cleaning Product Sampling

On January 30, 2014, Fugro visited the Site to conduct a Dry Cleaning Product Survey in the dry cleaning room. Fugro documented products stored in the dry cleaning room. Four products were identified and sampled for testing. Gipot is a dry cleaning detergent that is supplied to the existing dry cleaning machine. The Gipot container is located adjacent to and on the north side of the dry cleaning machine. Lubriplate was stored on top of the cabinet that stores used cylindrical filters. Adjacent to the cabinet in the hazardous materials staging area is a pallet with a blue drum of dryer lint and an empty gas can. The spotting table is located along the south wall with EZ-Out and Pyratex brand solvents that are used to facilitate the removal of tough stains. The spotting table also utilizes compressed air, steam and a vacuum to facilitate with stain removal.

Fugro observed a drain located on the north side of the concrete bermed area within the conventional wash area. According to the current tenants the drain has not been used for some time. Approximately four inches of standing water was visible in the drain and a sample was collected for analysis.

All samples were collected using standard industry practices for worker health and safety. Samples were retained in pre-cleaned laboratory containers, placed in an ice chilled

cooler, and transported under COC documentation to ATL a State of California certified testing laboratory. The product samples were analyzed for all of the follow:

- Gasoline Range Organics (GRO) using EPA Method 8015b;
- Diesel Range Organics (DRO) and Stoddard Solvent using EPA Method 8015b, both with and without silica gel cleanup; and
- VOCs including Naphthalene and Tentatively Identified Compounds (TICs) using EPA Method 8260b.

4.3.8 Air Quality Survey

On January 19, 2014, prior to indoor air sampling Fugro conducted a Site tour of both Mercury Cleaners and the north adjoining Simon's restaurant. Fugro conducted a building tour to identify ground surface finish details.

Fugro utilized a Photo ionization detector (PID) to collect real-time total VOC measurements during the Site tour. A PID is a portable vapor/gas detector that qualitatively measures whether VOCs are present. During the Mercury Site tour, Fugro detected no VOC odors; however, the PID measured VOCs up to 0.7 ppm, with the highest reading obtained near the drainage/utility channel running through the dry cleaning equipment room floor on the west wall. PID readings obtained in other parts of the building measured up to 0.3 ppm.

During the Simon's site tour, Fugro detected VOC odors in and near the restroom likely from the presence of cleaning products. The PID measured VOCs up to 0.7 ppm inside the restrooms, and the highest VOC measured was up to 0.8 ppm in the bar area near the drainage basins in the floor. PID readings obtained in other parts of the building measured up to 0.5 ppm. According to the CADA site representative, Simon's had conducted renovations which included painting and refurbishing the interior main common area within the last six months.

Fugro selected the air quality sample locations based on the soil vapor results and with consideration of the highest PID measurements recorded during the Site tours. For the Mercury study Fugro selected the main clothes hanging room for the location of AQ-6, the outside north wall of the of the boiler room for location of AQ-7, the northwest corner of the room adjacent to the south of the dry cleaning room for location AQ-8, and adjacent to the floor drainage/utility channel and dry cleaning machine for the location of AQ-9. For the Simon's study Fugro selected the eastern most wall of the kitchen for the location of AQ-10, and the outer west wall of the restrooms for the location of AQ-11.

The background sample location for this event was southwest of the HnH building near a storage building. Following the Site tour Fugro placed two laboratory prepared six-Liter Summa Canisters at each sample location. At each sample location, one Summa Canister was equipped with an eight-hour sample regulator and one was equipped with a 24-hour sample regulator. The Summa Canisters were batch-certified by the ATL, and equipped with particulate filters and regulators calibrated for either an 8-hour or 24-hour sampling event. All the sample canisters were situated such that the sampling ports were located between 3 and 5 feet off the ground to represent the potential breathing zone. A duplicate sample (DUP-2) was collected adjacent to location AQ-9. The locations of all the air quality samples are present on plate 2.



The air quality samples were collected and transported under COC documentation to ATL a State of California certified testing laboratory. The air quality samples were analyzed for all of the follow:

- GRO in air using EPA Method TO-3; and
- VOCs in air using EPA Method TO-15 (SIM).

5.0 FINDINGS

5.1 GEOLOGY AND HYDROGEOLOGY

Based on the geologic map titled Geologic Map of the Sacramento Quadrangle, California the Site is mapped as Levee and Channel Deposits (Qa) of early Holocene period (<11,700 years). These levee and channel deposits consist of poorly sorted clay to boulder size, with varying quantities of sand, gravel, silt, and clay. The deposits are shown to be present on gently sloping, fan-shaped, relatively un-dissected alluvial surfaces. Locally, these materials may have been disturbed or overfilled by development in the Site vicinity.

Conditions encountered during the field investigation indicate that the Site is underlain by up to five feet of silty sand. Geotechnical testing of a sample from boring FB-15 at the depth of 0.5 feet suggests that the shallow soil is comprised of 85 percent silt and clay with 15 percent fine sand. The shallow soils are underlain to the depth explored, about 24 feet bgs, by a silt with varying amounts of fine sand. Geotechnical testing of a sample from boring FB-15 at the depth of 13 feet suggests that the shallow soil is comprised of 54 percent silt and clay with 46 percent fine sand.

Groundwater was observed to fluctuate between depths of 16 to 20 feet bgs during the Site study. This is a similar range to that described during the Ninyo and Moore 2006 and Geocon 2008-2011 Site studies. To further characterize the groundwater conditions in the Site area, Fugro reviewed case files available online through the State of California GeoTracker database at www.geotracker.waterboards.ca.gov. Review of case records confirm that local groundwater conditions are similar to those observed during this study. In addition, the groundwater monitoring data suggests that the groundwater flow direction may vary from west to southwest at a relatively flat gradient.

To aid in the description of subsurface conditions across the Site, Fugro prepared two cross-sections utilizing subsurface data gathered from the borings completed during this data gap investigation. Cross section line A-A' illustrates subsurface conditions encountered along the long axis of the Site from the south end of the parking lot to the north side of the N-O Alley (Plate 3). Cross section line B-B' illustrates subsurface conditions from the east side of the Site building to 16th Street to the west and parallel with the N-O Alley (Plate 4).

5.2 RESULTS OF THE UTILITY SURVEY OF THE N-O ALLEY

The results of the limited utility survey are presented on Plate 8. The results of the sanitary sewer video survey are presented in appendix D and are summarized on Plate 4. This research was used to evaluate whether existing utility lines may represent completed preferential migration pathways.

The N-O Alley has multiple utilities located within the City right-of-way. Each utility is specified to have a minimum thickness of soil covering it as follows:

- Water Distribution Main – 3 feet,
- Gas – 2.5 feet,
- Cable TV – 2.5 feet,
- Electrical Primary – 3 feet, and
- Electrical Secondary – 2.5 feet.

The gas service line to the Site building runs approximately 2 feet from the north Site building wall. The gas line runs parallel with the alley way until it makes a right turn south into the Site building UST area, where it connects to the building's gas meter.

A communication and television (CTV) utility is located approximately 1 foot north from the Site building wall and running parallel with the alley and continues east to make a right angle turn south behind the Site building. At approximately 19 feet from the north of the Site building wall is another CTV utility that runs parallel with the alley and straight through without service lateral points within the alley. At approximately 12 feet from the north of the Site building wall is an electric line that runs parallel with the alley and goes straight through with no service points.

The 8-inch water distribution mainline is located approximately 9 feet off of the Site building north wall and runs parallel with the alley. The water main line has a service lateral to the Site building at approximately 100 feet from the west edge of the Site building. At approximately 170 feet and 210 feet from the west edge of the Site building there are two service laterals that service the buildings to the north of the alley.

The 8-inch diameter sanitary sewer line is located approximately 6 feet north from the Site building wall running parallel with the alley. The sewer flow direction is from west to east. The elevation of the sewer line starts at about 15.82 feet above mean sea level to the west of the Site and drops to an elevation of about 15.34 feet above mean sea level to the east of the Site.

The results of the video survey generally revealed that the sanitary sewer line comprises 6 foot long clay pipe sections. Each length of sewer line was coupled together with another length, and at these coupled points many gaps with exposed soil and roots were visible. A few of the coupled points had fractured sewer pipe with exposure to surrounding soil observed. In general, sewer laterals enter the sewer mainline near the top of the pipe, between the 10 o'clock and the 2 o'clock positions. The sewer service laterals enter the sewer at tap locations. The taps were either factory molded holes or break-in-line connections. A break-in-line connection is where a hole was created by breaking the main line to fit a lateral line into it. At each tap observations were noted. Observations included a description of the tap and condition of the tap.

Five sanitary sewer laterals, four of which are active and one that intrudes into the mainline, service the Site building. Two investigation borings were positioned in close proximity to two of the Site building laterals. Two active sewer laterals were also observed to service buildings to the north, with at least one of them serving the Simon's building.

The limited video survey revealed a low point where the sanitary sewer line had sagged resulting in pooling of flow. The observed sag point is located about 28 feet east of the northeast corner of the Site building.

The general depth of the sanitary sewer line is approximately five and ½ feet bgs and the general groundwater table fluctuate between depths of approximately 12 and 20 feet bgs. Based on the general depth of the sewer line and the depth of the fluctuating groundwater table, it is believed that the sewer line does not intersect the groundwater table.

Within the carport/UST area there are nine (9) observed pipes that penetrate the ground surface and/or the building wall. Of the nine pipes, four of them were observed to be vent pipes that seem to be connected to a respective UST. The vent pipes extend above the roof line and have the characteristic vent cap to prevent rain from entering the pipe. The remaining five pipes seem to be former conduit lines from the USTs to equipment inside the Site building. Three of the pipes are conduits that daylight from the subsurface and enter the dry cleaning room through the middle of the east wall of the UST area and the remaining two pipes are conduits that daylight at the south-east end of the UST area. The observed survey marking suggest that two of the three conduit pipes on the east-central wall of the UST area terminate in the subsurface and are not connected to the USTs, while the third pipe seems to be connected to an access box. The two pipes at the south-east corner of the UST area appear to be coming from the dry cleaning room and are cut off flush with the ground surface.

5.3 RESULTS OF CHEMICAL ANALYSES – SOIL VAPOR

Soil vapor results are presented on the attached Table 1 and Plates 5a through 5c. Contaminant iso-concentration contours are presented on some of the plates to provide a graphical representation of concentration intensity. Analytical laboratory reports are presented in Appendix E. General comments about the presence of dry cleaning compounds are presented below.

5.3.1 Source Area

No petroleum hydrocarbon concentrations in soil vapor were recorded by the mobile laboratory during this study.

Analyses detected PCE in the source area in all of the soil vapor probe locations. Detected concentrations of PCE in all source area samples ranged from 750 $\mu\text{g}/\text{m}^3$ to 2,200,000 $\mu\text{g}/\text{m}^3$. Analyses detected significantly elevated concentrations in the vicinity of the dry cleaning work areas, suggesting the presence of a potential source area.

PCE degradation products were also detected in the suspected source area including TCE and cis-DCE. Analyses detected no other VOCs in the soil vapor samples collected within the source area.

5.3.2 Extent of Release

Analyses detected PCE in all five of the soil vapor probe locations advanced to evaluate the extent of the release based on soil vapor data. Detected concentrations of PCE in this designated area ranged from 4,100 $\mu\text{g}/\text{m}^3$ to 390,000 $\mu\text{g}/\text{m}^3$. Analyses detected TCE at concentrations ranging from 160 $\mu\text{g}/\text{m}^3$ to 7,500 $\mu\text{g}/\text{m}^3$ and cis-DCE concentrations ranging from 660 $\mu\text{g}/\text{m}^3$ to 11,000 $\mu\text{g}/\text{m}^3$ in this area.

5.4 RESULTS OF CHEMICAL ANALYSES - SOIL

Soil analytical results are summarized in Table 2 and presented in Plate 6a through 6c. Analytical laboratory reports are presented in Appendix E. General comments about the presence of dry cleaning compounds are presented below.

Analyses detected TPHg in 17 of 57 samples analyzed at concentrations ranging from 10 mg/kg to 1,900 mg/kg. In general, the chromatograms for TPHg did not match the laboratory standard for gasoline and appeared to represent a heavier hydrocarbon chain material such as Stoddard Solvent.

Analyses detected TPHd in 14 of 27 samples analyzed at concentrations ranging from 1.9 mg/kg to 3,000 mg/kg. The laboratory noted an overlap of the Stoddard Solvent range for most of these detected concentrations and suggested that the sample fingerprint did not match a typical diesel hydrocarbon pattern.

One of the laboratories was able to quantify the presence of Stoddard Solvent in 15 of 44 samples checked at concentrations ranging from 2.6 mg/kg to 4,500 mg.

Analyses detected TPHmo in three of 51 samples analyzed ranging in concentrations from 15 mg/kg to 89 mg/kg.

Analyses detected PCE in 31 of 52 samples analyzed at concentrations ranging from 0.0051 mg/kg to 170 mg/kg. PCE degradation products were also detected in some of the soil samples. TCE was detected in 13 of 52 samples at concentrations ranging from 0.0056 mg/kg to 27 mg/kg and cis-DCE was detected in 29 of 52 samples at concentrations ranging from 0.0051 mg/kg to 1.8 mg/kg. Analyses detected no trans-DCE or vinyl chloride in the soil samples analyzed.

5.5 RESULTS OF CHEMICAL ANALYSES – GRAB GROUNDWATER

Groundwater analytical results are summarized in Table 4 and presented in Plate 7a through 7e. Contaminant iso-concentration contours are presented on some of the plates to provide a graphical representation of concentration intensity. Analytical laboratory reports are presented in Appendix E. General comments about the presence of dry cleaning compounds are presented below.

Grab groundwater samples were tested in both a stationary and a mobile laboratory. TPH data showed significant variability between the two laboratory outputs, likely the result of different standards in use by the respective laboratories and overlapping carbon chain standards.

MTA/Castle analyses detected TPHg in nine of 15 samples analyzed at concentrations ranging from 110 µg/L to 8,300 µg/L. TEG mobile laboratory analyses detected TPHg in eight of their 15 samples analyzed at concentrations ranging from 1,500 µg/L to 560,000 µg/L. Both laboratories noted the hydrocarbon patterns were not a typical gasoline pattern.

MTA/Castle analyses detected TPHd in eight of 12 samples analyzed at concentrations ranging from 130 µg/L to 200,000 µg/L. TEG mobile laboratory analyses detected TPHd in three of their seven samples analyzed at concentrations ranging from 8,400 µg/L to 49,000 µg/L. MTA/Castle noted that the TPHd detections were not typical diesel hydrocarbon patterns.

and there is overlap of the Stoddard Solvent pattern. TEG noted that their detections are not the typical diesel hydrocarbon pattern.

MTA/Castle analyses detected Stoddard Solvent in eight of 12 samples analyzed at concentrations ranging from 390 µg/L to 290,000 µg/L.

MTA/Castle analyses detected PCE in all 14 samples analyzed at concentrations ranging from 4.0 µg/L to 3,300 µg/L. TEG's mobile laboratory analyses detected PCE in all 15 samples they analyzed at concentrations ranging from 6.1 µg/L to 6,600 µg/L.

PCE degradation products were also detected in the samples. MTA/Castle analyses detected TCE in 14 samples analyzed at concentrations ranging from 2.6 µg/L to 5,900 µg/L. TEG's mobile laboratory detected TCE in all 15 samples analyzed at concentrations ranging from 3.5 µg/L to 5,900 µg/L. MTA/Castle analyses detected cis-DCE in all 14 samples analyzed at concentrations ranging from 11 µg/L to 28,000 µg/L. TEG's mobile laboratory detected cis-DCE in all 15 samples analyzed at comparable concentrations ranging from 15 µg/L to 32,000 µg/L. MTA/Castle analyses detected trans-DCE in 12 of 14 samples analyzed at concentrations ranging from 0.76 µg/L to 170 µg/L. TEG's mobile laboratory detected trans-DCE in four of 15 samples analyzed at concentrations ranging from 2.4 µg/L to 170 µg/L. MTA/Castle analyses detected 1,1-dichloroethene (1,1-DCE) in four of 14 samples analyzed at concentrations ranging from 1.9 µg/L to 7.5 µg/L. TEG's mobile laboratory detected no 1,1-DCE in any of the samples analyzed. MTA/Castle analyses detected vinyl chloride in four of 14 samples analyzed at concentrations ranging from 0.74 µg/L to 3.2 µg/L. TEG's mobile laboratory analyses detected no vinyl chloride in the 15 samples analyzed.

MTA/Castle analyses detected Naphthalene in 1 of 14 samples analyzed at a concentration of 9.2 µg/L; TEG's mobile laboratory detected no Naphthalene in any of the 15 samples.

5.6 RESULTS OF SILICA GEL TREATMENT ANALYSES

Several samples were tested for potential interference by natural oils. These samples were tested for ranges of petroleum hydrocarbons both before, and then following, sample preparation using a silica gel treatment (SGT, used to strip natural oils (polar materials) from samples). Comparison of soil and grab groundwater sample data before and following SGT are presented in Tables 3 and 5, respectively. The data comparison suggests that a decrease in TPH concentrations is realized following a SGT sample preparation. However, the degree of reduction is judged to not be sufficiently significant to warrant continued use of SGT at this point in the site investigation phase of work.

5.7 RESULTS OF CHEMICAL ANALYSIS – HAZARDOUS BUILDING MATERIALS

SCA's hazardous building material assessment indicates the presence of ACM on the first floor of the Site building. There is regulated ACM (RACM) present in the clothing room and the steam room on the first floor. The RACM present includes the Off-white insulation with canvas wrap on heating hot water pipe and elbows, and the joint compound used with the ceiling drywall. There is Cat II Non-Friable ACM present in the steam room and the mechanical room on the first floor. The Cat II Non-Friable material present includes the 12" x 12" red brick/clay wall mortar, the transite boiler flue, and the Off-white interior window putty. There is Cat I Non-Friable ACM present in the office room on the first floor and on the roof. The Cat I

Non-Friable material present includes the 9" x 9" grey with white streaks floor tile, and the grey penetrating roofing mastic. A copy of the SCA report is presented in Appendix F.

SCA's hazardous building material assessment indicates the presence of lead based paint (LBP) on the first floor in the office area, the office area restrooms, boiler room, and the conventional wash room. LBP is also present on the second floor in the south office and on the roof.

SCA did not detect PCBs in the three samples analyzed. However, PCBs may be contained the lighting ballasts. SCA also indicated the potential presence of mercury onsite that may be contained in the fluorescent tubes used for lighting.

5.8 RESULTS OF CHEMICAL ANALYSES – DRY CLEANING ROOM PRODUCT

ATL tested four dry cleaning products currently in use at the Site; EZ-Out, Gipot, Pyratex, and Lubriplate. Tentatively Identified Compounds (TICs) were detected in the analyses of all four products. The results of the dry cleaning room products are summarized in Table 6. The analytical laboratory report is presented in Appendix E.

Analyses detected TPHg, Stoddard Solvent, and TPHd range petroleum hydrocarbons at significant concentrations in all four products analyzed. PCE and its degradation products were not detected in these select samples.

5.9 RESULTS OF CHEMICAL ANALYSES – DRAIN LIQUID

Analyses detected no TPHg in the drain liquid found in a sump in the Site building. Stoddard Solvent range petroleum hydrocarbons were detected at a concentration of 1,300 µg/L and TPHd range petroleum hydrocarbons were detected at a concentration of 8,300 µg/L. Analyses detected no VOCs except PCE at a concentration of 5.4 µg/L and methanethiol at a concentration of 64 ug/L. A summary of the drain liquid results are presented in Table 7. The analytical laboratory report is presented in Appendix E.

5.10 RESULTS OF CHEMICAL ANALYSES – AIR QUALITY

The following table shows the start and stop times and dates; initial, final, and laboratory recorded canister pressures; and the initial and final PID readings for each air quality sample collected during this study.



Sample ID (8 hour or 24 hour)	Start Time and Date	Stop Time and Date	Initial Canister Pressure (mmHg)	Final Canister Pressure (mmHg)	Laboratory Canister Pressure (mmHg)	PID Readings Initial/Final (ppm)
AQ-6 (8)	0922 1/19/20104	1554 1/19/20104	-28	-2	-1	0.1 / 0.0
AQ-7(8)	0925 1/19/20104	1556 1/19/20104	-30	-4	-3	0.0 / 0.2
AQ-8(8)	0927 1/19/20104	1558 1/19/20104	-30	-5	-4	0.2 / 0.3
AQ-9(8)	0929 1/19/20104	1555 1/19/20104	-26	-4	-2	0.2 / 0.6
AQ-6(24)	0922 1/19/20104	0822 1/20/20104	-30	-20	-19	0.1 / 0.2
AQ-7(24)	0925 1/19/20104	0825 1/20/20104	-30	-24	-25	0.1 / 0.1
AQ-8(24)	0927 1/19/20104	0827 1/20/20104	-30	-10	-10	0.2 / 0.4
AQ-9(24)	0929 1/19/20104	0710 1/20/20104	-25	-2	-1	0.2 / 1.3
DUP-2(24)	1018 1/19/2014	0836 1/20/2014	0	0	-1	0.2 / 1.8
AQ-10(8)	0941 1/19/20104	1628 1/19/20104	-30	-4	-5	0.1 / 0.2
AQ-11(8)	1002 1/19/20104	1626 1/19/20104	-23	-1	-2	0.6 / 0.2
AQ-10(24)	0941 1/19/20104	0902 1/20/20104	-30	-13	-13	0.1 / 0.2
AQ-11(24)	1002 1/19/20104	0903 1/20/20104	-29	-13	-19	0.6 / 0.2
BKG-2(24)	0902 1/19/20104	0744 1/20/20104	-30	-3	-1	0.0 / 0.0

Initial negative pressures within the Summa Canisters were recorded to range from -23 to -30 mmHg at the start of the event. Final negative pressure within each canister were also recorded after sampling and ranged from -1 to -19 mmHg. According to ATL, most of the 24-hour canisters experienced an issue with the operation of the 24-hour regulators as evidenced by higher negative pressures than would be anticipated at the end of the sampling event. As a result these air samples were not tested.

