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By Alameda County Environmental Health at 2:39 pm, Dec 20, 2013

Solano Group
P.O. Box 9026
Berkeley, CA 94709

Mr. Mark Detterman
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Albany 1-Hour Cleaners
1187 Solano Avenue
Albany, California
ACEH Case No. 2857

Dear Mr. Detterman:

The Solano Group has retained Pangea Environmental Services, Inc. (Pangea) for environmental consulting services for the project referenced above. On my behalf, Pangea is submitting the attached documentation.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached documentation is true and correct to the best of my knowledge.

Sincerely,

J. Anthony Kershaw
General Partner
Solano Group

PANGEA

December 16, 2013

VIA ALAMEDA COUNTY FTP SITE

Mr. Mark Detterman
Alameda County Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Re: **Data Gap Workplan**
Former Albany 1-Hour Cleaners
1187 Solano Avenue
Albany, CA 94706
ACEH SLIC Case RO0002857

Dear Mr. Detterman:

On behalf of the Solano Group, Pangea Environmental Services, Inc. (Pangea) has prepared this *Data Gap Workplan* (workplan) for the subject site. This workplan was prepared in response to your agency letter dated November 18, 2013, and addresses technical comments required by your letter. This report also presents some preliminary results from additional groundwater and subslab gas sampling.

If you have any questions or comments, please call me at (510) 435-8664.

Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Data Gap Workplan*

cc: Mr. J. Anthony Kershaw, Solano Group, P.O. Box 9026, Berkeley, California 94709
Dr. Romtin Nassiri, Solano Smile Dental (1183 Solano Avenue Tenant)
Anne J. Wolfe, USPS Facilities R&A Team West (1191 Solano Avenue Tenant)
SWRCB (Geotracker)

DATA GAP WORKPLAN

Former Albany 1-Hour Cleaners
1187 Solano Avenue
Albany, CA 94706
ACEH SLIC Case RO0002857

December 16, 2013

Prepared for:

J. Anthony Kershaw
Solano Group
P.O. Box 9026
Berkeley, California 94709

Prepared by:

Pangea Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, California 94612

Written by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT G. CLARK-RIDDELL
No. C 049629
Exp. SEPT 2014
CIVIL
STATE OF CALIFORNIA

FOR

Morgan Gillies
Project Manager

Bob Clark-Riddell, P.E.
Principal Engineer

INTRODUCTION

On behalf of Solano Group, Pangea Environmental Services, Inc. (Pangea) has prepared this *Data Gap Workplan* (workplan) for the subject site. This workplan was prepared in response to your agency letter dated November 18, 2013 (Appendix A), and addresses technical comments required by your letter. This report also presents some preliminary results from additional groundwater and subslab gas sampling.

SITE BACKGROUND

Site Use

The subject site consists of a vacant, one-story commercial unit at 1187 Solano Avenue (Figures 1 and 2). Dry cleaner operations occurred at Albany 1-Hour Cleaners at 1187 Solano Avenue (subject site) from approximately 1986 to 2011. In 2004, hydrocarbon-based cleaning equipment was installed to replace the equipment that used tetrachloroethene, also known as perchloroethene (PCE). Former dry cleaning equipment locations are shown on Figure 3.

The subject site represents one unit of an entire commercial block of single-story units/buildings along Solano Avenue, for which the responsible party (Solano Group) owns the north side of the block. Parcel number 66.2801-22-1 includes 1175 Solano (pizza restaurant), 1181 Solano (medical offices), 1183 Solano (dentist office), and 1185 Solano (vacant and immediately adjacent subject site). Parcel number 66.2801-20 includes 1191 Solano (U.S. Post Office). The commercial parking lot for the site (parcel numbers 66.2801-18 and 66.2801-18) is immediately north of the site, and residential properties are north and northwest of the subject site parking lot. Cornell Elementary School is present about 150 ft southeast (upgradient) of the subject site.