Results of chemical analysis conducted for this survey and Fugro's 2012 survey are summarized in Tables 8 and 9. The laboratory report is presented in Appendix E.

5.10.1 Mercury Cleaners

Prior to the sampling event, Fugro noted building and ground surface finish details. We observed one self-contained dry cleaning machine in operation and observed that product for the machine is pumped from a 5-gallon product container through a polyethylene tube into the machine. During our reconnaissance, Fugro observed that a fan was running when we entered the dry cleaning room.

Analyses did detect PCE, TCE, cis-DCE, and trans-DCE in all four indoor air samples analyzed. BTEX was detected in all of the indoor air samples analyzed from the Site and in the background sample. Carbon tetrachloride was detected at a concentration of $0.27 \mu\text{g}/\text{m}^3$ in the background sample and it was detected in all 4 indoor air samples at the same relative concentration as the background sample. Carbon tetrachloride in an urban environment can be related to its long time use as an industrial compound in the greater Sacramento area.

General comments about the presence of dry cleaning compounds are presented below.

5.10.1.1 BKG-2

Analyses did not detect PCE, TCE, cis-DCE, and trans-DCE in background sample (BKG-2). Naphthalene was detected at a concentration of $0.76 \mu\text{g}/\text{m}^3$. Other compounds were consistent with previously detected ambient concentrations of BTEX and carbon tetrachloride.

5.10.1.2 AQ-6

In sample AQ-6 analyses detected PCE was detected at a concentration of $9.0 \mu\text{g}/\text{m}^3$. Analyses detected the PCE degradation products TCE, cis-DCE, trans-DCE and 1,2-Dichloroethane (DCA) at a concentrations of $1.0 \mu\text{g}/\text{m}^3$, $1.9 \mu\text{g}/\text{m}^3$, $0.04 \mu\text{g}/\text{m}^3$, and $0.24 \mu\text{g}/\text{m}^3$ respectively. Naphthalene was detected at $3.7 \mu\text{g}/\text{m}^3$.

5.10.1.3 AQ-7

In sample AQ-7 analyses detected PCE at a concentration of $9.5 \mu\text{g}/\text{m}^3$. Analyses detected the PCE degradation products TCE, cis-DCE, trans-DCE, and DCA at concentrations of $0.91 \mu\text{g}/\text{m}^3$, $1.9 \mu\text{g}/\text{m}^3$, $0.09 \mu\text{g}/\text{m}^3$, $0.07 \mu\text{g}/\text{m}^3$ respectively. Analyses detected naphthalene at a concentration of $1.5 \mu\text{g}/\text{m}^3$.

5.10.1.4 AQ-8

In sample AQ-8 analyses detected PCE at a concentration of $10 \mu\text{g}/\text{m}^3$. Analyses detected TCE, cis-DCE, trans-DCE, and 1,1,1-trichloroethene (TCA) at a concentrations of $0.8 \mu\text{g}/\text{m}^3$, $1.8 \mu\text{g}/\text{m}^3$, $0.02 \mu\text{g}/\text{m}^3$, $0.08 \mu\text{g}/\text{m}^3$ respectively. Analyses detected naphthalene at a concentration of $0.68 \mu\text{g}/\text{m}^3$.

5.10.1.5 AQ-9

In sample AQ-9 analyses detected PCE at a concentration of $24 \mu\text{g}/\text{m}^3$. Analysis detected TCE, cis-DCE, trans-DCE, and DCA at a concentrations of $1.1 \mu\text{g}/\text{m}^3$, $2.3 \mu\text{g}/\text{m}^3$, 0.03

$\mu\text{g}/\text{m}^3$, and $0.17 \mu\text{g}/\text{m}^3$ respectively. Analyses detected naphthalene at a concentration of $2.5 \mu\text{g}/\text{m}^3$.

5.10.2 Simon's Restaurant

No TCE, cis-DCE, trans-DCE, or vinyl chloride (dry cleaning compounds of concern) were detected in any of the indoor air samples or the background sample collected at concentrations greater than the laboratory detection limits. Analyses did detect PCE, DCA, TCA, and naphthalene in all of the indoor air samples analyzed.

BTEX was detected in all of the indoor air samples analyzed from the Site and in the background sample. The detected concentrations of toluene, xylenes, and MTBE are all below their respective residential Tier 1 ESLs.

Carbon tetrachloride was detected at a concentration of $0.27 \mu\text{g}/\text{m}^3$ in the background sample. Carbon tetrachloride was detected in both indoor air samples at the same relative concentration as the background sample. Carbon tetrachloride in an urban environment can be related to its long time use as an industrial compound. Even though the detected concentrations of carbon tetrachloride exceed the residential Tier 1 ESL of $0.058 \mu\text{g}/\text{m}^3$, it is considered to be part of the background levels. As a result, the potential risk based on this sampling event due to the detected concentration of carbon tetrachloride is considered to be low.

5.10.2.1 AQ-10

In sample AQ-10 analyses detected PCE at a concentration of $2.2 \mu\text{g}/\text{m}^3$. Analyses detected no TCE, cis-DCE, trans-DCE, or vinyl chloride in AQ-10. Analyses detected DCA at a concentration of $0.10 \mu\text{g}/\text{m}^3$ and TCA at a concentration of $0.04 \mu\text{g}/\text{m}^3$. Analyses detected naphthalene at a concentration of $2.1 \mu\text{g}/\text{m}^3$ in AQ-10.

5.10.2.2 AQ-11

In sample AQ-11 analyses detected PCE at a concentration of $2.6 \mu\text{g}/\text{m}^3$. Analyses detected no TCE, cis-DCE, trans-DCE, or vinyl chloride in AQ-11. Analyses detected DCA at a concentration of $0.34 \mu\text{g}/\text{m}^3$ and TCA at a concentration of $0.08 \mu\text{g}/\text{m}^3$. Analyses detected naphthalene at a concentration of $1.7 \mu\text{g}/\text{m}^3$ in AQ-11.

6.0 DISCUSSION TOPICS

6.1 PREFERENTIAL FLOW/SECONDARY RELEASE EVALUATION

Most of the utilities within the N–O Street Alley are less than three feet deep bgs; the sanitary sewer mainline appears to be about five feet deep bgs. While the sanitary sewer had gaps and fractured couplings with visible soil observed, the soil vapor, soil and groundwater data collected near the sewer line is not significantly elevated compared to data collected below the Site building. As such, based on currently available data no completed preferential flow pathways judged to represent a significant source of contamination to the Site were identified, other than direct release(s) from the onsite deteriorated infrastructure.

6.2 SOURCE AREA CONDITIONS

For discussion purposes, the source area is defined as concentrations of chemicals of concern that exceed the screening levels such as commercial ESL or MCL by 100 times in groundwater and soil vapor. Shallow soil which contain dry cleaning chemicals were observed to coincide with the source area.

6.2.1 Petroleum Hydrocarbons

Samples from FB-15 were collected from the UST area north of the dry cleaning room. These soil samples contained over 400 mg/kg TPH quantified as gasoline and/or Stoddard Solvent and are considered source area materials. Petroleum hydrocarbons were also detected in grab groundwater samples from this area. The highest concentrations of Stoddard Solvent range TPH was observed in samples collected from FB-3, FB-5, FB-10, and FB-15. These samples contained TPH concentrations greater than 50,000 ug/L which is above the soluble limit for petroleum hydrocarbons. Concentrations above 20,000 ug/L are generally considered to represent Light Non Aqueous Petroleum Liquid (LNAPL).

Groundwater below the Site was encountered at approximately 20 feet bgs. Most soil borings were advanced to between 22 and 24 feet bgs. During sampling, the groundwater surface rose to approximately 16 feet bgs. Although TPH concentrations in groundwater from this area were generally above the solubility for TPH, LNAPL was not observed.

6.2.2 PCE

The most likely source of PCE impacts at the Site are past dry cleaning operations within the Site building. The highest concentrations of PCE in soil vapor was observed in samples FB-4, FB-5, FB-9 and FB 10 all of which contained PCE at concentrations greater than 1,000,000 ug/m³. Other soil vapor samples that exceed 210,000 ug/m³ concentrations or 100 times the commercial ESL are FB-3, FB-6, FB-7, FB-8, FB 13, FB-15 and FB-23. Samples from FB-3 and FB-4 were collected from below the current dry cleaning room. Samples from FB-5 and FB-6 were collected from below the former dry cleaning room. Samples from FB-7, FB-8, FB-9 and FB-10 were collected from below the conventional wash room. Sample FB-15 was collected from the UST area adjoining the wash room. Sample FB-23 was collected from east of the Site building.

Concentrations of PCE in grab groundwater samples were highest in samples from FB-5, FB-8, FB-9, FB-10 and FB-22. These samples all contain greater than 1,000 ug/L. Samples from FB-3 and FB-12 contained PCE greater than 100 times to ESL. Samples from FB-3 and FB-5 were collected from former dry cleaning room. Samples FB-8, FB-9 and FB 10 were all collected from the wash room. Samples from FB-12 were collected from west adjoining the boiler room. Sample FB-22 was collected from the N-O Street alley north of the current dry cleaning room.

Significant impacts to soil were not observed during this study. However, evidence suggests that impacted soil will be present in close proximity to points of release including below pipelines and trenches, and around sumps and USTs.

6.2.3 PCE Degradation Products

PCE breakdown component TCE was detected in soil vapor samples collected from location FB-3 through FB-15, FB-17, and FB-22 through FB-25. No samples were over 300,000 ug/m³, but the highest concentrations were detected at FB-9 and FB-10 within the conventional wash room. Concentrations of TCE were highest in groundwater samples from FB-5, FB-9 and FB-10. These concentrations were all over 500 ug/L or 100 times the MCL. These samples were collected from below the former dry cleaning room and conventional wash room. The down gradient concentration of TCE at FB-17 near the southeast corner of the Site building was more than twice the concentration detected at B3 during Ninyo & Moore's 2006 investigation.

The breakdown component cis-DCE was detected in 17 of 29 soil vapor samples. No samples were over 3,100,000 ug/m³, but the highest concentrations were detected at locations FB-5, FB-7, FB-9 and FB-10. These samples all contained greater than 100,000 ug/m³. These samples were collected from below the former dry cleaning room and the conventional wash room.

Concentrations of cis-DCE were greater than 600 ug/l at samples collected from locations FB-1, FB-3, FB-5, FB-9, FB-10, FB-15 and FB-22. Concentrations of Cis-DCE in groundwater are higher than any chlorinated solvent. This compound was not used directly at the Site based on current historic records and is the result of natural degradation of PCE. The next step in the degradation process would be conversion to vinyl chloride, but that does not appear to be taking place.

6.3 EXTENT OF RELEASE

The breadth and extent of the release at the Site is not well defined. The down gradient concentrations appear to be higher than previous studies showed. Concentrations of PCE, TCE and cis-DCE detected in groundwater at location FB-17 are, in general twice the concentrations detected in groundwater at location B3 collected in 2006. Groundwater data suggests that the dry cleaning solvent PCE and its breakdown components, TCE and cis-DCE may have migrated off the Site.

The extent of the petroleum hydrocarbon dry cleaning material Stoddard Solvent is better defined, but that is to be expected because petroleum based cleaning solvents have only been used on the site since 2004/2005 and petroleum is not as mobile as PCE.

Continued operation of dry cleaning and washing equipment at this facility appears to be a continuing source of contamination in soil and groundwater, as well as the waste conveyance system. The continuing conventional wash operations are contributing to spreading contamination plume by mobilizing past releases through flushing with water.

6.4 DRY CLEANING ROOM PRODUCTS AND DRAIN WATER TESTING

The results of this study shows that the materials in use at the Site are largely petroleum hydrocarbon based; with gasoline, Stoddard Solvent and diesel range hydrocarbons detected in all four product samples.

Drain liquid from a sump located in the conventional wash room contained petroleum hydrocarbons within the Stoddard Solvent and diesel ranges. PCE was also detected at low concentrations in this sump. The sump appears to be connected to another subsurface

improvement that was below a 30-inch diameter steel utility plate. Fugro could not access this improvement. The presence of PCE in drain liquid suggests either PCE is still in use at the Site, or that subsurface systems at the facility may still contain PCE.

6.5 HAZARDOUS BUILDING MATERIALS SURVEY

The hazardous building material assessment identified RACM at several locations and assumed RACM to be present at other locations. Lead was detected in all paint tested. Waste stream characterization will be required to facilitate proper disposal of demolition debris. PCBs were not detected in caulks or putties tested during the assessment. In general, the in-place ACM, LBP, and PCBs pose little threat to the building occupants if not disturbed.

6.6 AIR QUALITY SURVEY

Two background samples collected from the HnH contained BTEX and naphthalene. These compounds were present above ESL screening levels. These petroleum compounds are associated with automobile exhaust and are considered ubiquitous in the environment. In addition to these hydrocarbon vapors, the volatile organic compound VOC carbon tetrachloride was detected in ambient air in both samples. Background samples did not contain detectable concentrations of other VOCs.

All samples collected within the Mercury Cleaners Site building exceeded both residential and commercial indoor air screening levels for PCE and residential screening levels for TCE. Naphthalene was present at concentrations greater than background data and higher than commercial ESLs. Concentrations of chlorinated solvents, although still elevated above screening levels, were lower than recorded during the 2012 event, most likely due to the reduced usage of the dry cleaning machine during the study. Based on these elevated concentrations, continued operation/and occupancy of the Site building is not recommended until such time that additional modification of the ventilation system attains better management of the indoor air quality or remediation of the Site is completed.

Both Air Quality samples collected in Simon's exceeded the residential and commercial screening levels for PCE. The concentrations detected in Simon's were greater than those observed during the 2012 air quality sampling event. In addition, during this event elevated naphthalene and benzene concentrations relative to the background and screening levels were detected.

Fugro believes that recent painting activity within Simon's may have skewed air quality sample results for this study. This suspicion is supported by the higher PID readings registered at Simon's in 2014 compared to those detected in 2012.

7.0 INITIAL CONCEPTUAL SITE MODEL

The Initial Conceptual Site Model (CSM) presented herein summarizes and assesses available Site information regarding the nature, extent and mobility of the PCE and hydrocarbon releases which occurred at the Site. The CSM is documented in a tabular format with four (4) major sections describing the source, site characteristics including hydrogeology and preferential pathways, potential remediation effectiveness, and risks posed. Supporting documentation is attached to assist with a review of this information including Site vicinity maps,



Site analytical data summary tables (Table 1 through 10), Logs of Borings (Appendix C), and a Site Plot Plan (Plate 2).

Item	CSM Criteria	Evaluation
1	Source	
	Source and Volume	<p>The source is the result of 60 years of onsite dry cleaner operations. Between 1950 and 2004 dry cleaning equipment utilized PCE. From 2005 to today the equipment uses Stoddard solvent.</p> <p>Releases appear to have occurred below the dry cleaning room, former dry cleaning room, conventional wash room, and USTs. The exact release mechanism or source has not been identified.</p>
	Concerns regarding ongoing releases	<p>PCE use at the site reportedly stopped in 2004. Drain water samples contained PCE, so either subsurface piping still contains PCE or it is still in use. The operational dry cleaning equipment uses Stoddard solvent or other petroleum hydrocarbon based materials. Conventional clothes washing operations takes place at the Site and are likely releasing water that can spread the on-site impacts.</p>
2	Site Characterization	
	Current Site Use/Status	<p>The Site is an active dry cleaning and laundry business with professional offices on the second floor. The Site address is 1419 16th Street in Sacramento. The Site encompasses an approximately 0.29 acre level lot in a densely developed urban setting. Most of the building is constructed with a slab-on-grade floor.</p>
	Soil Impacts	<p>In general, soil concentrations above the groundwater table show that PCE and its breakdown components and TPH are defined to detections in the source area. Data gaps regarding the eastern boundary of the soil impacts exist. Significant concentrations of TPH were not detected in shallow soil samples, so the point of release for TPH is less certain.</p>
	Groundwater Impacts	<p>The extent of groundwater contamination is not known. Past studies have shown PCE and TPH are present at concentrations greater than screening levels as far west as the east side of 16th Street. The down gradient extent, west of 16th Street and the up gradient extent east of the Site building is not known. The cross gradient extent to the north and south are not known.</p>
	Plume stability and concentration trends	<p>A monitoring well network with spatial and temporal data has not been established. Based on grab groundwater samples between 2006 and 2014, concentrations near the center of the plume appear higher as the plume approaches 16th Street. Concentrations measured in groundwater on the west side of 16th Street in 2001 and 2005 suggest that the leading edge of the plume had already made its way across 16th Street.</p>
	Groundwater flow direction, depth trends and gradient trends	<p>A monitoring well network with special and temporal data has not been established for the Site. Data from nearby sites (1530 L Street 1601 L Street) shows groundwater flows toward the west or southwest.</p>



Item	CSM Criteria	Evaluation
	Site Setting and Geology	Based on the geologic map titled Geologic Map of the Sacramento Quadrangle, California the Site is mapped as Levee and Channel Deposits (Qa) of early Holocene (<11,700 years). These levee and channel deposits consist of poorly sorted clay to boulder particles size sand, gravel, silt, and clay, mapped on gently sloping, fan-shaped, relatively un-dissected alluvial surfaces.
	Regional Stratigraphy and Hydrogeology	Studies in the area identified fine grained soils and flow toward the west at a very low gradient. Other studies showed a flat groundwater gradient with no discernible flow direction.
	Preferential Pathway analysis	This data gap investigation evaluated preferential flow pathways and found none.
3	Potential Remediation Effectiveness	
		Natural degradation of PCE has begun, but the degradation process appears to be showing a cis-DCE stall.
		This Data Gap Investigation detected elevated concentrations of cis-DCE in groundwater. This suggests that natural attenuation of PCE is occurring, but the absence of vinyl chloride suggests that there is a cis-DCE stall below the Site. This may be because there is a low population of specific strains of Dehalococcoides bacteria that can degrade PCE all the way to ethane. Based on the concentrations of TPH detected in groundwater, the Site conditions are likely anaerobic. TPH will not degrade under anaerobic environments. PCE and its breakdown component on the other hand will not degrade under aerobic environments.
4	Risks Posed	
		<p>The Site is within a highly developed urban environment.</p> <p>No ecological receptors were identified.</p> <p>No water production wells are within the 3/4 mile of the site based on well surveys conducted by others for the Site. The nearest surface water is the Sacramento River, approximately 1.2 miles west of the Site. While the down gradient extent of groundwater impact is not defined, it is unlikely that groundwater impacts surface water or the production wells.</p> <p>Data has been compared to screening levels. Concentrations in soil, groundwater, soil vapor and indoor air at the Site are above residential and commercial screening levels. A human health risk assessment will need to be conducted.</p> <p>The human health risk from chlorinated solvents such as PCE and its breakdown components are greater than those of petroleum compounds such as Stoddard solvent. As such, the remediation driver is the presence of chlorinated solvents.</p>

8.0 CONCLUSIONS

This investigation did not identify completed preferential contaminant migration pathways. The mainline of the sanitary sewer system within the N-O Alley does not appear to be a significant contributing source to the distribution of soil and groundwater contamination based on the data collected to date. This is evidenced by observing the distribution of contaminants along the sanitary sewer alignment at lower concentrations than identified below the Site building.

Based on the history of Site use and review of the existing data distribution, there is sufficient data to demonstrate that two generations of releases have occurred at the Site. PCE was released from circa 1940 until at least 2004/2005 when the facility began using Stoddard Solvent or petroleum hydrocarbon based solvents. PCE is present in soil vapor, soil and groundwater below the site. The petroleum hydrocarbon based Stoddard Solvent is present in soil and groundwater at concentrations that suggest LNAPL may be present.

The cumulative evidence of this sampling event identified the source area below the current dry cleaning room, the former dry cleaning room, the conventional wash room and the UST area. This suggests that all or some of the following types of releases have occurred:

- Releases through the floor slab,
- Releases from leaking waste distribution system components,
- Releases from the floor drainage system, and
- Releases from the UST system.

The human health risk from chlorinated solvents such as PCE and its breakdown components are greater than those of petroleum compounds such as Stoddard solvent. As such, the remediation driver is the presence of chlorinated solvents.

The extent of the release is not well defined, but down gradient concentrations appear to be increasing. Groundwater data suggests that the dry cleaning solvents PCE, TCE and cis-DCE may have migrated off of the Site. The extent of the petroleum dry cleaning solvent Stoddard solvent is better defined, but that is to be expected because petroleum based cleaning solvents have only been used on the site since 2004 and petroleum is not as mobile as PCE.

The sample of the drain liquid contained petroleum hydrocarbons and PCE. The precise release points have not been identified but this area contains the highest concentrations. The source may extend to areas immediately adjoining these areas, but the presence of shallow soil contamination in these areas demonstrates that the past releases of dry cleaning chemicals can be traced to these areas.

The soil below the Site is fine grained material with sand. The hydraulic conductivity of this soil is generally slower than coarse grained soil. The release of Stoddard solvent has likely created an anaerobic environment in the subsurface. PCE will only degrade in anaerobic environments.

The natural degradation products of PCE are TCE, cis-DCE, trans-DCE, and vinyl chloride. Of these compounds only TCE and cis-DCE were present at high concentrations. The high concentration of PCE in groundwater was 6,600 ug/L while the high concentration of cis-DCE was 32,000 ug/l. This suggests that natural degradation of PCE is occurring and has

stalled at cis-DCE. This is common where specific strains of Dehalococcoides bacteria are not present in sufficient quantities to complete dechlorination to ethane. The breakdown to cis-DCE is evidence that anaerobic conditions are present.

PCE has a well documented affinity for petroleum compounds (Petrisor). Based on these results and the operational history of the building, it can reasonably be assumed that release points for the PCE and Stoddard solvent were in similar locations. The presence of high concentrations of Stoddard solvent in soil and groundwater may have sequestered PCE from the subsurface. The presence of high concentrations of TPH in soil below 16 feet bgs and TPH in groundwater above the soluble limit suggests that PCE may be accumulated in the TPH at higher concentrations.

9.0 RECOMMENDATIONS

Environmental data collected in January and February 2014 confirm that the Mercury Cleaners site has been impacted by past onsite operation of dry cleaning businesses. Studies conducted to date suggest that releases from onsite dry cleaning equipment and wash water conveyance trenches and pipelines, have resulted in both chlorinated solvents and petroleum based solvent contamination to soil, soil vapor, groundwater and indoor air quality at the site, and some adjacent areas. Existing onsite data is several orders of magnitude above standard screening levels; data concentrations drop off significantly at the property limits. Recent data strongly suggests that ongoing use of the Mercury Cleaners site as a dry cleaning business would continue to expand the impacts, and these impacts will continue to pose a risk to human health and the environment until the site is remediated. As such, Fugro recommends that all dry cleaning and conventional clothes washing practices at the site be ceased to stop the ongoing contribution (release) to the underground plume. Further, we have recommended to DGS that they consider terminating all onsite business activities to allow unrestricted and streamlined investigation and remediation of the site.

PCE and naphthalene are contaminants of concern related to onsite releases, and the 2014 levels of these contaminants in indoor air samples at the site are elevated. Measured contaminant concentrations were documented to be above screening criteria (that is, ESLs) for an exposure at a commercial site by a factor of 4 to 10 for PCE and by a factor of 2 to 10 for naphthalene. Without additional mitigation or remediation, risks posed to human health will continue.

Interior mitigation measures are immediately needed to protect human health and the environment. These measures may include further modification of the existing ventilation system, sealing the floor throughout the dry cleaning and conventional washing work areas, modification of the wash water collection and conveyance system including remedial efforts to remove stagnant fluids and to flush clean the system. Implementation of the interior mitigation measures would require that the tenant be moved out of the building.

Interim remediation may include UST removal, waste and drainage conveyance pipeline and sump closure/removal and a forensic assessment of points of release, and source area soil and possibly groundwater removal, treatment and disposal.

All identified RACM should be abated prior to renovation or demolition activity. All painted surfaces should be considered to contain some lead and proper dust control procedures

should be in place before renovation of demolition work begins. Light fixtures will have to be disassembled for visual inspection of Non-PCB labels. All fixtures that lack a manufacturer's label showing no PCB shall be classified as PCB containing material and require special disposal.

Various additional site investigations should be conducted to provide data that can be used to develop a remedial action plan. The types of studies still required should include the following:

- A pilot test to evaluate the efficacy of bioaugmentation should be considered to see if the addition of specific strains of Dehalococcoides bacteria can use the anaerobic conditions to break PCE down to ethene. This pilot test would also collect additional data for oxygen content, redox potential, pH, injection rates, and hydraulic conductivity.
- Additional definition of the horizontal and vertical extent of contamination in groundwater needs to be completed through installation of shallow and deep groundwater monitoring wells, and implementation of a monitoring program.
- Additional soil vapor survey points should be tested to aid in the definition of the plume in offsite areas.
- A Membrane Interface Probe study should be conducted to assess the lateral and vertical extent of impacts due to LNAPL/DNAPL.
- Additional air quality data should be periodically collected from Simon's and from the adjacent apartment building to document whether conditions warrant further assessment and monitoring.
- A Human Health Risk Assessment and Remedial Alternatives feasibility study should be conducted to provide information for the development of a remedial action plan. Given the current anaerobic state that the subsurface environment at this Site, it may benefit from bioaugmentation/reductive dechlorination approach to address the PCE release.

10.0 LIMITATIONS

Fugro has prepared this report in a professional manner, using that degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. Fugro shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared. Fugro also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report. Fugro believes that conclusions stated wherein to be factual, but no guarantee is made or implied. This report has been prepared for the benefit of the DGS.

11.0 REFERENCES

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TABLES

Table 1
Summary of Analytical Results - Soil Vapor
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID														Regulatory Criteria		
		FB-1SV	FB-1SV	FB-1SV	FB-2SV	FB-2SV dup	FB-3SV	FB-4SV	FB-5SV	FB-6SV	FB-7SV	FB-8SV	FB-9SV	FB-10SV	FB-11SV	FB-12SV	ESLs	
Date		1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4 -1/5/2014	1/4/2014	1/5/2014	Residential	Commercial
Purge Volume		1	3	10	10	10	10	10	10	10	10	10	10	10	10	10		
Hydrocarbons																		
TPHg	µg/m ³	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	300,000	2,500,000
TPHd	µg/m ³	<50,000	<50,000	<50,000	--	--	<50,000	<50,000	<50,000	<50,000	<50,000	--	--	<50,000	<50,000	--	68,000	570,000
VOCs																		
Tetrachloroethene	µg/m ³	100,000	140,000	150,000	130,000	110,000	450,000	1,200,000	2,200,000	580,000	890,000	500,000	1,300,000	1,400,000	200,000	140,000	210	2,100
Trichloroethene	µg/m ³	<8,000	<8,000	<8,000	<8,000	<8,000	13,000	58,000	75,000	27,000	62,000	41,000	140,000	120,000	15,000	15,000	300	3,000
cis-1,2-Dichloroethene	µg/m ³	<8,000	<8,000	<8,000	<8,000	<8,000	32,000	91,000	140,000	65,000	140,000	81,000	250,000	210,000	17,000	15,000	3,700	31,000
Chloroform	µg/m ³	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	<8,000	230	2,300
Remaining VOCs	µg/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	varies	varies						
Leak Check Compound																		
1,1-Difluoroethane	µg/m ³	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	NE	NE

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 VOCs = Volatile Organic Compounds
 ND = Not Detected
 NE = Not Established
 Detected concentrations shown in **Bold**
 -- = Not Analyzed
 <100 = Not detected above Laboratory reporting limits
 µg/m³ = Micrograms per meters cubed
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013. Table E-2 Residential and Commercial



Table 1
Summary of Analytical Results - Soil Vapor
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID														Regulatory Criteria	
		FB-13SV	FB-13SV dup	FB-14SV	FB-15SV	FB-16SV	FB-17SV	FB-18SV	FB-19SV	FB-22SV	FB-22SV dup	FB-23SV	FB-24SV	FB-25SV	FB-25SV dup	ESLs	
Date		1/5/2014	1/5/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4/2014	1/4 -1/5/2014	1/4 -1/5/2015	1/4 -1/5/2015	Residential	Commercial
Purge Volume		10	10	10	10	10	10	10	10	10	10	10	10	10	10		
Hydrocarbons																	
TPHg	µg/m ³	<800,000	<800,000	<100,000	<800,000	<100,000	<10,000	<10,000	<20,000	<10,000	<10,000	<200,000	<10,000	<20,000	<20,000	300,000	2,500,000
TPHd	µg/m ³	--	--	--	<50,000	<50,000	--	--	--	--	--	--	--	--	--	68,000	570,000
VOCs																	
Tetrachloroethene	µg/m ³	240,000	210,000	46,000	400,000	37,000	7,400	4,100	750	5,900	7,200	390,000	22,000	25,000	26,000	210	2,100
Trichloroethene	µg/m ³	27,000	23,000	1,000	32,000	<1,000	170	<100	<200	160	190	7,500	1,000	3,700	3,900	300	3,000
cis-1,2-Dichloroethene	µg/m ³	28,000	25,000	<1,000	81,000	<1,000	<100	<100	<200	<100	<100	11,000	660	3,200	3,200	3,700	31,000
Chloroform	µg/m ³	<8,000	<8,000	<1,000	<8,000	<1,000	<100	<100	<200	<100	<100	<2,000	<100	<200	<200	230	2,300
Remaining VOCs	µg/m ³	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	varies	varies
Leak Check Compound																	
1,1-Difluoroethane	µg/m ³	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	<800,000	NE	NE

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 VOCs = Volatile Organic Compounds
 ND = Not Detected
 NE = Not Established
 Detected concentrations shown in **Bold**
 -- = Not Analyzed
 <100 = Not detected above Laboratory reporting limits
 µg/m³ = Micrograms per meters cubed
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013. Table E-2 Residential and Commercial



Table 2
Summary of Analytical Results - Soil
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID															Regulatory Criteria	
		FB-1@10	FB-1@18	FB-1@20	FB-3@10	FB-3@15	FB-3@18	FB-3@20	FB-5@2	FB-5@10	FB-5@15	FB-5@20	FB-8@5	FB-8@10	FB-8@15	FB-8@18	ESLs	
		Date	41650	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	Residential
		1/11/2014	18 ft	20 ft	10 ft	15 ft	18 ft	20 ft	2.0 ft	10 ft	15 ft	20 ft	5 ft	10 ft	15 ft	18 ft		
		MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle		
Hydrocarbons																		
TPHg	mg/kg	<1.0	28 ^{2,3}	13	<1.0	470 ^{2,3}	420 ^{2,3}	57 ^{2,3}	<1.0	<1.0	540 ^{2,3}	100 ^{2,3}	<1.0	<1.0	<1.0	<1.0	100	500
Stoddard Solvent	mg/kg	--	--	--	--	--	--	--	<10	<10	1,200	360	--	--	--	--	NE	NE
TPHd	mg/kg	<10	1,600 ⁶	<10	<10	33 ⁶	150	75 ⁶	--	--	--	--	--	--	--	--	100	110
TPHmo	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	--	--	--	100	500
VOCs																		
Tetrachloroethene	mg/kg	<0.005	0.87	0.017	0.014	<0.04	<0.2	0.6	1.5	0.041	170	7.1	0.028	0.019	0.017	0.16	0.55	0.7
Trichloroethene	mg/kg	<0.005	0.058	<0.005	<0.005	<0.04	<0.2	0.042	0.031	<0.005	27	1.8	<0.005	<0.005	<0.005	0.02	0.46	0.46
cis-1,2-Dichloroethene	mg/kg	<0.005	0.27	0.015	0.0051	<0.04	<0.2	0.2	0.038	0.0052	1.6	1.8	<0.005	0.015	0.013	0.030	0.19	0.19
trans-1,2-Dichloroethene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	<0.2	<0.04	<0.005	<0.005	<0.005	<0.005	0.67	0.67
1,1-Dichloroethene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	<0.2	<0.04	<0.005	<0.005	<0.005	<0.005	1.0	1.0
Vinyl chloride	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	<0.2	<0.04	<0.005	<0.005	<0.005	<0.005	0.032	0.085
Chloroform	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	<0.2	<0.04	<0.005	<0.005	<0.005	<0.005	1.1	2.4
Benzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	<0.2	<0.04	<0.005	<0.005	<0.005	<0.005	0.044	0.044
Toluene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	0.0078	<0.005	0.75	<0.04	<0.005	<0.005	<0.005	<0.005	2.9	2.9
Ethylbenzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	0.23	<0.04	<0.005	<0.005	<0.005	<0.005	3.3	3.3
Total Xylenes	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	0.0070	<0.005	<0.2	<0.04	<0.005	<0.005	<0.005	<0.005	2.3 ¹	2.3 ²
Methyl tert-Butyl Ether	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	0.0088	<0.005	<0.2	<0.04	<0.005	<0.005	0.0051	<0.005	0.023	0.023
tert-Butyl alcohol	mg/kg	<0.1	<0.8	<0.1	<0.1	<8.0	<4.0	<0.8	<0.1	<0.1	<4.0	<0.8	<0.1	<0.1	<0.1	<0.1	0.075	0.075
n-Butylbenzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	2.0	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
sec-Butylbenzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	1.6	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
Isopropylbenzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	0.76	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
n-Propylbenzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	1.1	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
Styrene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	<0.2	<0.04	0.032	<0.005	<0.005	<0.005	1.5	1.5
1,2,4-Trimethylbenzene	mg/kg	<0.005	<0.04	<0.005	<0.005	<0.04	<0.2	<0.04	<0.005	<0.005	0.58	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
Remaining VOCs	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	varies	varies
SVOCs																		
All SVOCs	mg/kg	--	--	--	--	ND	ND	--	--	ND	--	--	--	--	--	--	varies	varies

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 TPHmo = Total Petroleum Hydrocarbons as motor oil
 VOCs = Volatile Organic Compounds
 SVOCs = Semi-Volatile Organic Compounds
 mg/kg = milligrams per kilograms
 -- = Not Analyzed
 ND = Not Detected
 NE = Not established

Detected concentrations shown in **Bold**
 < = Not detected above laboratory detection limits
 MTA = Moore Twining Associates
 Castle = Castle Analytical Laboratory
 MTA = Moore Twining Associates
 Castle = Castle Analytical Laboratory
 4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane
¹ = Assumes total xylenes
² = Heavier hydrocarbon than gasoline

³ = Hydrocarbon pattern is not a typical gasoline pattern
⁴ = Hydrocarbon pattern is not a typical diesel pattern
⁵ = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range
⁶ = Lighter hydrocarbon than diesel
⁷ = Hydrocarbon pattern is not a typical diesel pattern, overlap of heavier hydrocarbons into diesel
⁸ = Analyzed outside of EPA hold time
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013. Table A-1 Residential and Table A-2 Commercial





Analyte	Units	Sample ID															Regulatory Criteria	
		FB-9@5	FB-9@10	FB-9@15	FB-9@20	FB-10@2	FB-10@10	FB-10@18	FB-10@20	FB-12@2	FB-12@10	FB-12@18	FB-14@5	FB-14@10	FB-14@15	FB-14@20	ESLs	
		Date	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/11/2014	1/11/2014	1/11/2014	1/11/2014	Residential
		5 ft	10 ft	15 ft	20 ft	2 ft	10 ft	18 ft	20 ft	2 ft	10 ft	18 ft	5 ft	10 ft	15 ft	20 ft		
		MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle		
Hydrocarbons																		
TPHg	mg/kg	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	810 ^{2,3}	60 ^{2,3}	<1.0	<1.0	<1.0	<1.0 ⁸	<1.0	<1.0 ⁸	<1.0 ⁸	100	500
Stoddard Solvent	mg/kg	--	<2.0	<2.0	<2.0	2.6	<2.0	4,500	110	--	--	--	--	--	--	--	NE	NE
TPHd	mg/kg	--	<2.0	<2.0	<2.0	1.9 ⁷	<2.0	3,000 ⁵	79 ⁵	<11	<10	<10	<10	<10	<10	<10	100	110
TPHmo	mg/kg	--	<5.0	<5.0	<5.0	15	<5.0	<250	<10	<11	<10	<10	19	<10	<10	<10	100	500
VOCs																		
Tetrachloroethene	mg/kg	0.086	0.024	<0.005	0.058	0.025	0.18	2.2	1.8	<0.005	0.0074	0.015	--	<0.005	--	--	0.55	0.7
Trichloroethene	mg/kg	0.0099	<0.005	<0.005	<0.005	<0.005	0.055	2.3	0.24	<0.005	<0.005	<0.005	--	<0.005	--	--	0.46	0.46
cis-1,2-Dichloroethene	mg/kg	0.013	0.029	<0.005	0.033	<0.005	0.26	<0.4	0.20	<0.005	0.0057	0.0053	--	<0.005	--	--	0.19	0.19
trans-1,2-Dichloroethene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	0.67	0.67
1,1-Dichloroethene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	1.0	1.0
Vinyl chloride	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	0.032	0.085
Chloroform	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	1.1	2.4
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	0.044	0.044
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	2.9	2.9
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	3.3	3.3
Total Xylenes	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	2.3 ¹	2.3 ¹
Methyl tert-Butyl Ether	mg/kg	0.0052	<0.005	0.0094	0.0058	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	0.0095	--	--	0.023	0.023
tert-Butyl alcohol	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<8.0	<0.8	<0.1	<0.1	<0.1	--	<0.1	--	--	0.075	0.075
n-Butylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	NE	NE
sec-Butylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	NE	NE
Isopropylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	NE	NE
n-Propylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	NE	NE
Styrene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	1.5	1.5
1,2,4-Trimethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.4	<0.04	<0.005	<0.005	<0.005	--	<0.005	--	--	NE	NE
Remaining VOCs	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	ND	--	--	varies	varies
SVOCs																		
All SVOCs	mg/kg	--	ND	--	--	--	--	ND	--	--	--	--	--	ND	--	--	varies	varies

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 TPHmo = Total Petroleum Hydrocarbons as motor oil
 VOCs = Volatile Organic Compounds
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Detected concentrations shown in **Bold**
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 MTA = Moore Twining Associates
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 4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane
¹ = Assumes total xylenes
² = Heavier hydrocarbon than gasoline

³ = Hydrocarbon pattern is not a typical gasoline pattern
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⁵ = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range
⁶ = Lighter hydrocarbon than diesel
⁷ = Hydrocarbon pattern is not a typical diesel pattern, overlap of heavier hydrocarbons into diesel
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 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013. Table A-1 Residential and Table A-2 Commercial



Table 2
Summary of Analytical Results - Soil
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID														Regulatory Criteria	
		FB-15@10	FB-15@15	FB-15@17.5	FB-15@20	FB-17@5	FB-17@15	FB-17@20	FB-18@0.5	FB-18@5	FB-18@10	FB-18@20	FB-19@15	FB-19@17.5	FB-19@20	ESLs	
		Date	1/6/2014	1/6/2014	1/6/2014	1/6/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/6/2014	1/6/2014	1/6/2014	Residential
Sample Depth	10 ft	15 ft	17.5 ft	20 ft	5 ft	15 ft	20 ft	0.5 ft	5 ft	10 ft	20 ft	15 ft	17.5 ft	20 ft			
Lab	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle		
Hydrocarbons																	
TPHg	mg/kg	<1.0	220 ^{2,3} / 1,900 ^{2,3}	280 ^{2,3}	16 ^{2,3}	<1.0	<1.0	<1.0 ⁸	<1.0	<2.0	<1.0	<1.0	<1.0	72 ^{2,3}	10 ^{2,3}	100	500
Stoddard Solvent	mg/kg	<2.0	2,100	1,500	31	--	--	--	--	--	--	--	<2.0	170	8.5	NE	NE
TPHd	mg/kg	<2.0	1,400 ⁵	1,000 ⁵	24 ⁵	<10	<10	<10	89	<10	<10	<10	<2.0	130 ⁵	6.6 ⁵	100	110
TPHmo	mg/kg	<5.0	<250	<250	<5.0	<10	<10	<10	89	<10	<10	<10	<5.0	<25	<5.0	100	500
VOCs																	
Tetrachloroethene	mg/kg	0.0085	0.0084	<0.01	0.030	<0.005	<0.005	--	0.019	<0.005	<0.005	0.0051	<0.005	<0.01	<0.005	0.55	0.7
Trichloroethene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	0.46	0.46
cis-1,2-Dichloroethene	mg/kg	0.046	<0.005	0.14	0.66	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	0.014	<0.01	0.027	0.19	0.19
trans-1,2-Dichloroethene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	0.67	0.67
1,1-Dichloroethene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	1.0	1.0
Vinyl chloride	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	0.032	0.085
Chloroform	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	1.1	2.4
Benzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	0.044	0.044
Toluene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	0.0099	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	2.9	2.9
Ethylbenzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	3.3	3.3
Total Xylenes	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	0.010	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	2.3 ¹	2.3 ¹
Methyl tert-Butyl Ether	mg/kg	<0.005	<0.005	<0.01	<0.005	0.0070	0.0067	--	0.010	0.0072	0.0085	<0.005	<0.005	<0.01	<0.005	0.023	0.023
tert-Butyl alcohol	mg/kg	<0.10	<0.10	<2.0	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<2.0	<0.10	0.075	0.075
n-Butylbenzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	NE	NE
sec-Butylbenzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	NE	NE
Isopropylbenzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	NE	NE
n-Propylbenzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	NE	NE
Styrene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	1.5	1.5
1,2,4-Trimethylbenzene	mg/kg	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	NE	NE
Remaining VOCs	mg/kg	ND	ND	ND	ND	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	varies	varies
SVOCs																	
All SVOCs	mg/kg	--	--	ND	--	--	--	--	--	--	--	--	--	ND	--	varies	varies

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 TPHmo = Total Petroleum Hydrocarbons as motor oil
 VOCs = Volatile Organic Compounds
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 mg/kg = milligrams per kilograms
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Detected concentrations shown in **Bold**
 < = Not detected above laboratory detection limits
 MTA = Moore Twining Associates
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 Castle = Castle Analytical Laboratory
 4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane
¹ = Assumes total xylenes
² = Heavier hydrocarbon than gasoline

³ = Hydrocarbon pattern is not a typical gasoline pattern
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Table 2
Summary of Analytical Results - Soil
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID												Regulatory Criteria	
		FB-20@10	FB-20@15	FB-20@20	FB-21@10	FB-21@15	FB-21@20	FB-22@15	FB-22@15.5	FB-22@18	FB-26@5	FB-26@15	FB-26@20	ESLs	
Date		1/7/2014	1/7/2014	1/7/2014	1/7/2014	1/7/2014	1/7/2014	1/11/2014	1/11/2014	1/11/2014	1/12/2014	1/12/2014	1/12/2014	Residential	Commercial
Sample Depth		10 ft	15 ft	20 ft	10 ft	15 ft	20 ft	15 ft	15.5 ft	18 ft	5 ft	15 ft	20 ft		
Lab		MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle	MTA/Castle		
Hydrocarbons															
TPHg	mg/kg	<1.0	58 ^{2,3}	<1.0	<1.0	300 ^{2,3} / 550 ^{2,3}	<1.0	<1.0	78	<1.0	<1.0	<1.0	<1.0	100	500
Stoddard Solvent	mg/kg	<2.0	770	<2.0	<2.0	1,900	<2.0	--	--	--	--	--	--	NE	NE
TPHd	mg/kg	<2.0	570 ⁵	<2.0	<2.0	1,100 ⁵	<2.0	13	11	<10	<10	<10	<10	100	110
TPHmo	mg/kg	<5.0	<100	<5.0	<5.0	<250	<5.0	<10	<10	<10	<10	<10	<10	100	500
VOCs															
Tetrachloroethene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	0.012	0.033	5.4	0.11	<0.005	<0.005	0.021	0.55	0.7
Trichloroethene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	0.0056	0.069	0.025	<0.005	<0.005	<0.005	0.46	0.46
cis-1,2-Dichloroethene	mg/kg	<0.005	<0.005	0.035	<0.005	<0.10	0.013	0.012	<0.04	0.083	<0.005	<0.005	0.0068	0.19	0.19
trans-1,2-Dichloroethene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	0.67	0.67
1,1-Dichloroethene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	1.0	1.0
Vinyl chloride	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	0.032	0.085
Chloroform	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	1.1	2.4
Benzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	0.044	0.044
Toluene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	2.9	2.9
Ethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	3.3	3.3
Total Xylenes	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	2.3 ¹	2.3 ¹
Methyl tert-Butyl Ether	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	0.0080	0.0063	<0.005	0.023	0.023
tert-Butyl alcohol	mg/kg	<0.10	<0.10	<0.10	<0.10	<2.0	<0.10	<0.10	<0.8	<0.10	<0.10	<0.10	<0.10	0.075	0.075
n-Butylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
sec-Butylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
Isopropylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
n-Propylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
Styrene	mg/kg	<0.005	<0.005	<0.005	<0.005	<0.10	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	1.5	1.5
1,2,4-Trimethylbenzene	mg/kg	<0.005	<0.005	<0.005	<0.005	0.30	<0.005	<0.005	<0.04	<0.005	<0.005	<0.005	<0.005	NE	NE
Remaining VOCs	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	varies	varies
SVOCs															
All SVOCs	mg/kg	--	--	--	--	--	--	--	ND	--	--	--	--	varies	varies