Subsurface assessment was performed in 2004 and 2005 by Avalon Environmental Consultants of Tustin, California, to evaluate potential cleaning solvent impact to soil, soil gas, and groundwater. The assessment included soil gas sampling from 5 ft depth in four (4) temporary probes (SG- 1 through SG-4), soil sampling from three (3) shallow borings at 5 ft depth (GP-1 through GP-3), soil sampling from five (5) deeper borings to 10 to 30 ft depth (GPA-1 through GPA-5), and groundwater sampling from approximately 30 ft deep within the five deeper borings completed to a maximum of 37 ft bgs. Prior site assessment was summarized and evaluated in the *Soil Gas Investigation and Human Health Risk Assessment* dated June 8, 2006. Avalon reported that no sensitive receptors such as schools, day care centers or hospitals are located within 100 ft of the subject property structure, and that the nearest residences are located greater than 100 ft north and separated by a parking lot. Avalon's report concluded that the risk posed by the identified compounds was within acceptable levels for commercial site use and recommended no further action at the time. In a letter dated July 5, 2006, the Alameda County Environmental Health (ACEH) concurred with the report findings and requested a closure request for commercial land use with a draft deed restriction limiting future land use. The ACEH required additional action to allow case closure with *unrestricted* land use and avoid a deed restriction.

In January 2013, the Solano Group retained Pangea to review site environmental conditions prior to site improvements for a planned restaurant. All sampling locations are shown on Figure 4. Historic and recent sampling data for soil, groundwater, and soil gas are summarized on Tables 1, 2 and 3, respectively. The extensive site assessment, interim remediation, and vapor intrusion mitigation efforts performed by Pangea in 2013, and the corrective action plan for future site activity toward pursuing case closure was detailed in the *Site Investigation and Interim Remediation Report and Corrective Action Plan* (Technical

Report) dated October 28, 2013 (Pangea, 2013). The final excavation extent is shown on Figure 5. The passive subslab ventilation system is shown on the post-excavation site map as Figure 6.

INFORMATION REQUIRED BY TECHNICAL COMMENTS

As required by ACEH, this section provides additional information and responses to the technical comments in your letter.

Comment 2.a. - Interim Remedial Action Indoor Air Monitoring

Indoor air quality monitoring was performed periodically of the general work area and adjacent units during interim remediation activities. Air monitoring was performed with a Mini Rae 2000 photoionization detector (PID) and personnel gas monitoring meters, which were BW Technologies, GasAlert Micro Clip meter (model #MC2XWM-Y-NA).

PID readings were periodically recorded for the excavation and surrounding areas in 1185 and 1187 Solano. For 1191 Solano, low PID readings were recorded near the vent well installation area and limited PID readings were recorded in the work areas. For 1183 Solano, PID readings in the occupied 1183 Solano unit were typically highest near the reception area or dentist working stations where VOCs (mostly products with ethanol) are used. PID data for indoor air monitoring is included in Appendix B. Results from indoor air laboratory results, where very low concentrations of chemicals of concern were detected, suggest that the PID readings were the result of VOCs used by the dentist.

During soil excavation activities, PID readings were used to screen soil for sufficiency of soil removal. In general, all soil with PID readings above approximately 0.1 to 0.3 parts per million on a volume to volume basis (ppm) were overexcavated for disposal.

To help safeguard worker safety, the PID was also located nearby the work area to sound an alarm if PID readings reached 10 ppm. In addition, excavation personnel wore BW Gas Alert Micro Clip meters. Based on meter readings the excavation personnel followed protocol of the health and safety plan, which included wearing respirators, increasing ventilation, and discontinuing work until conditions improved. The Gas Alert meter included the factory alarm setpoints below shown in Table A.