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 TPHmo = Total Petroleum Hydrocarbons as motor oil
 VOCs = Volatile Organic Compounds
 SVOCs = Semi-Volatile Organic Compounds
 mg/kg = milligrams per kilograms
 -- = Not Analyzed
 ND = Not Detected
 NE = Not established

Detected concentrations shown in **Bold**
 < = Not detected above laboratory detection limits
 MTA = Moore Twining Associates
 Castle = Castle Analytical Laboratory
 MTA = Moore Twining Associates
 Castle = Castle Analytical Laboratory
 4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane
¹ = Assumes total xylenes
² = Heavier hydrocarbon than gasoline

³ = Hydrocarbon pattern is not a typical gasoline pattern
⁴ = Hydrocarbon pattern is not a typical diesel pattern
⁵ = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range
⁶ = Lighter hydrocarbon than diesel
⁷ = Hydrocarbon pattern is not a typical diesel pattern, overlap of heavier hydrocarbons into diesel
⁸ = Analyzed outside of EPA hold time
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013. Table A-1 Residential and Table A-2 Commercial



Table 3
Summary of Analytical Results for Petroleum Concentrations with and with out Silica Gel Clean up - Soil
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID									
		FB-3@18	FB-5@10	FB-10@18	FB-14@5	FB-14@15	FB-15@17.5	FB-17@15	FB-18@5	FB-19@17.5	FB-22@15.5
Date		1/11/2014	1/11/2014	1/12/2014	1/11/2014	1/11/2014	1/6/2014	1/12/2014	1/12/2014	1/6/2014	1/11/2014
Sample Depth		18 ft	10 ft	18 ft	5 ft	15 ft	17.5 ft	15 ft	5 ft	17.5 ft	15.5 ft
Lab		MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle
Hydrocarbons											
Stoddard Solvent	mg/kg	--	--	4,500	--	--	1,500	--	--	170	--
Stoddard Solvent with SGT	mg/kg	--	--	3,500	--	--	1,100	--	--	130	--
TPHd	mg/kg	150	<10	3,000 ¹	<10	<10	1,000 ¹	<10	<10	130 ¹	11
TPHd with SGT	mg/kg	160	<10	2,400	--	<10	570	<10	<10	86 ¹	11
TPHmo	mg/kg	<10	<10	<250	19	<10	<250	<10	<10	<25	<10
TPHmo with SGT	mg/kg	<10	<10	--	17	<10	<250	<10	<10	<25	<10

Notes:

SGT = Silica Gel Treatment

TPHd = Total Petroleum Hydrocarbons as diesel

TPHmo = Total Petroleum Hydrocarbon as motor oil

mg/kg = milligrams per kilograms

Detected Concentrations shown in **Bold**

-- = Not Analyzed

< = Not detected above laboratory detection limits

NE = Not established

¹ = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range



Table 4
Summary of Analytical Results - Grab Groundwater
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID														Regulatory Criteria		
		FB-1	FB-3	FB-3	FB-5	FB-5	FB-8	FB-8	FB-9	FB-9	FB-10	FB-10	FB-12	FB-12	FB-14	FB-14	Tier 1 ESLs	MCLs
Date Lab		1/11/2014 TEG	1/11/2014 MTA / Castle	1/11/2014 TEG	1/11/2014 MTA / Castle	1/11/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG	1/11/2014 MTA / Castle	1/11/2014 TEG		
Hydrocarbons																		
TPHg	µg/L	5,100 ³	3,100 ²	57,000 ³	8,300 ⁷	210,000 ³	--	<2,500	1,100 ⁷	<5,000	4,000 ^{2,7}	560,000 ³	--	<250	110 ⁷	<50	100	NE
Stoddard Solvent	µg/L	--	290,000	--	65,000	--	--	--	390	--	86,000	--	--	--	<100	--	NE	NE
TPHd	µg/L	<500	200,000 ⁵	8,400 ⁴	50,000 ⁵	19,000 ⁴	--	<500	130 ⁵	<500	59,000 ⁵	49,000 ⁴	--	<500	<100	--	100	NE
TPHmo	µg/L	--	<25,000	--	<10,000	--	--	--	<500	--	<10,000	--	--	--	<500	--	100	NE
VOCs																		
Tetrachloroethene	µg/L	29	370	720	2,300	4,300	1,400	1,500	3,300	3,100	1,600	6,600	880	760	220	220	5.0	5.0
Trichloroethene	µg/L	16	290	430	5,900	5,900	130	150	750	700	2,500	3,700	93	62	31	29	5.0	5.0
cis-1,2-Dichloroethene	µg/L	930	5,100	5,300	28,000	32,000	300	370	980	1,200	7,700	11,000	180	150	98	100	6.0	6.0
trans-1,2-Dichloroethene	µg/L	6.3	58	<100	170	170	4.0	<50	7.8	<100	66	<100	1.6	<5.0	0.76	<1.0	10	10
1,1-Dichloroethene	µg/L	<5.0	1.9	<100	7.5	<100	<0.5	<50	<0.5	<100	3.9	<100	<0.5	<5.0	<0.5	<1.0	6.0	6.0
Vinyl chloride	µg/L	<5.0	3.2	<100	2.6	<100	<0.5	<50	<0.5	<100	0.74	<100	<0.5	<5.0	<0.5	<1.0	0.5	0.5
Chloroform	µg/L	<5.0	<0.5	<100	2.1	<100	<0.5	<50	<0.5	<100	3.6	<100	<0.5	<5.0	2.0	<1.0	80	80 ⁸
Benzene	µg/L	<5.0	5.7	<100	4.3	<100	<0.5	<50	<0.5	<100	3.9	<100	<0.5	<5.0	<0.5	<1.0	1.0	1.0
Toluene	µg/L	<5.0	0.78	<100	4.0	<100	<0.5	<50	<0.5	<100	0.69	<100	<0.5	<5.0	<0.5	<1.0	40	150
Ethylbenzene	µg/L	5.3	0.67	<100	15	<100	<0.5	<50	<0.5	<100	1.2	<100	<0.5	<5.0	<0.5	<1.0	30	300
Total Xylenes	µg/L	<10	<2.0	<200	13	<200	<2.0	<100	<2.0	<200	<2.0	<200	<2.0	<10	<2.0	<2.0	20 ¹	1,750 ¹
tert-Butyl alcohol	µg/L	--	<20	--	<20	--	<20	--	<20	--	<20	--	<20	--	<20	--	12	NE
Naphthalene	µg/L	<5.0	<0.5	<100	9.2	<100	<0.5	<50	<0.5	<100	<0.5	<100	<0.5	<5.0	<0.5	<1.0	6.1	NE
n-Butylbenzene	µg/L	<5.0	<0.5	<100	<0.5	<100	<0.5	<50	<0.5	<100	<0.5	<100	<0.5	<5.0	<0.5	<1.0	NE	NE
sec-Butylbenzene	µg/L	<5.0	9.2	<100	11	<100	<0.5	<50	0.68	<100	9.9	230	<0.5	<5.0	<0.5	<1.0	NE	NE
Isopropylbenzene	µg/L	<5.0	6.7	<100	17	<100	<1.0	<50	<1.0	<100	10	<100	<1.0	<5.0	<1.0	<1.0	NE	NE
p-Isopropyltoluene	µg/L	<5.0	<1.0	<100	2.1	<100	<1.0	<50	<1.0	<100	<1.0	<100	<1.0	<5.0	<1.0	<1.0	NE	NE
n-Propylbenzene	µg/L	6.0	<1.0	<100	11	<100	<1.0	<50	<1.0	<100	<1.0	<100	<1.0	<5.0	<1.0	<1.0	NE	NE
1,2,4-Trimethylbenzene	µg/L	<5.0	<1.0	<100	30	110	<1.0	<50	<1.0	<100	<1.0	<100	<1.0	<5.0	<1.0	<1.0	NE	NE
Remaining VOCs	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	varies	varies
SVOCs																		
Benzoic acid	µg/L	--	<5.3	--	<5.0	--	--	--	7.6	--	<5.0	--	--	--	<6.0	--	NE	NE
bis(2-ethylhexyl) phthalate	µg/L	--	33	--	<5.0	--	--	--	<5.0	--	<5.0	--	--	--	<6.0	--	4.0	NE
Di-n-octyl phthalate	µg/L	--	<5.3	--	<5.0	--	--	--	<5.0	--	<5.0	--	--	--	<6.0	--	NE	NE
4,4'-DDD	µg/L	--	8.1	--	<5.0	--	--	--	<5.0	--	<5.0	--	--	--	<6.0	--	0.001	NE
Remaining SVOCs	µg/L	--	ND	--	ND	--	--	--	ND	--	ND	--	--	--	ND	--	varies	varies
General Chemistry																		
pH	SU	--	7.3	--	--	--	--	--	--	--	--	--	--	--	7.3	--	NE	NE

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 VOCs = Volatile Organic Compounds
 SVOCs = Semi-Volatile Organic Compounds
 Detected concentrations shown in **Bold**
 -- = Not Analyzed
 < = Not detected above laboratory detection limits
 ND = Not detected
 NE = not established
 SU = Standard unit

4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane

¹ = Assumes total xylenes

² = Heavier hydrocarbon than gasoline

³ = Hydrocarbon pattern is not a typical gasoline pattern

⁴ = Hydrocarbon pattern is not a typical diesel pattern

⁵ = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range

⁶ = Detected concentration of o-Xylene

⁷ = The results for this hydrocarbon is elevated due to the presence of single analyte peak(s) in the quantitation range

⁸ = Regulatory criteria shown is for Total Trihalomethanes of which Chloroform is a byproduct

ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013, Tier 1

MCLs = Maximum Contaminant Levels from office of OEHHA, updated February 2014

PHGs = Public Health Goals from office of OEHHA, updated February 2014



Table 4
Summary of Analytical Results - Grab Groundwater
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID														Regulatory Criteria	
		FB-15	FB-15	FB-17	FB-17	FB-18	FB-18	FB-19	FB-19	FB-21	FB-21	FB-22	FB-22	FB-26	FB-26	Tier 1 ESLs	MCLs
Date Lab		1/6/2014 MTA / Castle	1/6/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG	1/6/2014 MTA / Castle	1/6/2014 TEG	1/7/2014 MTA / Castle	1/7/2014 TEG	1/11/2014 MTA / Castle	1/11/2014 TEG	1/12/2014 MTA / Castle	1/12/2014 TEG		
Hydrocarbons																	
TPHg	µg/L	1,600 ³	24,000 ³	--	<50	--	<50	230 ³	11,000 ³	280 ³	1,500 ³	--	2,300 ³	--	<50	100	NE
Stoddard Solvent	µg/L	58,000	--	<100	--	<100	--	3,000	--	1,100	--	500	--	<100	--	NE	NE
TPHd	µg/L	41,000 ⁵	--	<100	--	<100	--	2,200 ⁵	--	710 ⁵	--	150	--	<100	--	100	NE
TPHmo	µg/L	<10,000	--	<500	--	<500	--	<500	--	<500	--	<500	--	<500	--	100	NE
VOCs																	
Tetrachloroethene	µg/L	140	200	220	270	66	99	4.0	6.1	180	200	1,300	620	170	300	5.0	5.0
Trichloroethene	µg/L	130	150	26	25	4.2	6.0	2.6	3.5	70	70	340	270	39	37	5.0	5.0
cis-1,2-Dichloroethene	µg/L	16,000	12,000	24	27	11	15	150	160	270	280	970	1,000	140	150	6.0	6.0
trans-1,2-Dichloroethene	µg/L	95	<100	<0.5	<1.0	<0.5	<1.0	1.8	2.4	0.94	<5.0	4.9	5.0	0.76	<1.0	10	10
1,1-Dichloroethene	µg/L	3.3	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	6.0	6.0
Vinyl chloride	µg/L	4.1	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	0.5	0.5
Chloroform	µg/L	<0.5	<100	7.0	8.3	1.7	2.4	0.63	<1.0	<0.5	<5.0	<0.5	<5.0	7.5	9.2	80	80 ⁸
Benzene	µg/L	15	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	1.0	1.0
Toluene	µg/L	4.7	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	40	150
Ethylbenzene	µg/L	8.8	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	30	300
Total Xylenes	µg/L	0.62 ⁶	<200	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<2.0	<10	<2.0	<2.0	20 ¹	1,750 ¹
tert-Butyl alcohol	µg/L	24	--	<20	--	<20	--	<20	--	<20	--	<20	--	<20	--	12	NE
Naphthalene	µg/L	<0.5	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	6.1	NE
n-Butylbenzene	µg/L	5.0	<100	<0.5	<1.0	<0.5	<1.0	<0.5	<1.0	<0.5	<5.0	<0.5	<5.0	<0.5	<1.0	NE	NE
sec-Butylbenzene	µg/L	10	<100	<0.5	<1.0	<0.5	<1.0	2.0	3.0	2.0	<5.0	4.4	<5.0	<0.5	<1.0	NE	NE
Isopropylbenzene	µg/L	14	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	NE	NE
p-Isopropyltoluene	µg/L	<1.0	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	NE	NE
n-Propylbenzene	µg/L	6.2	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	NE	NE
1,2,4-Trimethylbenzene	µg/L	<1.0	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<5.0	<1.0	<1.0	NE	NE
Remaining VOCs	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	varies	varies
SVOCs																	
Benzoic acid	µg/L	<3,000	--	<6.6	--	<5.0	--	<6.5	--	<5.7	--	--	--	--	--	NE	NE
bis(2-ethylexyl) phthalate	µg/L	8.1	--	<6.6	--	<5.0	--	<6.5	--	<5.7	--	--	--	--	--	4.0	NE
Di-n-octyl phthalate	µg/L	8.8	--	<6.6	--	<5.0	--	<6.5	--	<5.7	--	--	--	--	--	NE	NE
4,4'-DDD	µg/L	7.3	--	<6.6	--	<5.0	--	<6.5	--	<5.7	--	--	--	--	--	0.001	NE
Remaining SVOCs	µg/L	ND	--	ND	--	ND	--	ND	--	ND	--	--	--	--	--	varies	varies
General Chemistry																	
pH	SU	--	--	7.2	--	--	--	--	--	--	--	--	--	--	--	NE	NE

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline
 TPHd = Total Petroleum Hydrocarbons as diesel
 VOCs = Volatile Organic Compounds
 SVOCs = Semi-Volatile Organic Compounds
 Detected concentrations shown in Bold
 -- = Not Analyzed
 < = Not detected above laboratory detection limits
 ND = Not detected
 NE = not established
 SU = Standard unit

4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane
¹ = Assumes total xylenes
² = Heavier hydrocarbon than gasoline
³ = Hydrocarbon pattern is not a typical gasoline pattern
⁴ = Hydrocarbon pattern is not a typical diesel pattern
⁵ = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range
⁶ = Detected concentration of o-Xylene
⁷ = The results for this hydrocarbon is elevated due to the presence of single analyte peak(s) in the quantitation range

⁸ = Regulatory criteria shown is for Total Trihalomethanes of which Chloroform is a byproduct
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013. Tier 1
 MCLs = Maximum Contaminant Levels from office of OEHHA, updated February 2014
 PHGs = Public Health Goals from office of OEHHA, updated February 2014



Table 5
Summary of Analytical Results for Petroleum Concentrations with and with out Silica Gel Clean up - Grab Groundwater
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID											
		FB-3	FB-3	FB-5	FB-5	FB-9	FB-9	FB-10	FB-10	FB-15	FB-19	FB-21	FB-22
Date		1/11/2014	1/11/2014	1/11/2014	1/11/2014	1/12/2014	1/12/2014	1/12/2014	1/12/2014	1/6/2014	1/6/2014	1/7/2014	1/11/2014
Lab		MTA / Castle	TEG	MTA / Castle	TEG	MTA / Castle	TEG	MTA / Castle	TEG	MTA / Castle	MTA / Castle	MTA / Castle	MTA / Castle
Hydrocarbons													
Stoddard Solvent	µg/L	290,000	--	65,000	--	390	--	86,000	--	58,000	3,000	1,100	500
Stoddard Solvent with SGT	µg/L	220,000	--	58,000	--	310	--	73,000	--	50,000	2,000	540	270
TPHd	µg/L	200,000 ²	8,400 ¹	50,000 ²	19,000 ¹	130 ²	<500	59,000 ²	49,000 ¹	41,000 ²	2,200 ²	710 ²	150 ²
TPHd with SGT	µg/L	150,000	--	44,000	--	120	--	48,000	--	26,000	1,200	320	110
TPHmo	µg/L	<25,000	--	<10,000	--	<500	--	<10,000	--	<10,000	<500	<500	<500
TPHmo with SGT	µg/L	--	--	--	--	--	--	--	--	<25,000	<500	<500	--

Notes:

SGT = Silica Gel Treatment

TPHd = Total Petroleum Hydrocarbons as diesel

TPHmo = Total Petroleum Hydrocarbon as motor oil

µg/L = micrograms per Liter

Detected Concentrations shown in **Bold**

-- = Not Analyzed

< = Not detected above laboratory detection limits

NE = Not established

¹ = Hydrocarbon pattern is not a typical diesel pattern

² = Hydrocarbon pattern is not a typical diesel pattern, overlap of Stoddard Solvent into diesel range





Analyte	Units	Sample ID			
		EZ-OUT	GIPOT	PYRATEX	LUBRIPLATE
		1/30/2014 Product	1/30/2014 Product	1/30/2014 Product	1/30/2014 Product
Hydrocarbons					
TPHg	µg/kg	85,000,000	97,000,000	2,300,000	4,300,000
Stoddard Solvent	µg/kg	710,000,000¹	17,000,000¹	16,000,000¹	40,000,000¹
TPHd	µg/kg	820,000,000	900,000,000	120,000,000	320,000,000
VOCs					
Tetrachloroethene	µg/kg	<5,000	<250	<250	<250
Trichloroethene	µg/kg	<5,000	<250	<250	<250
cis-1,2-Dichloroethene	µg/kg	<5,000	<250	<250	<250
trans-1,2-Dichloroethene	µg/kg	<5,000	<250	<250	<250
1,1-Dichloroethene	µg/kg	<5,000	<250	<250	<250
Chloroform	µg/kg	<5,000	<250	<250	<250
Benzene	µg/kg	<5,000	<250	<250	<250
Toluene	µg/kg	<5,000	460²	6,200	8,600
Ethylbenzene	µg/kg	<5,000	<250	<250	<250
m,p-Xylenes	µg/kg	<10,000	<500	680	860
o-Xylenes	µg/kg	<5,000	<250	320	470
tert-Butyl alcohol	µg/kg	<100,000	<5,000	8,100	<5,000
Naphthalene	µg/kg	<5,000	250	<250	<250
n-Butylbenzene	µg/kg	<5,000	<250	760	1,100
sec-Butylbenzene	µg/kg	<5,000	<250	<250	<250
1,2-Dichlorobenzene	µg/kg	<5,000	<250	<250	410
Isopropylbenzene	µg/kg	<5,000	<250	<250	<250
Methylene chloride	µg/kg	12,000	<250	660	<250
n-Propylbenzene	µg/kg	<5,000	<250	710	1,000
1,2,4-Trimethylbenzene	µg/kg	<5,000	<250	4,400	5,800
1,3,5-Trimethylbenzene	µg/kg	<5,000	<250	2,000	2,800
Remaining VOCs	µg/kg	ND	ND	ND	ND
TICs					
Cyclodecane	µg/kg	--	2,500	--	--
2,3-dihydro-4,7-dimethyl-1H-Indene	µg/kg	--	--	1,300	1,200
2,3-dihydro-4-methyl-1H-Indene	µg/kg	--	--	1,500	2,000
3,7-dimethyl-Nonane	µg/kg	6,300	--	--	--
dibutylsulfide	µg/kg	--	--	--	30,000
Di-tert-butyl sulfide	µg/kg	--	--	--	1,200
Dodecanal	µg/kg	--	2,700	--	--
2-ethyl-1,4-dimethyl-benzene	µg/kg	--	--	--	1,100
Ethyl Ester Hexanoic acid	µg/kg	--	5,300	--	--
Ethyl ester Nonanoic acid	µg/kg	--	4,600	--	--
Ethyl ester Octanoic acid	µg/kg	--	3,600	--	--
1-ethyl-2-methyl-Benzene	µg/kg	--	--	1,900	2,700
Methyl ester Decanoic acid	µg/kg	--	3,900	--	--
Methyl ester Heptanoic acid	µg/kg	--	2,600	--	--
Methyl ester Octanoic acid	µg/kg	--	10,000	--	--
2-methyl-2-Propanethiol	µg/kg	--	--	6,700	--
1-methyl-3-propyl-benzene	µg/kg	--	--	--	1,100
Nonanal	µg/kg	--	9,200	--	--
Octanal	µg/kg	--	5,400	--	--
3-3'-thiobis[2methyl-1-Propene]	µg/kg	--	--	65,000	--
Undecane	µg/kg	--	2,600	--	--

Notes:

- TPHg = Total Petroleum hydrocarbons as gasoline
- TPHd = Total Petroleum Hydrocarbons as diesel
- VOCs = Volatile Organic Compounds
- TICs = Tentatively Identified Compounds
- mg/kg = milligrams per kilograms
- µg/kg = micrograms per kilograms
- Detected concentrations shown in **Bold**
- < Not Detected above Laboratory detection limits
- = Not analyzed
- ND = Not detected
- ¹ = Sample contains hydrocarbons within the stoddard oil range that do not match the stoddard oil pattern. Quantitation was based on a stoddard oil standard.
- ² = Results are estimated



		Sample ID
Analyte	Units	DRAIN
Date		1/30/2014
Sample Type		Water
Hydrocarbons		
TPHg	µg/L	<200
Stoddard Solvent	µg/L	1,300¹
TPHd	µg/L	8,300
VOCs		
Benzene	µg/L	<5.0
n-Butylbenzene	µg/L	<5.0
sec-Butylbenzene	µg/L	<5.0
Chloroform	µg/L	<5.0
1,2-Dichlorobenzene	µg/L	<5.0
1,1-Dichloroethene	µg/L	<5.0
cis-1,2-Dichloroethene	µg/L	<5.0
trans-1,2-Dichloroethene	µg/L	<5.0
Ethylbenzene	µg/L	<5.0
Isopropylbenzene	µg/L	<5.0
Methylene chloride	µg/L	<5.0
Naphthalene	µg/L	<5.0
n-Propylbenzene	µg/L	<5.0
tert-Butyl alcohol	µg/L	<100
Tetrachloroethene	µg/L	5.4
Toluene	µg/L	<5.0
Trichloroethene	µg/L	<5.0
1,2,4-Trimethylbenzene	µg/L	<5.0
1,3,5-Trimethylbenzene	µg/L	<5.0
m,p-Xylenes	µg/L	<10
o-Xylenes	µg/L	<5.0
Remaining VOCs	µg/L	ND
TICs		
Methanethiol	µg/L	64

Notes:

TPHg = Total Petroleum hydrocarbons as gasoline

TPHd = Total Petroleum Hydrocarbons as diesel

VOCs = Volatile Organic Compounds

TICs = Tentatively Identified Compounds

µg/L = micrograms per Liter

> Not detected above Laboratory detection limits

ND = Not detected

Detected concentrations shown in **Bold**

1 = Sample contains hydrocarbons within the stoddard oil range that do not match the stoddard oil pattern. Quantitation was based on a stoddard oil standard

Table 8
Summary of Analytical Results - Air Quality Survey
Mercury Cleaners
Sacramento, California



Analyte	Units	Sample ID							Screening Criteria	
		AQ-5	BKG-1	AQ-6	AQ-7	AQ-8	AQ-9	BKG-2	ESLs	
Site		Mercury Cleaners	Hand in Hand	Mercury Cleaners				Hand in Hand		
Location		Indoor	Outdoor (Background)	Indoor	Indoor	Indoor	Indoor	Outdoor (Background)		
Test Duration		24 Hour	24 Hour	8 Hour	8 Hour	8 Hour	8 Hour	24 Hour		
Date		2/10 - 2/11/2012	2/10 - 2/11/2012	1/19/2014	1/19/2014	1/19/2014	1/19/2014	1/19 - 1/20/2014	Residential	Commercial
Dry Cleaning Related VOCs										
Tetrachloroethene	µg/m ³	40	<0.07	9.0	9.5	10	24	<0.18	0.41	2.1
Trichloroethene	µg/m ³	1.7	<0.05	1.0	0.91	0.8	1.1	<0.09	0.59	3.0
cis-1,2 Dichloroethene	µg/m ³	2.8	<0.04	1.9	1.9	1.8	2.3	<0.01	7.3	31
trans-1,2 Dichloroethene	µg/m ³	<0.04	<0.04	0.04j	0.09j	0.02j	0.03j	<0.007	63	260
1,2-Dichloroethane	µg/m ³	--	--	0.24	0.07j	0.08j	0.17j	<0.007	0.12	0.58
1,1,1-Trichloroethane	µg/m ³	--	--	0.04j	0.03j	0.03j	0.04j	0.03j	5,200	22,000
Vinyl Chloride	µg/m ³	<0.03	<0.03	<0.04	<0.04	<0.04	<0.05	<0.03	0.031	0.16
Naphthalene	µg/m ³	<0.05	0.31	3.7	1.5	0.68	2.5	0.76	0.072	0.36
Fuel Related VOCs										
Benzene	µg/m ³	0.31	0.22	1.6	0.55	0.59	0.81	1.3	0.084	0.42
Toluene	µg/m ³	0.71	0.90	4.6	1.5	2.2	14	4.5	310	1,300
Ethylbenzene	µg/m ³	0.18	0.23	0.52	0.29	0.33	0.72	0.56	0.97	4.9
m,p-Xylene	µg/m ³	1.4	2.2	2.5	1.6	1.8	3.4	3.9	100b	440b
o-Xylene	µg/m ³	0.52	0.43	0.48	0.35	0.38	0.68	0.67	100b	440b
MTBE	µg/m ³	<0.04	<0.04	<0.01	0.02j	<0.01	<0.01	<0.008	9.4	470
Other VOCs										
Carbon Tetrachloride	µg/m ³	0.17	0.17	0.28	0.27	0.26	0.28	0.27	0.058	0.29
Gasoline Range Organics	µg/m ³	--	--	2,300	2,000	1,500	12,000	--	100	100

Notes:

VOCs = Volatile Organic Compounds
 NE= Not established
 µg/m³ = micrograms per cubic meter
 <0.5 = Not detected above laboratory detection limits
 -- = Not Analyzed
 Detected concentrations shown in **Bold**
 CHHSL = Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties, January 2005
 a = Draft CHHSLs for Ethylbenzene, dated November 2009. Assumes structure is placed over native soil, not engineered fill
 b = Screening Level represents Total Xylenes
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013, Summary Table E.
 j= Flagged by the laboratory as a result between the PQL and the calculated MDL.



Table 9
Summary of Analytical Results - Air Quality Survey
Simon's Restaurant
Sacramento, California



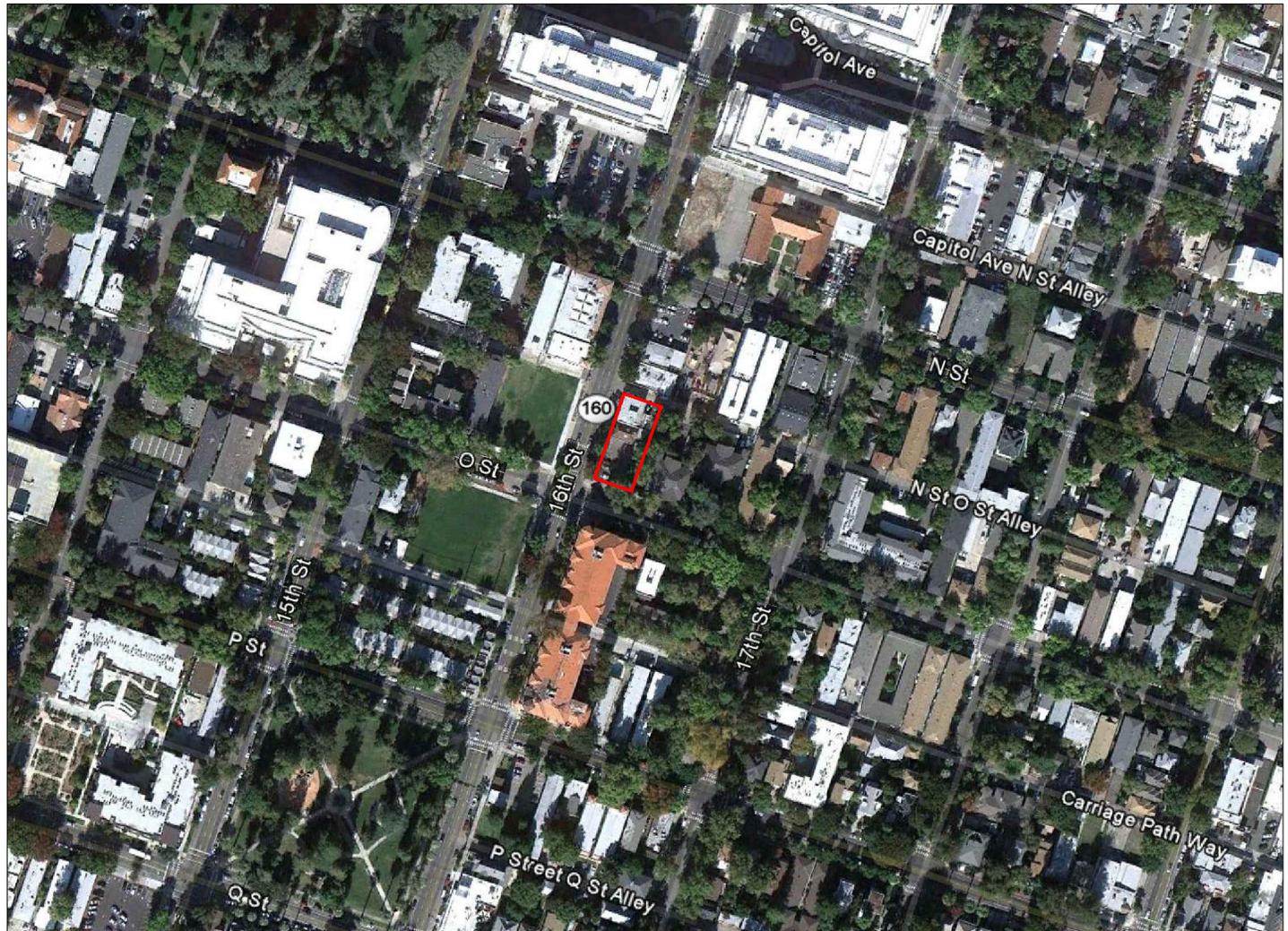
Analyte	Units	Sample ID						Screening Criteria	
		AQ-4	DUP	BKG-1	AQ-10	AQ-11	BKG-2	ESLs	
Site		Simon's Restaurant		Hand in Hand	Simon's Restaurant		Hand in Hand		
Location		Indoor	Indoor	Outdoor (Background)	Indoor	Indoor	Outdoor (Background)		
Test Duration		24 Hour	24 Hour	24 Hour	8 Hour	8 Hour	24 Hour	Residential	Commercial
Date		2/10 - 2/11/2012	2/10 - 2/11/2012	2/10 - 2/11/2012	1/19/2014	1/19/2014	1/19 - 1/20/2014		
Dry Cleaning Related VOCs									
Tetrachloroethene	µg/m ³	1.3	1.3	<0.07	2.2	2.6	<0.18	0.41	2.1
Trichloroethene	µg/m ³	<0.05	<0.05	<0.05	<0.13	<0.13	<0.09	0.59	3.0
cis-1,2 Dichloroethene	µg/m ³	0.87	0.91	<0.04	<0.02	<0.02	<0.01	7.3	31
trans-1,2 Dichloroethene	µg/m ³	<0.04	<0.04	<0.04	<0.009	<0.009	<0.007	63	260
1,2-Dichloroethane	µg/m ³	--	--	--	0.10j	0.34	<0.007	0.12	0.58
1,1,1-Trichloroethane	µg/m ³	--	--	--	0.04j	0.08j	0.03j	5,200	22,000
Vinyl Chloride	µg/m ³	<0.03	<0.03	<0.03	<0.04	<0.04	<0.03	0.031	0.16
Naphthalene	µg/m ³	0.35	0.63	0.31	2.1	1.7	0.76	0.072	0.36
Fuel Related VOCs									
Benzene	µg/m ³	0.93	1.1	0.22	0.89	1.6	1.3	0.084	0.42
Toluene	µg/m ³	2.2	2.3	0.90	5.4	34	4.5	310	1,300
Ethylbenzene	µg/m ³	0.34	0.44	0.23	0.54	1.3	0.56	0.97	4.9
m,p-Xylene	µg/m ³	2.0	2.3	2.2	2.4	6.6	3.9	100b	440b
o-Xylene	µg/m ³	0.33	0.39	0.43	0.50	1.2	0.67	100b	440b
MTBE	µg/m ³	<0.04	0.07	<0.04	<0.01	0.02j	<0.008	9.4	470
Other VOCs									
Carbon Tetrachloride	µg/m ³	0.18	0.18	0.17	0.30	0.36	0.27	0.058	0.29
Gasoline Range Organics	µg/m ³	--	--	--	1,100	1,400	--	100	100

Notes:

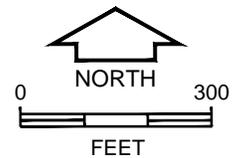
VOCs = Volatile Organic Compounds
 NE= Not established
 µg/m3 = micrograms per cubic meter
 <0.5 = Not detected above laboratory detection limits
 -- = Not Analyzed
 Detected concentrations shown in **Bold**
 CHHSL = Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties, January 2005
 a = Draft CHHSLs for Ethylbenzene, dated November 2009. Assumes structure is placed over native soil, not engineered fill
 b = Screening Level represents Total Xylenes
 ESLs = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, Interim Final December 2013, Summary Table E.
 j= Flagged by the laboratory as a result between the PQL and the calculated MDL.



PLATES



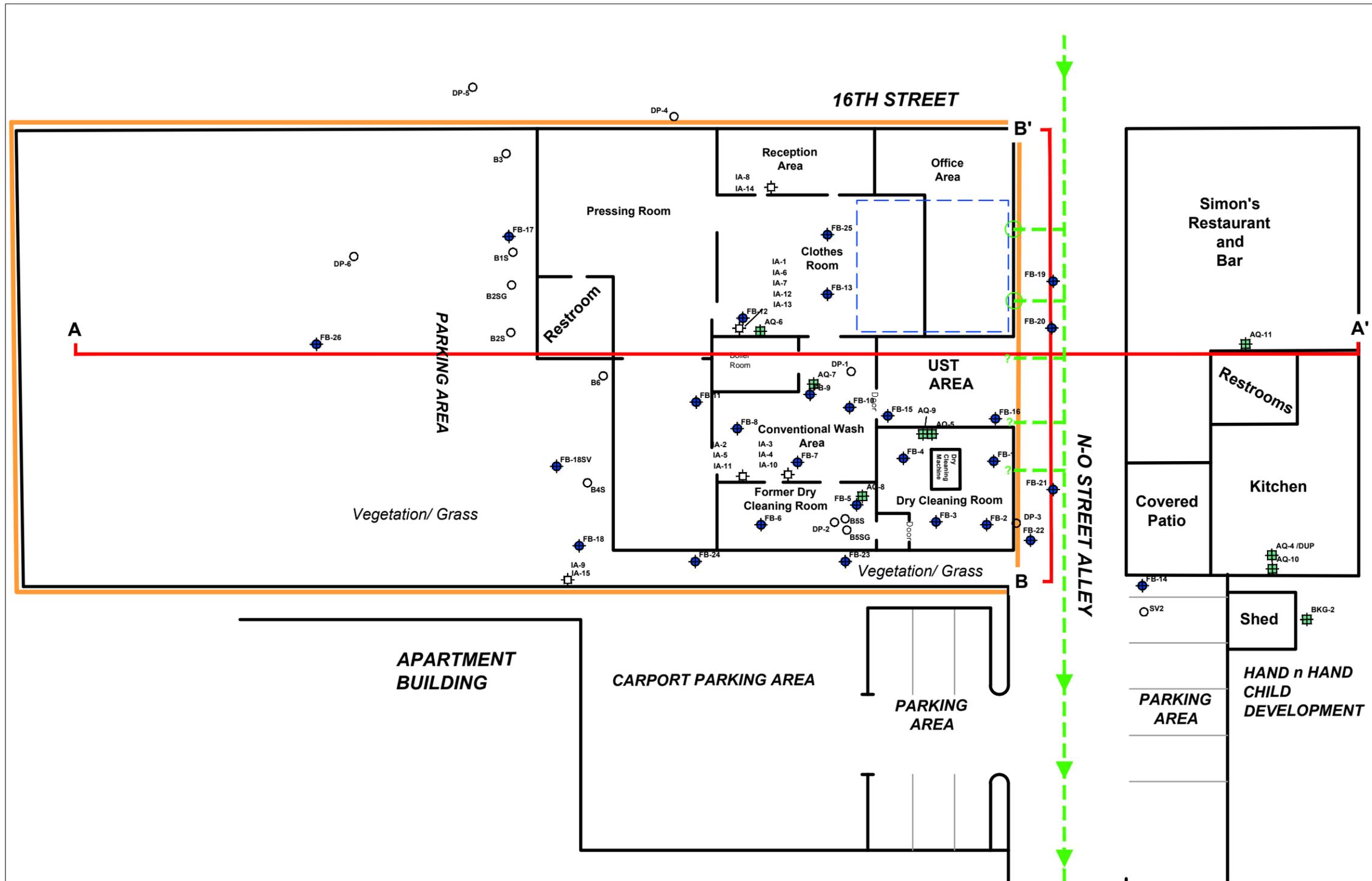
BASE MAP SOURCE: Aerial photograph provided by Google Earth Pro 2012.



LEGEND

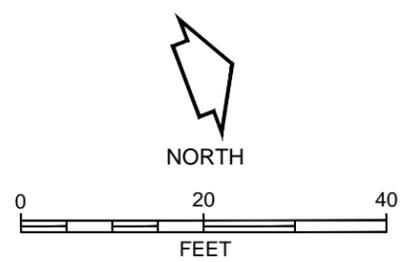
-  Site Boundary

VICINITY MAP
Mercury Cleaners
Sacramento, California



LEGEND

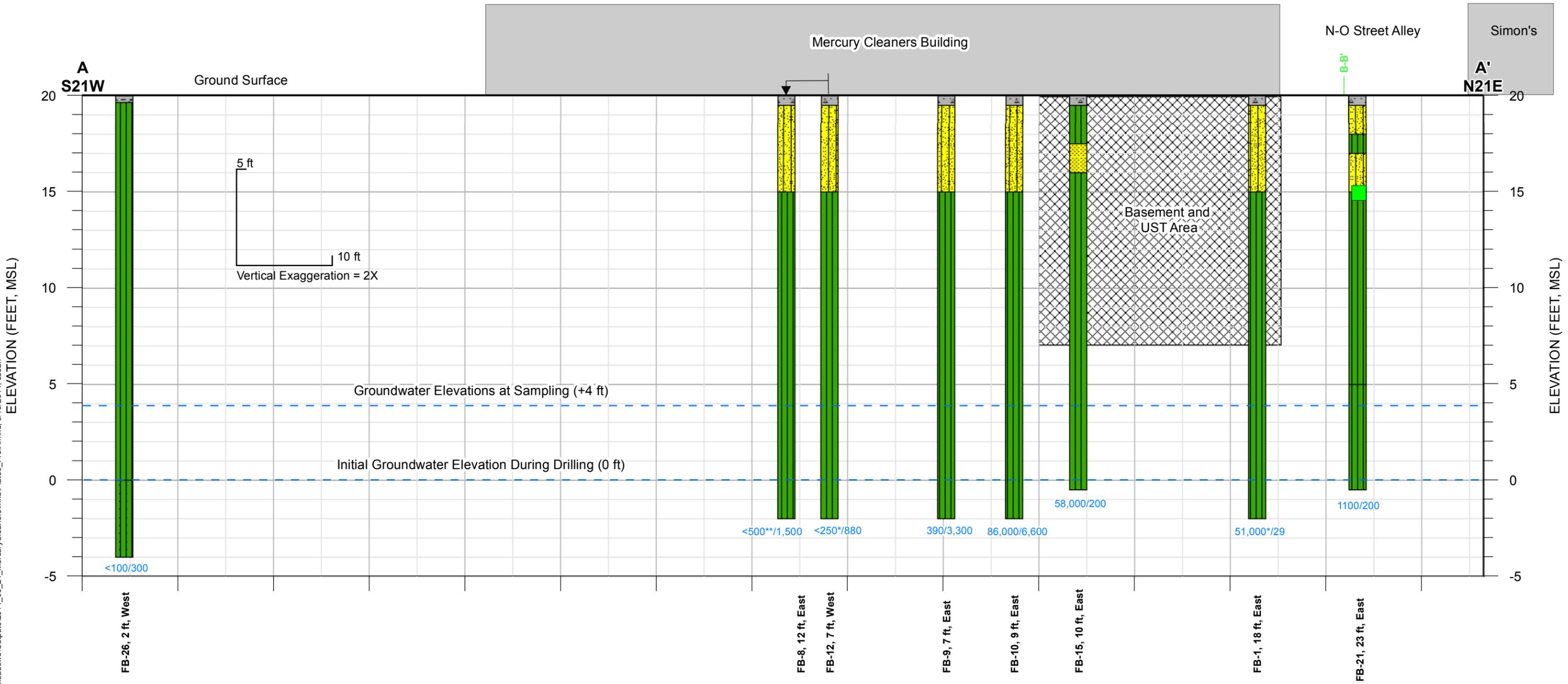
-  IA-15 Approximate location of Geocon's Indoor Air Sample
-  B1S Approximate location of Borings by others
-  AQ-1 Approximate location of Fugro's AQ Sample
-  SG-1 Approximate Location of Fugro Boring
-  A A' Cross Section Lines
-  Approximate Location of The Sanitary Sewer Line
-  Approximate Location of Basement Area
-  Site Boundary



SITE PLAN
Mercury Cleaners
Sacramento, California

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BASE MAP SOURCE: Engineering Sketch.

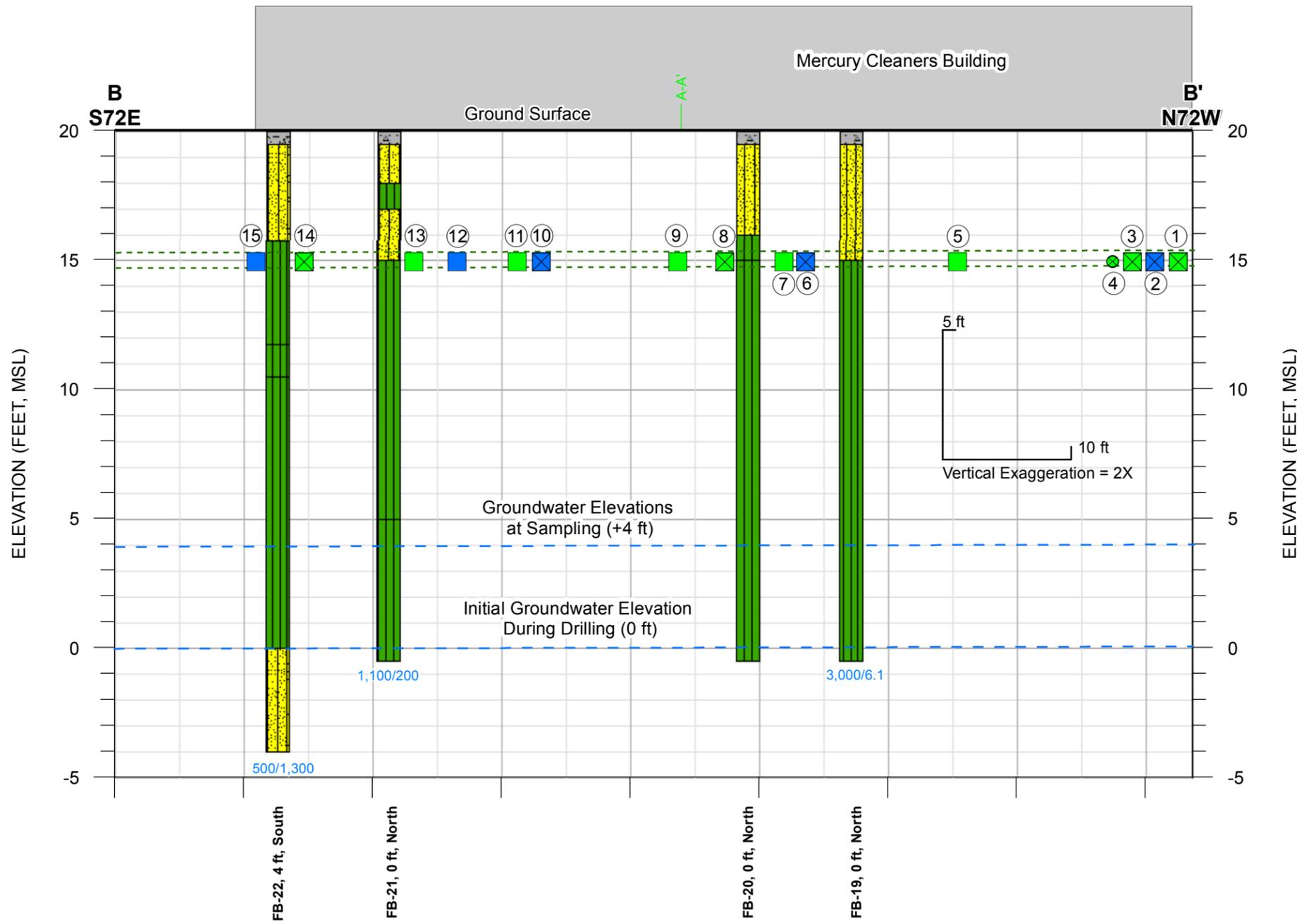


Legend

- | | | | | |
|-------------------------|--------------------|--------------|---|---|
| Silt (ML)/CL (CL) | Silty SAND (SM) | < 100 / 0.08 | Stoddard Solvent / PCE Groundwater Concentrations (ug/L) | Approximate Location of Sanitary Sewer Line |
| SILT with Sand (ML) | Asphaltic Concrete | * | Quantified as gasoline but does not resemble typical gasoline pattern | |
| Poorly-Graded SAND (SP) | Concrete | ** | Quantified as diesel but does not resemble typical diesel pattern | |

CROSS SECTION A-A'
Mercury Cleaners
Sacramento, California

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Sanitary Sewer Line Observations

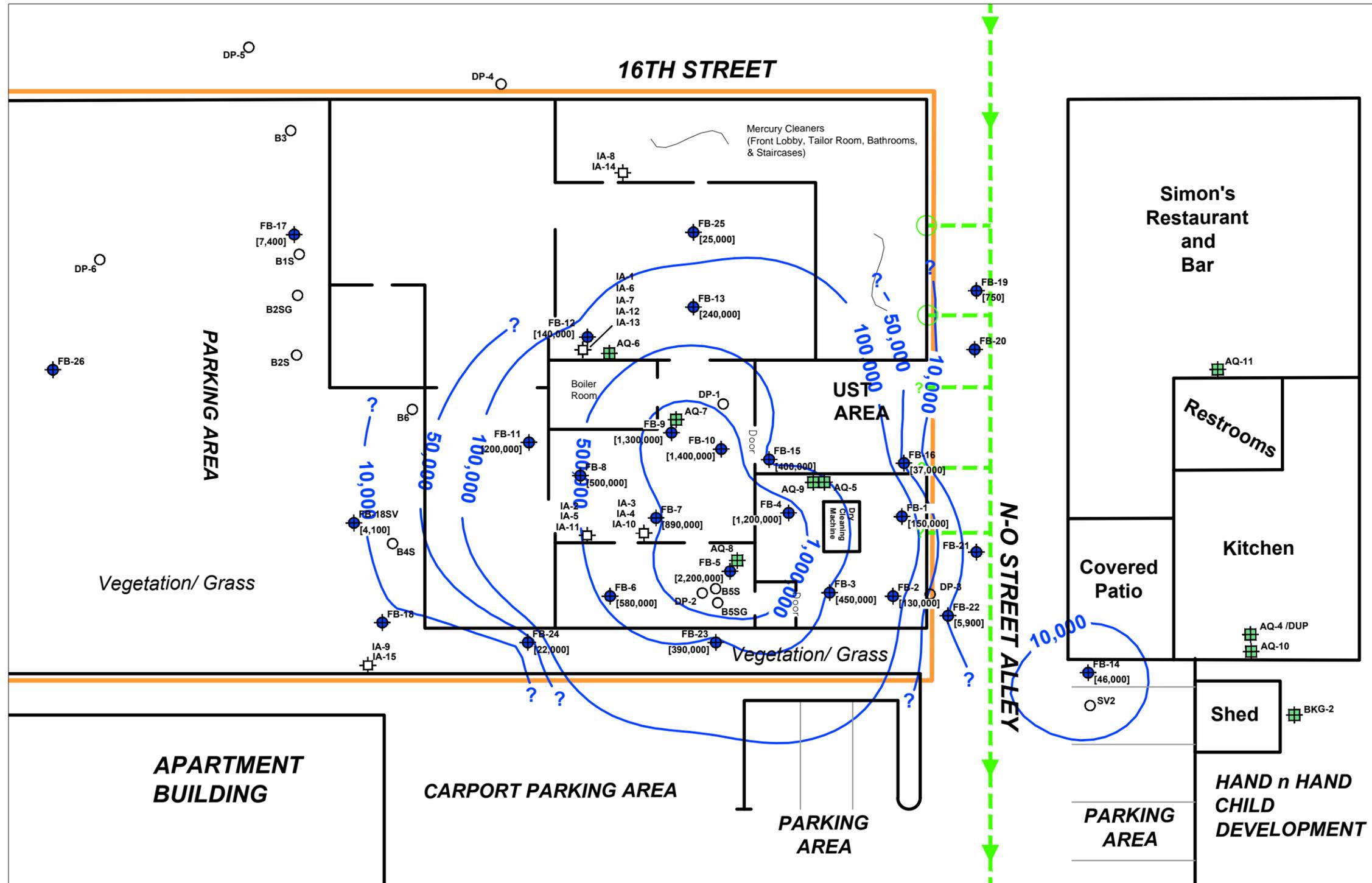
- ①- Factory made capped lateral TAP with debris in TAP
- ②- Factory made capped lateral TAP with roots visible
- ③- Defective factory made lateral TAP, TAP is filled with debris, possible break
- ④- Typical visible roots
- ⑤- Break in lateral TAP intruding into the main line, roots visible, Identified by USA
- ⑥- Factory made capped lateral TAP
- ⑦- Factory made lateral TAP, noted active, roots visible, Identified by USA
- ⑧- Defective factory made lateral TAP, offset in lateral, soil visible, debris in TAP
- ⑨- Break in lateral TAP, noted active
- ⑩- Factory made capped lateral TAP
- ⑪- Factory made lateral TAP, noted active, break in TAP with soil visible, lateral filled with debris
- ⑫- Factory made lateral TAP, noted active, Identified by USA
- ⑬- Break in lateral TAP, noted active
- ⑭- Factory made capped lateral TAP
- ⑮- Factory made lateral TAP, noted active

Legend

- | | | | |
|-------------------------|--------------------|--|--|
| Silt (ML)/CL (CL) | Silty SAND (SM) | Approximate Location of Sanitary Sewer Service Laterals Providing Service to the South | Approximate Location of Sanitary Sewer Line Deficiency |
| SILT with Sand (ML) | Asphaltic Concrete | Approximate Location of Sanitary Sewer Service Laterals Providing Service to the North | Stoddard Solvent / PCE Groundwater Concentrations in micrograms per Liter (ug/L) |
| Poorly-Graded SAND (SP) | Concrete | Approximate Location of Capped/Defective Sanitary Sewer Service Lateral | < 100 / 0.08 |

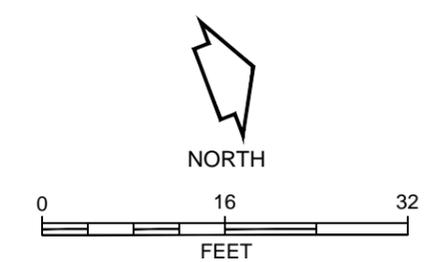
CROSS SECTION B-B'
 Mercury Cleaners
 Sacramento, California

N:\Projects\04_2012\04_7212_0008_TahoeMeadows\Outputs\2014_03_24_MercuryCleaners\mxd\Plate4_ProfB.mxd, 5/15/2014, cdean



LEGEND

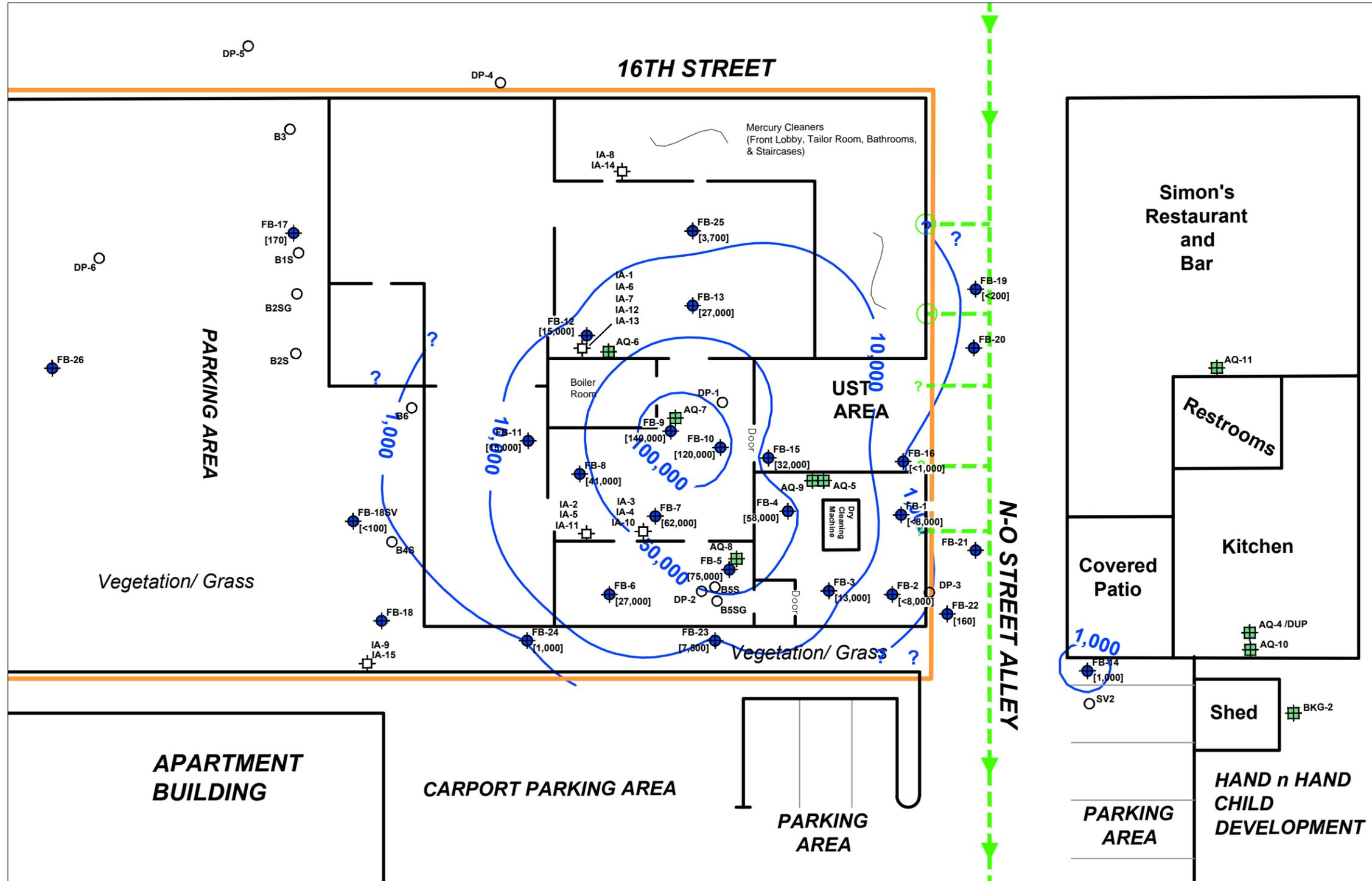
- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [1,000] Tetrachloroethene (PCE) Concentrations in micrograms per meter cubed ($\mu\text{g}/\text{m}^3$)
- 10,000 Isoconcentration contour
- Approximate Location of The Sanitary Sewer Line
- 2,100 $\mu\text{g}/\text{m}^3$ Commercial Land Use ESL for PCE
- Site Boundary



PCE CONCENTRATIONS IN SOIL VAPOR
Mercury Cleaners
Sacramento, California

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BASE MAP SOURCE: Engineering Sketch.



LEGEND

- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [150,000] Trichloroethene (TCE) Concentrations in micrograms per meter cubed ($\mu\text{g}/\text{m}^3$)
- 1,000- Isoconcentration contour
- Approximate Location of The Sanitary Sewer Line
- 3,000 $\mu\text{g}/\text{m}^3$ Commercial Land Use ESL for TCE
- Site Boundary

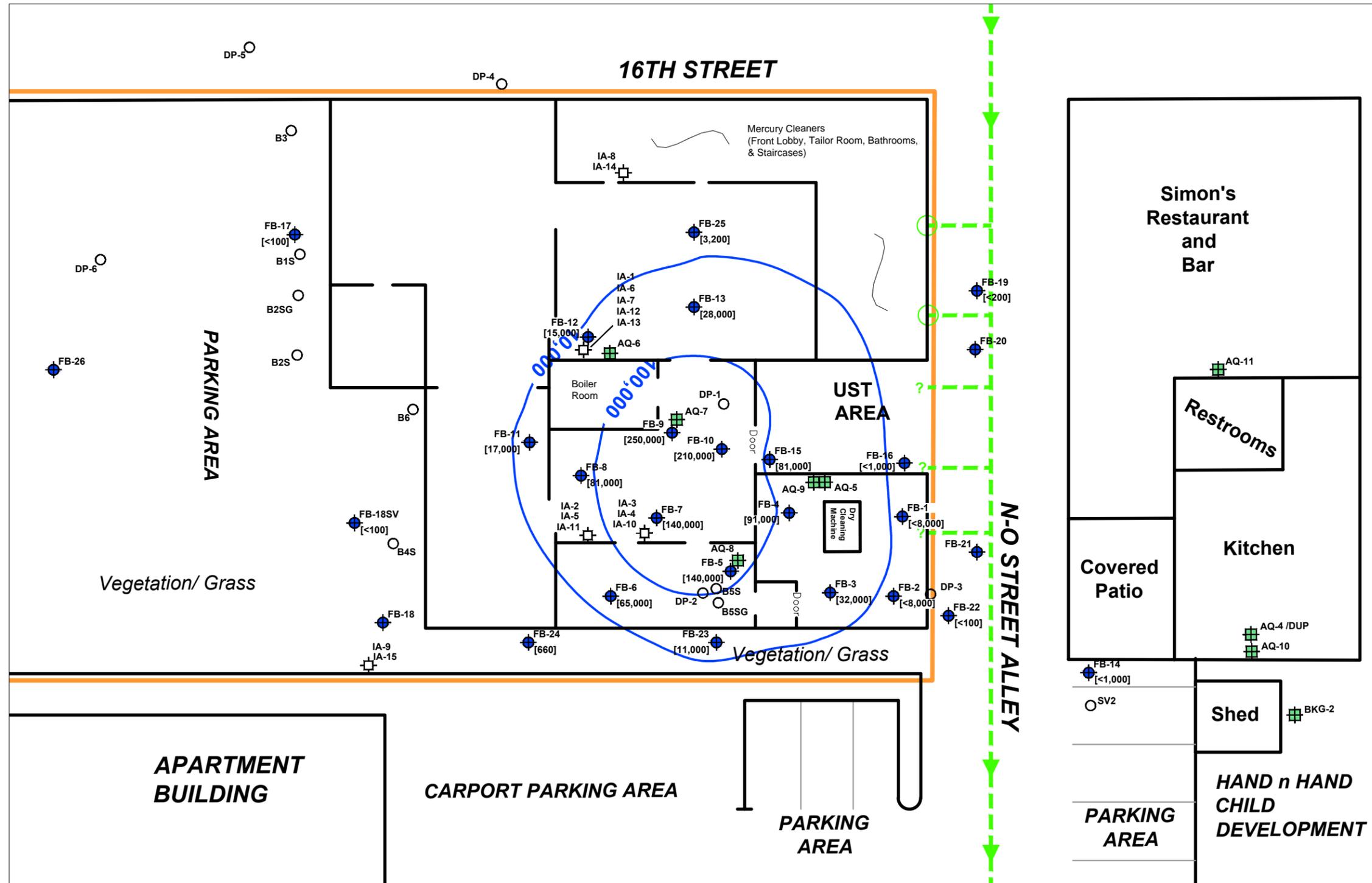
NORTH

0 16 32
FEET

TCE CONCENTRATIONS IN SOIL VAPOR
Mercury Cleaners
Sacramento, California

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BASE MAP SOURCE: Engineering Sketch.



LEGEND

- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [1,000] CIS-1,2-Dichloroethene Concentrations in micrograms per meter cubed ($\mu\text{g}/\text{m}^3$)
- 100- Isoconcentration contour
- Approximate Location of The Sanitary Sewer Line
- 31,100 $\mu\text{g}/\text{m}^3$ Commercial Land Use ESL for CIS-DCE
- Site Boundary

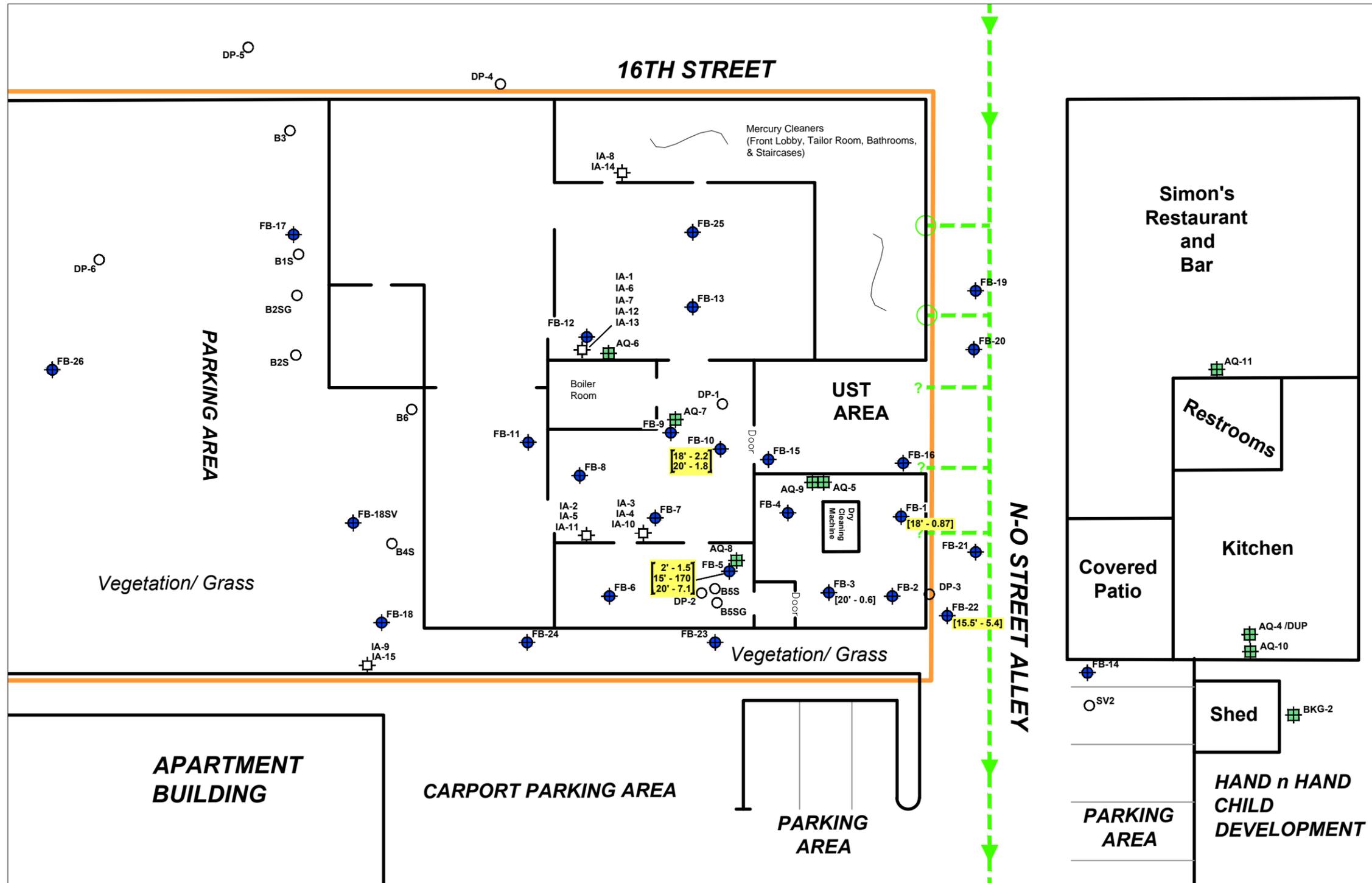
NORTH

0 16 32
FEET

CIS-DCE CONCENTRATIONS IN SOIL VAPOR
Mercury Cleaners
Sacramento, California

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BASE MAP SOURCE: Engineering Sketch.



LEGEND

- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [5.0' - 100] Tetrachloroethene (PCE) Concentrations in milligrams per Kilogram (mg/kg) at a specific depth
- Approximate Location of The Sanitary Sewer Line
- Site Boundary

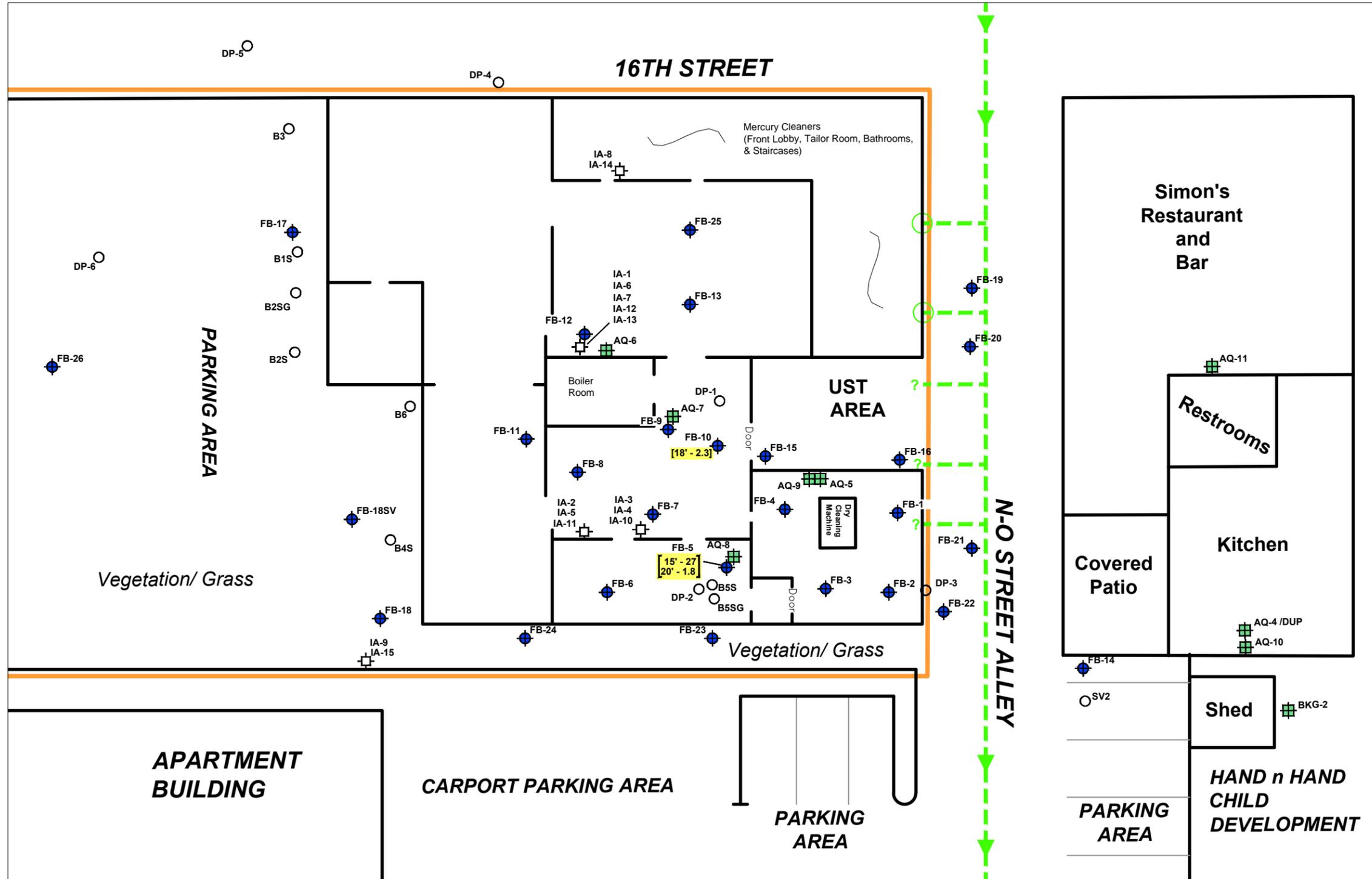
NORTH

0 16 32
FEET

PCE CONCENTRATIONS IN SOIL AT OR ABOVE TIER 1 ESL OF 0.55 mg/kg
Mercury Cleaners
Sacramento, California

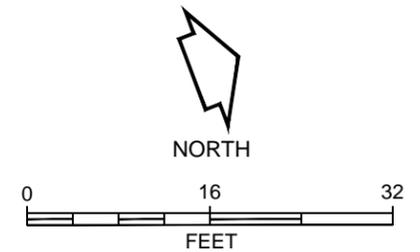
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BASE MAP SOURCE: Engineering Sketch.



LEGEND

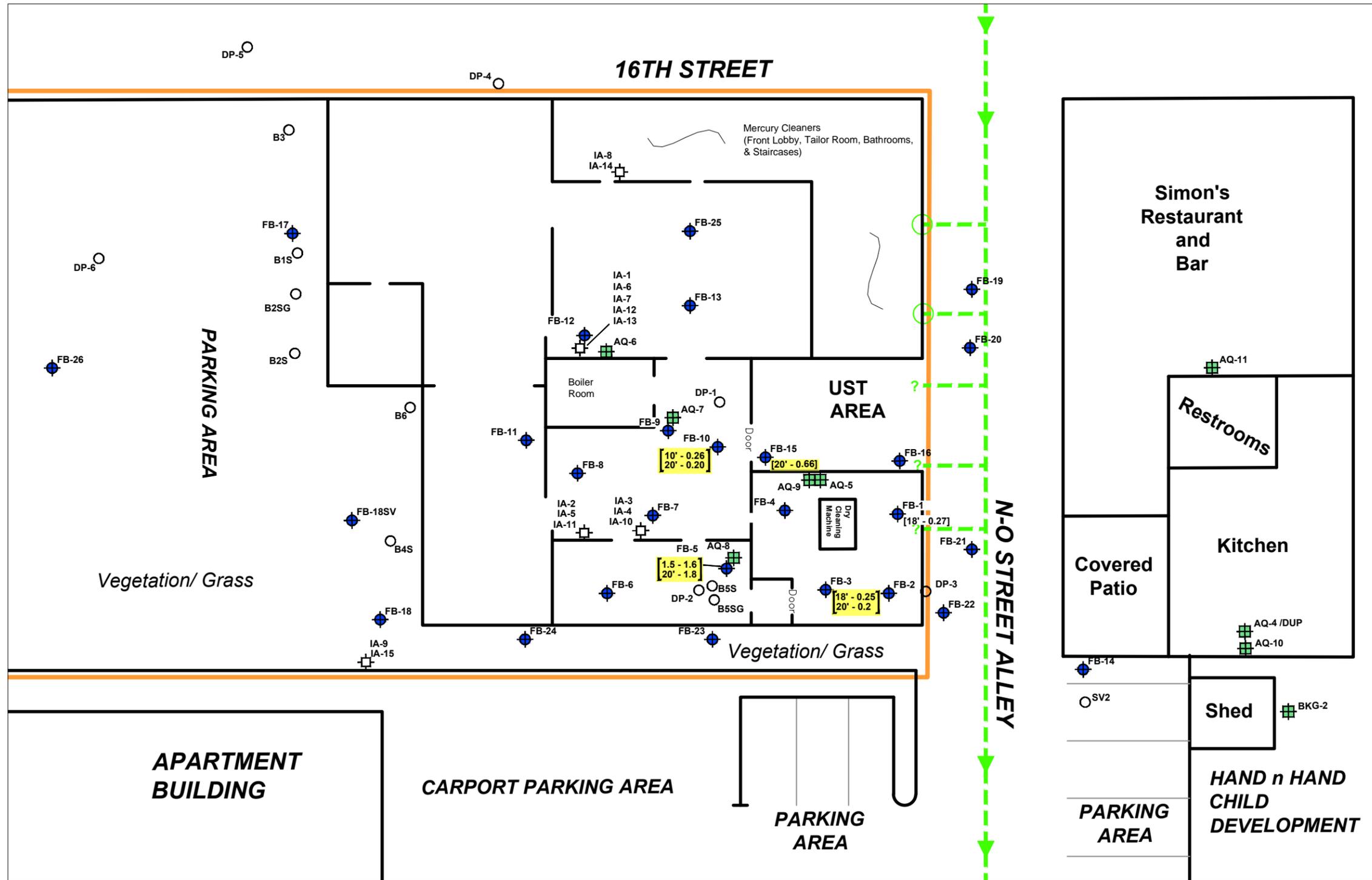
- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [5.0' - 100] Trichloroethene (TCE) Concentrations in milligrams per Kilogram (mg/kg) at a specific depth
- Approximate Location of The Sanitary Sewer Line
- Site Boundary



TCE CONCENTRATIONS IN SOIL AT OR ABOVE TIER 1 ESL OF 0.46 mg/kg
Mercury Cleaners
Sacramento, California

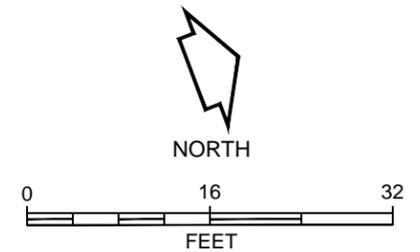
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BASE MAP SOURCE: Engineering Sketch.



LEGEND

- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [5.0' - 100] CIS-1,2-Dichloroethene (CIS-DCE) Concentrations in milligrams per Kilogram (mg/kg) at a specific depth
- Approximate Location of The Sanitary Sewer Line
- Site Boundary

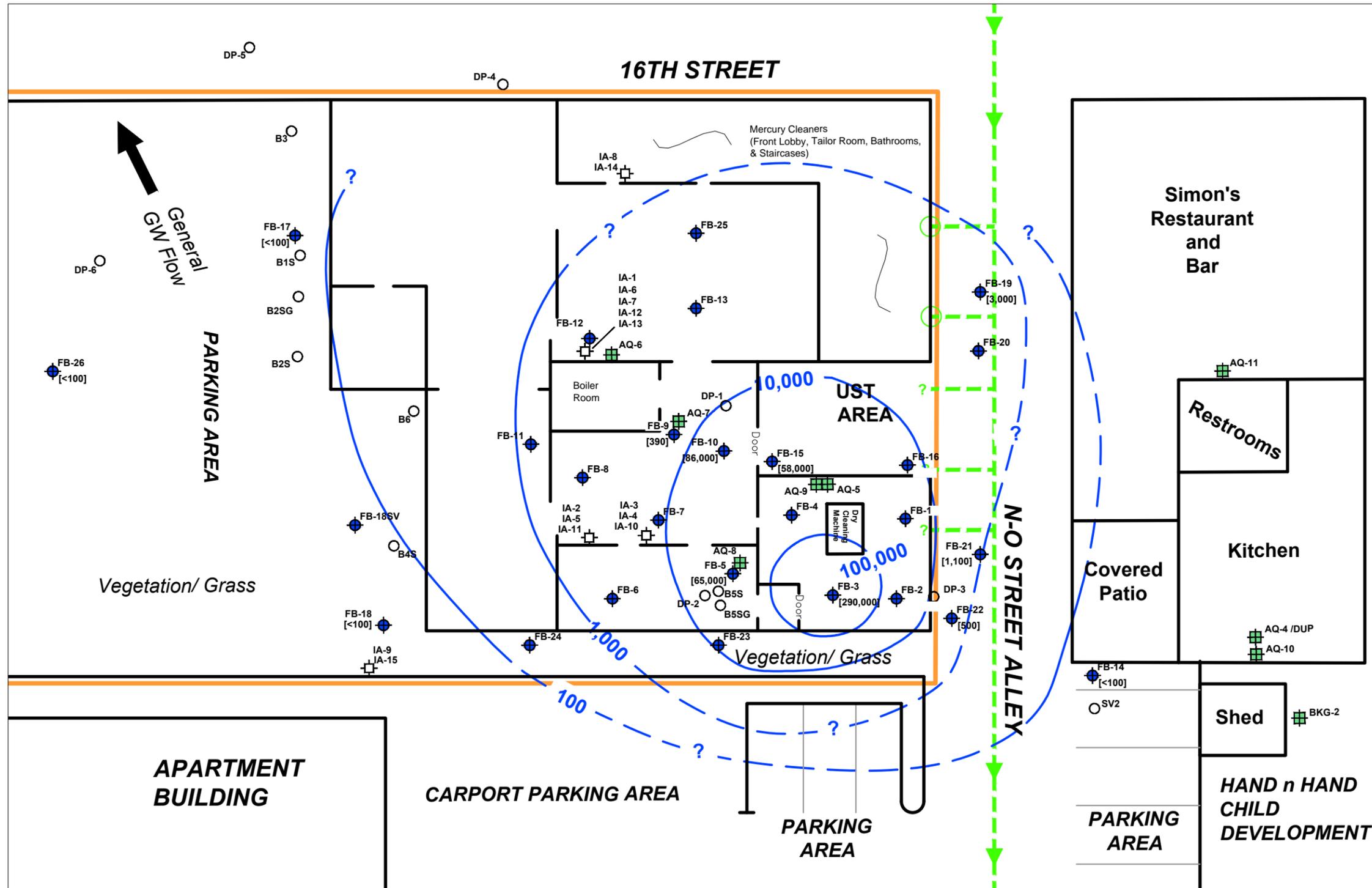


CIS-DCE CONCENTRATIONS IN SOIL AT OR ABOVE TIER 1 ESL OF 0.19 mg/kg
Mercury Cleaners
Sacramento, California

BASE MAP SOURCE: Engineering Sketch.

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C:\Documents and Settings\begin\local settings\temp\AcPublish_5712\B04.72120008-07a Stodd Sol GW.dwg 05-15-2014 - 9:51am



LEGEND

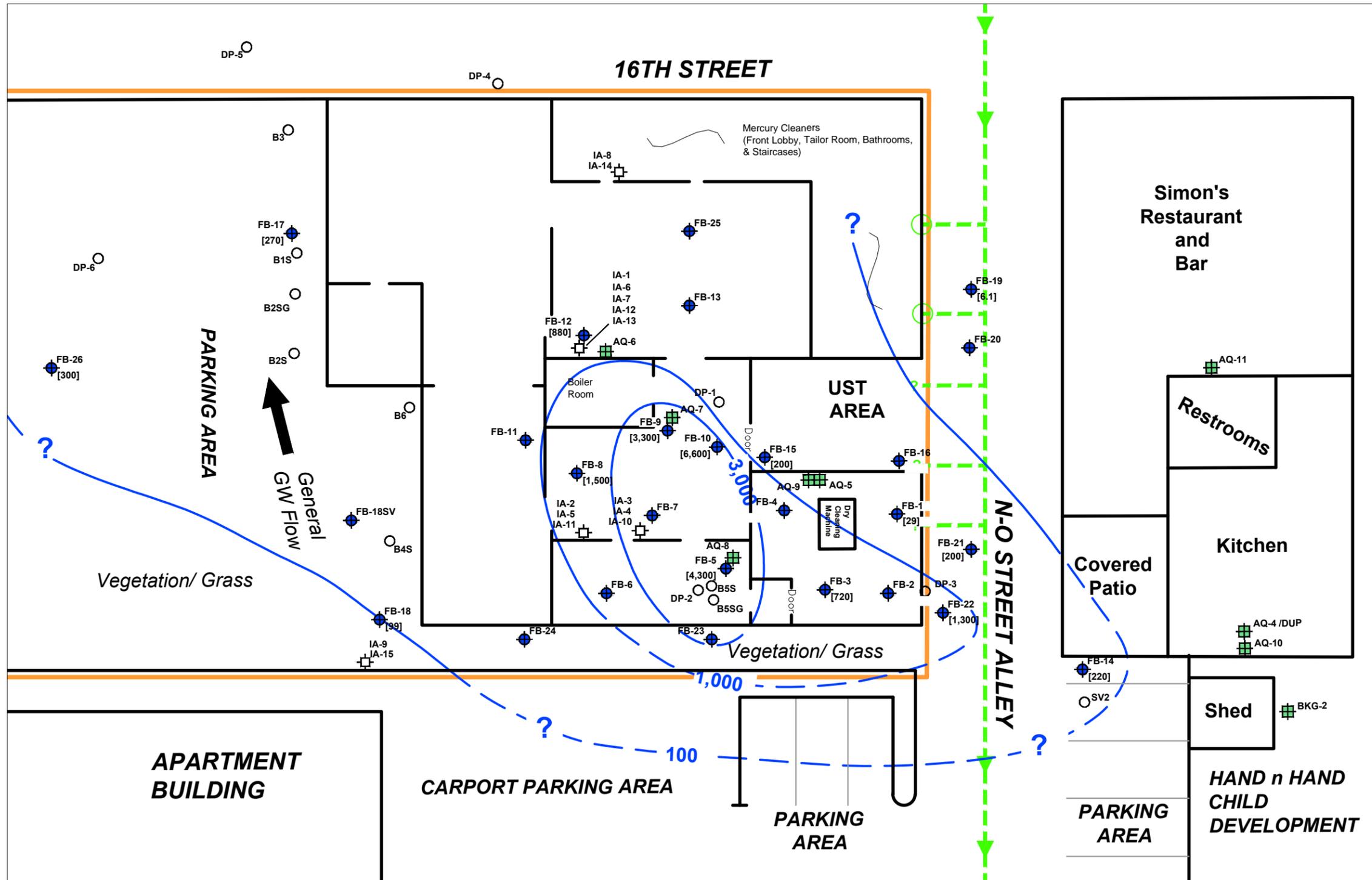
- Approximate location of Geocon's Indoor Air Sample
- Approximate location of Borings by others
- Approximate location of Fugro's AQ Sample
- Approximate Location of Fugro Boring
- [100] Stoddard Solvent Concentrations in micrograms per Liter (µg/L)
- 100- Isoconcentration contour (dashed where approximated)
- Approximate Location of The Sanitary Sewer Line
- 100 µg/L Tier 1 ESL for Total Petroleum Hydrocarbon in the Gasoline and Diesel ranges
- Site Boundary

NORTH

0 16 32
FEET

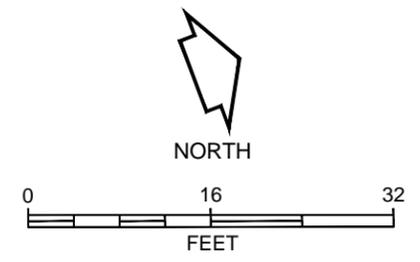
STODDARD SOLVENT CONCENTRATION IN GROUNDWATER
Mercury Cleaners
Sacramento, California

BASE MAP SOURCE: Engineering Sketch.



LEGEND

- IA-15
Approximate location of Geocon's Indoor Air Sample
- B1S
Approximate location of Borings by others
- AQ-9
Approximate location of Fugro's AQ Sample
- FB-25
Approximate Location of Fugro Boring
- [100]
Tetrachloroethene (PCE) Concentrations in micrograms per Liter (µg/L)
- 100-
Isoconcentration contour (dashed where approximated)
- Approximate Location of The Sanitary Sewer Line
- 5.0 µg/L
Tier 1 ESL for PCE
- Site Boundary



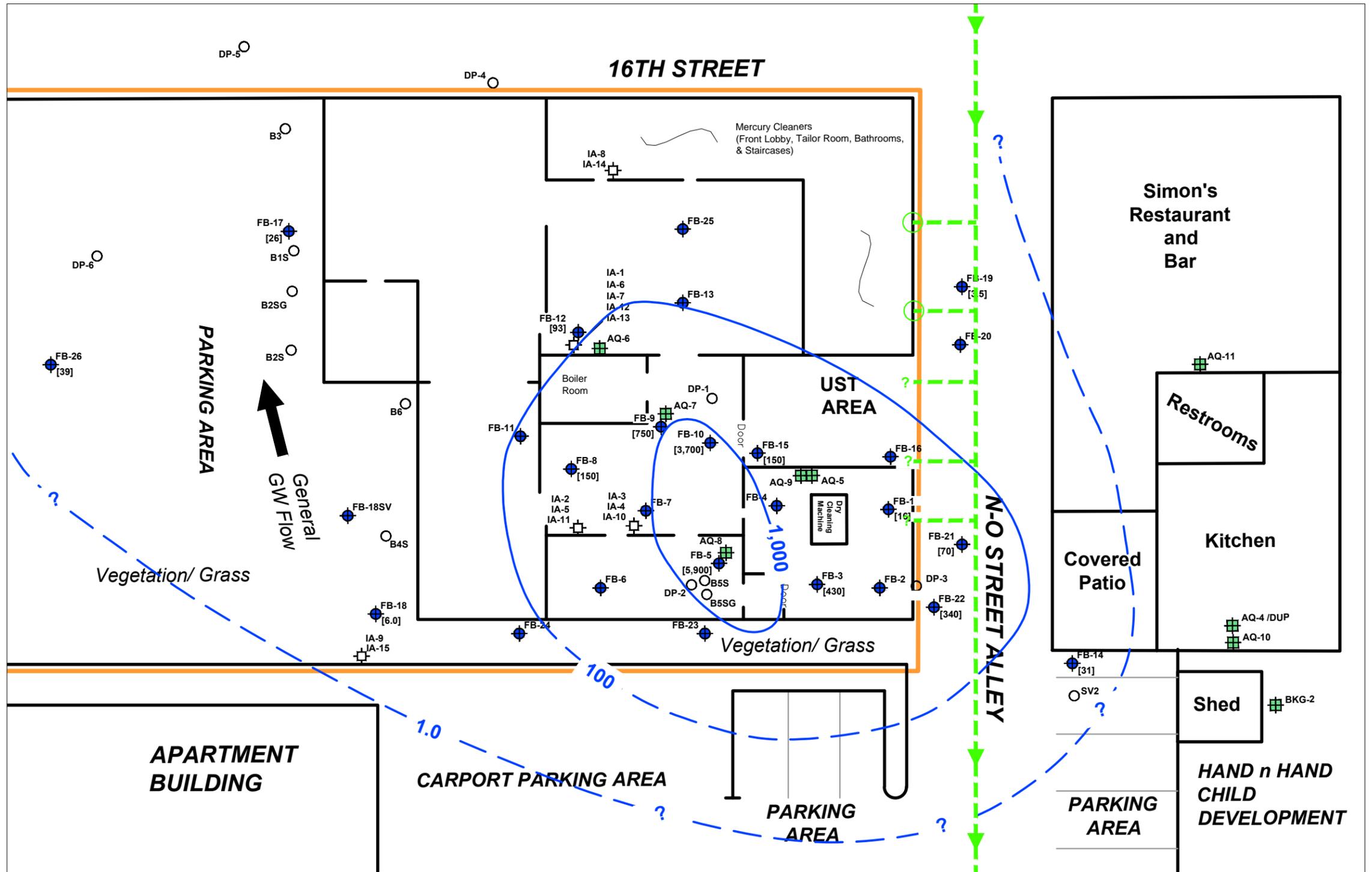
PCE CONCENTRATIONS IN GROUNDWATER
Mercury Cleaners
Sacramento, California

BASE MAP SOURCE: Engineering Sketch.

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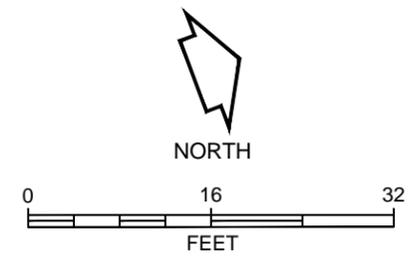


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LEGEND

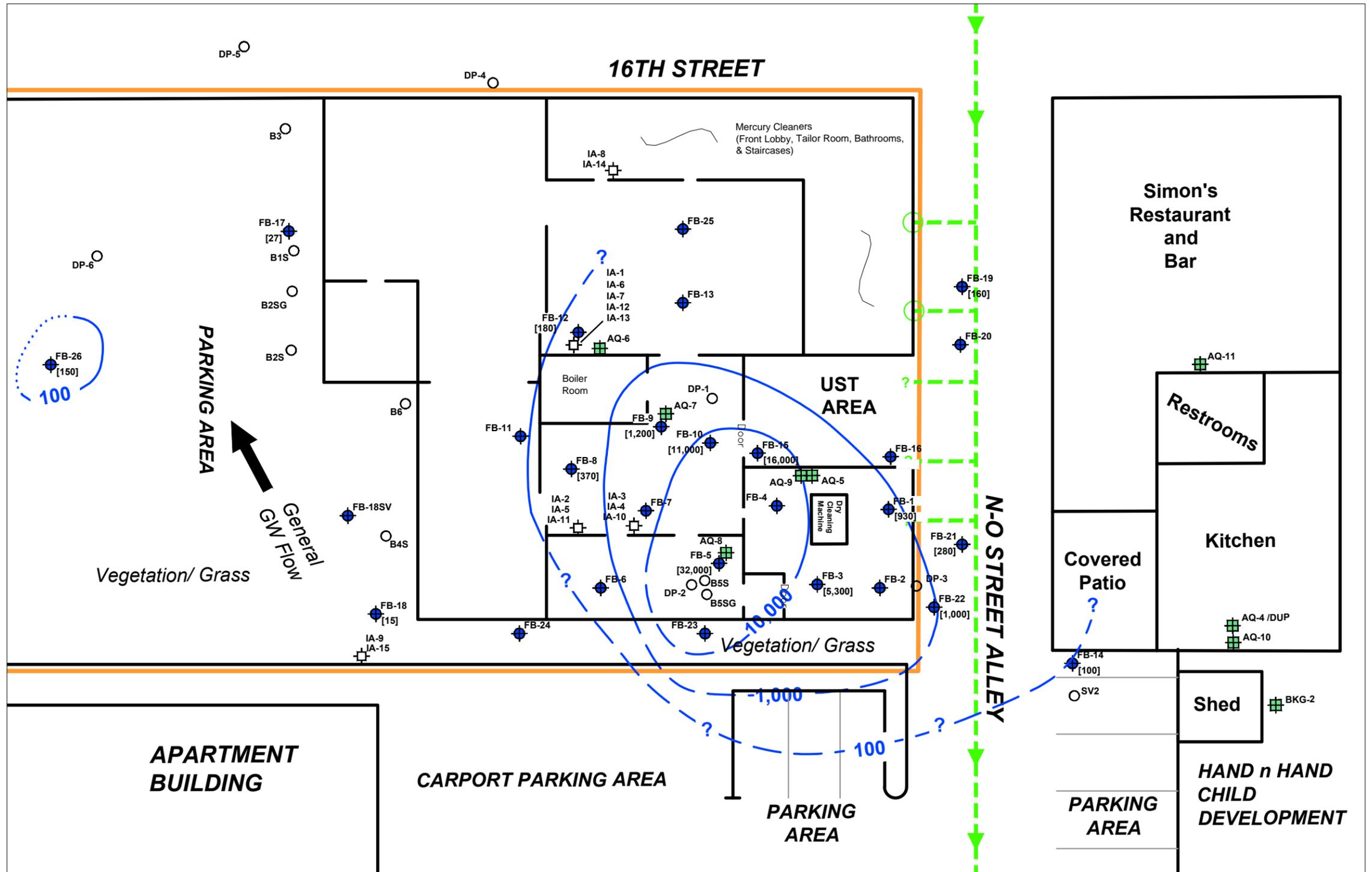
- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [100] Trichloroethene (TCE) Concentrations in micrograms per Liter (µg/L)
- 1.0- Isoconcentration contour (dashed where approximated)
- Approximate Location of The Sanitary Sewer Line
- 5.0 µg/L Tier 1 ESL for TCE
- Site Boundary



TCE CONCENTRATIONS IN GROUNDWATER
Mercury Cleaners
Sacramento, California

BASE MAP SOURCE: Engineering Sketch.

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LEGEND

- IA-15 Approximate location of Geocon's Indoor Air Sample
- B1S Approximate location of Borings by others
- AQ-9 Approximate location of Fugro's AQ Sample
- FB-25 Approximate Location of Fugro Boring
- [100] CIS-1,2-Dichloroethene Concentrations in micrograms per Liter (µg/L)
- 100- Isoconcentration contour (dashed where approximated; dotted where inferred)
- Approximate Location of The Sanitary Sewer Line
- 6.0 µg/L Tier 1 ESL for CIS-DCE
- Site Boundary

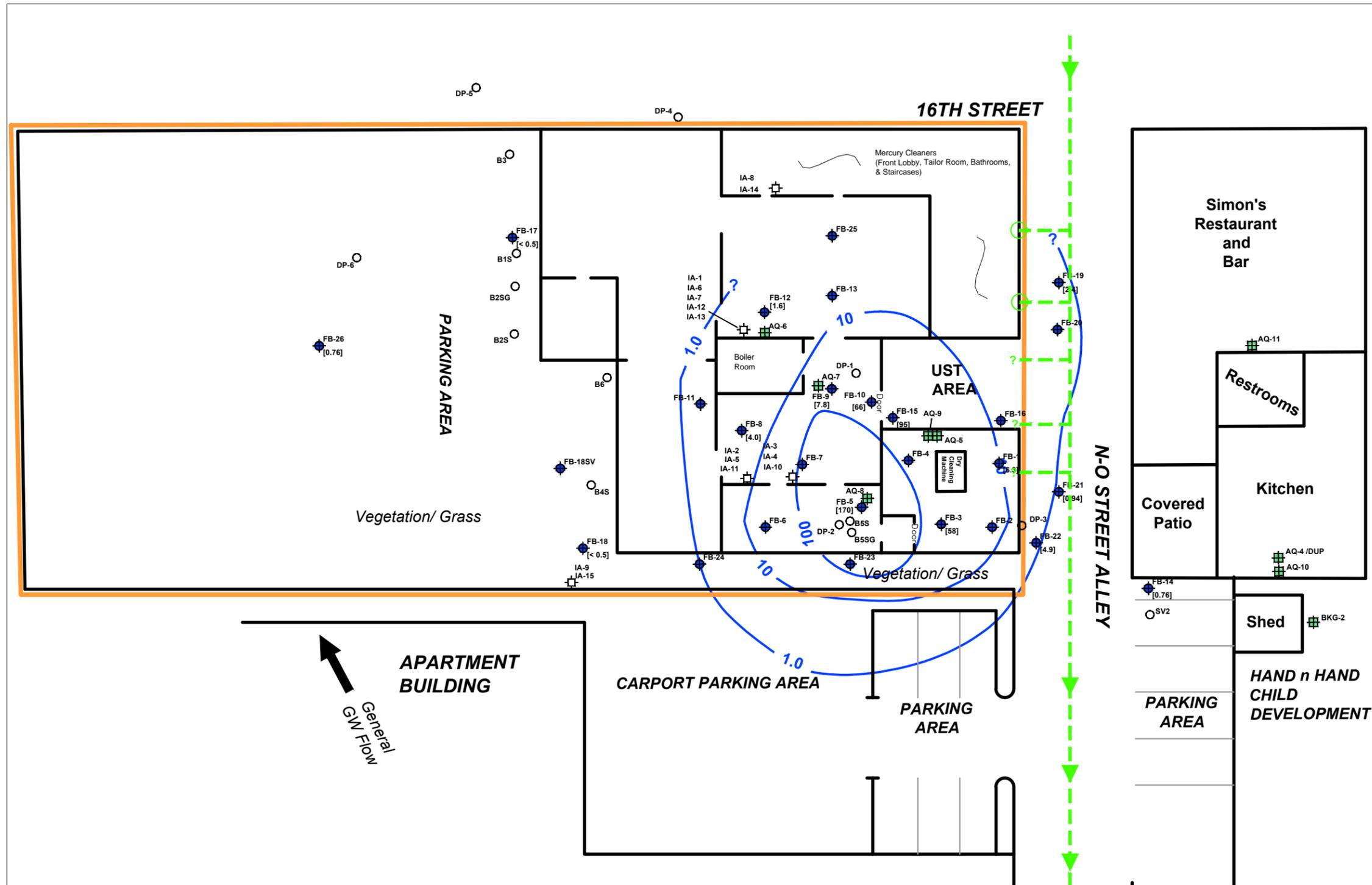
NORTH

0 16 32
FEET

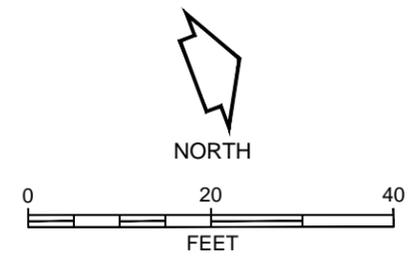
CIS-DCE CONCENTRATIONS IN GROUNDWATER
Mercury Cleaners
Sacramento, California

BASE MAP SOURCE: Engineering Sketch.

M:\Drafting\JOBFILES\2014\04.72120008\Phase 14\Drawings\B04.72120008-07e TRANS-DCE Conc GW.dwg 05-15-2014 - 9:54am



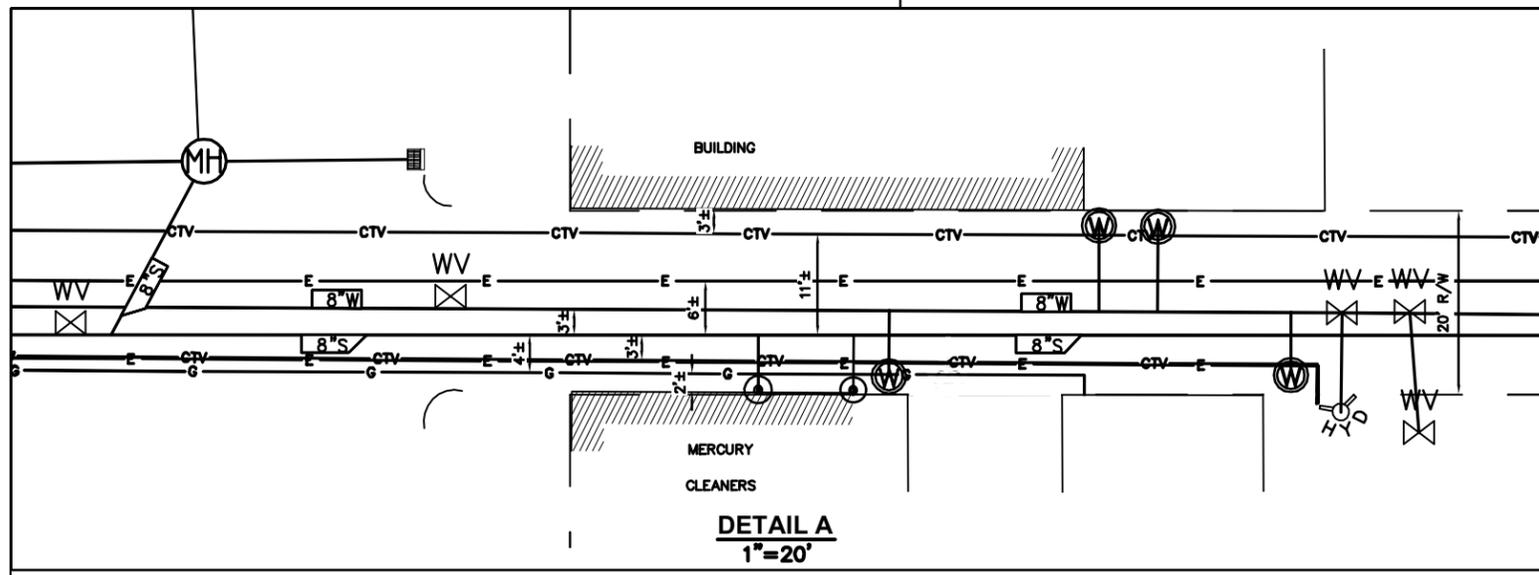
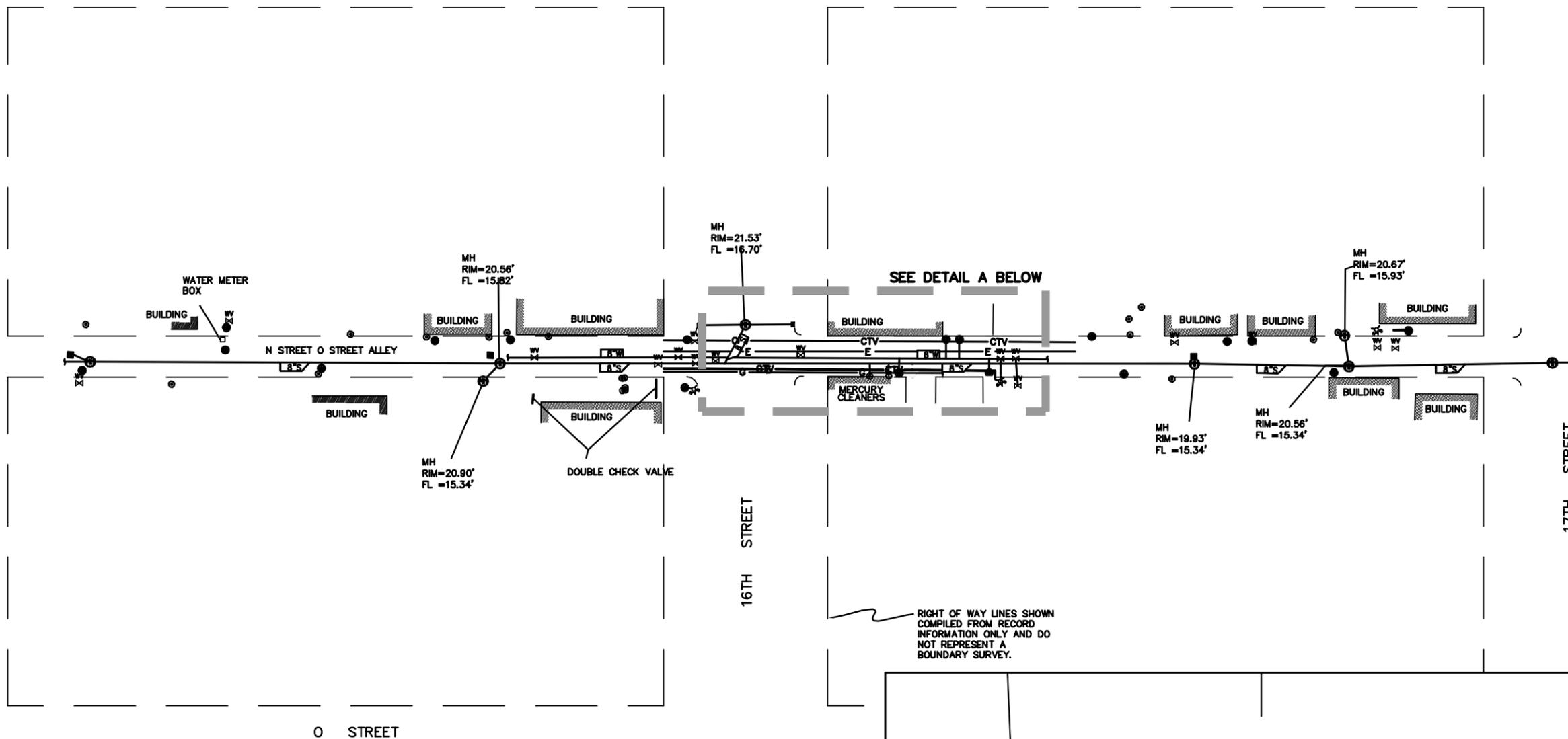
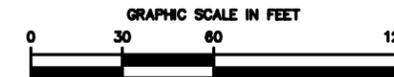
- LEGEND**
- Approximate location of Geocon's Indoor Air Sample
 - Approximate location of Borings by others
 - Approximate location of Fugro's AQ Sample
 - Approximate Location of Fugro Boring
 - [100] TRANS-1,2-Dichloroethene Concentrations in micrograms per Liter (µg/L)
 - 1.0 - Isoconcentration contour (dashed where approximated)
 - Approximate Location of The Sanitary Sewer Line
 - 10 µg/L Tier 1 ESL for TRANS-DCE
 - Site Boundary



TRANS-DCE CONCENTRATIONS IN GROUNDWATER
 Mercury Cleaners
 Sacramento, California

BASE MAP SOURCE: Engineering Sketch.

N STREET



LEGEND/REFERENCES

- - COMBINED SANITARY SEWER STORM DRAIN MANHOLE
- - SANITARY SEWER CLEANOUT
- - DOUBLE CHECK VALVE
- - CATCH BASIN
- - WATER METER
- ⊕ - FIRE HYDRANT
- ⊙ - FOUND WELL MONUMENT
- ⊗ - GAS VALVE
- ⊕ - WATER VALVE
- A/C - ASPHALTIC CONCRETE
- F/C - FACE OF CURB
- CB - CATCH BASIN
- SD - STORM DRAIN
- EV - ELECTRIC VAULT
- - WATER MAIN
- - SEWER/STORM DRAIN MAIN
- - CABLE TELEVISION
- - ELECTRICITY
- - GAS
- - RIGHT-OF-WAY (R/W)

BENCHMARK

CITY OF SACRAMENTO BENCHMARK
297-D4E AT THE SW CORNER OF 16TH
AVENUE AND N STREETS.
BENCHMARK ELEVATION=21.21' (NAVD 88)

GENERAL NOTES:

1. THE TOPOGRAPHIC AND UTILITY INFORMATION PROVIDED WITHIN THIS DRAWING WAS PREFORMED ON JANUARY 9, 2014 BY VIRGIL CHAVEZ LAND SURVEYING.
2. THE SUPPLEMENTAL EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN OBTAINED FROM READILY AVAILABLE PROVIDER MAPPING AND INFORMATION AND HAS BEEN PLACED BASED ON ABOVE GROUND VISIBLE EVIDENCE OF UNDERGROUND UTILITIES. THE EXACT SIZE AND DEPTH OF THESE UTILITIES IS UNKNOWN WITHOUT FURTHER FIELD INVESTIGATION.
3. UNDERGROUND SERVICE ALERT (U.S.A.) SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK.

UTILITY NOTES:

1. CONTRACTOR SHALL FIELD VERIFY DEPTHS TO UTILITIES.
2. TYPICAL DEPTHS TO UTILITIES:
 1. 36" MINIMUM COVER IN STREET TO WATER DISTRIBUTION MAIN
 2. 30" MINIMUM COVER IN STREET TO GAS
 3. 30" MINIMUM COVER IN STREET TO CABLE TELEVISION
 4. 36" MINIMUM COVER IN STREET TO ELECTRICAL PRIMARY
 5. 30" MINIMUM COVER IN STREET TO ELECTRICAL SECONDARY

MERCURY CLEANERS SITE ASSESSMENT

UTILITY SITE EXHIBIT

SACRAMENTO, CALIFORNIA



11919 Foundation Place, Suite 200
Gold River, California 95670
www.kimley-horn.com
Tel. No. (916) 858-5800
Fax No. (916) 858-5805

SCALE:	SHEET
HORIZ.: AS NOTED	8
VERT.: N/A	
DATE: MARCH 2014	
PROJECT NO.: 097603001	

MAY 26, 2014 - 1:45pm - USER: chris.jones - USERR chris.jones - Assessment\08_CADD\Exhibits\20140326_UTILITY\Exhibit-11X17.dwg