Table A - Gas Alert Alarm Setpoints

Gas	TWA	STEL	Low	High
O_2	N/A	N/A	19.5% vol	23.5% vol
LEL	N/A	N/A	9% LEL	20% LEL
CO	35 ppm	50 ppm	35 ppm	200 ppm
H_2S	10 ppm	15 ppm	10 ppm	15 ppm

Comment 2.b. - PCE Vapor Concentrations in Subslab Probe SS-9

ACEH expressed concern about the higher PCE concentration reported in subslab vapor probe SS-9 on August 1, 2013 compared to initial probe sampling on April 25, 2013. Pangea notes that the initial sample from SS-9 was unrepresentative of site conditions, due to pump malfunction and probe cloggage. Prior to resampling on August 1, Pangea used a narrow drill bit to remove dirt from the probe. Upon discovering elevated PCE in subslab vapor at this location, Pangea expanded the excavation to target this area. As shown on Figure 5, this area was overexcavated to approximately 4 ft depth in early September 2013. As described below, soil gas monitoring from nearby probes allow evaluation of post-excavation conditions within the subsurface. In addition, the passive subslab ventilation system (shown on Figure 6) provides mitigation of any subslab vapors at this location to safeguard indoor air quality.

Comment 2.c. - Health Risk Levels

Pangea acknowledges that a risk of one in a million (1E-06) is the departure point for making site specific risk decisions. Our report was merely referencing prior agency correspondence. In our prior report, Pangea noted that all current site concentrations at the time were below applicable ESLs based on a risk of 1E-06. Per the Data Gap Workplan, planned additional assessment and monitoring is designed to confirm that post-excavation conditions remain below 1E-06 or to facilitate risk management for any risk above 1E-06.

Comment 2.d. - Groundwater Classification (and Pangea Well Yield Test)

ACEH clarifies Water Board policy requires that site groundwater is considered potentially suitable for MUN and domestic water beneficial uses, unless groundwater is shown to meet specific exemption criteria of the RWQCB Water Quality Control Plan (Basin Plan; RWQCB, 1999). The Basin Plan exception criteria for non-beneficial use include: the water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day. Therefore, Pangea performed a well yield test as described below. The Basin Plan exemption critera also includes groundwater with total dissolved solids (TDS) exceed 3,000 mg/l (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by the Regional Board that the groundwater could supply a public water system. However, electrical conductivity readings at this site have been approximately 1,000 to 1,500 uS/cm, below the 5,000 uS/cm exemption limit.

On December 4, 2013, Pangea performed well water yield tests on wells MW-1 through MW-3. Pangea did not anticipate significant water yield since wells required many days or weeks to yield sufficient water for prior sample collection. For each well, Pangea measured depth-to-water and manually bailed groundwater with a mini-bailer over an approximate one-hour period. Field forms from well yield study are included in Appendix C.

During initial bailing, Pangea was able to remove approximately 1 liter or less before each well dewatered. Specifically, Pangea first bailed 0.6 liters (L) from well MW-1, 1.1 L from well MW-2, and 1.0 L from well MW-3. Within approximately one hour of purging the wells, Pangea returned to each well to measure water level and purge a second time. During the second bailing, the additional yield from each well was very small: 0.05 L (MW-1), 0.15 L (well MW-2), and 0.1 L (well MW-3). Therefore, the total approximate water yield in approximately one hour was 0.65 L (MW-1), 1.25 L (well MW-2), and 1.1 L (well MW-3). Based on the actual purge duration, the corresponding daily yield ranged from approximately 4 to 6 gallons per day (gpd). Based on the supplemental bailing (excluding the initial well purging), the estimated sustained daily yield ranges from approximately 0.4 to 1.0 gpd for these site wells. These water yield/production rates are well below the beneficial use exemption criteria of 200 gpd. This information indicates that shallow, impacted site groundwater does not meet criteria to be considered for beneficial use.

Comment 2.e. - RWQCB's Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites

We appreciate that ACEH is in general agreement that the RWQCB's *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites* (RWQCB, 2009) may be useful for the subject site. ACEH clarifies that robust site specific evidence for natural attention should natural attenuation be proposed for the site. ACEH also states that most chlorinated solvent sites (based on a 2007 study shown in the assessment tool) were closed with solvent concentrations less than 20 times the Maximum Contaminant Level (MCL). Finally, ACEH indicates that this information is offered to provide insight relevant to the site.

To provide more robust data, Pangea has commenced collection of additional data. Also, the low water yield indicates that the shallow impacted groundwater does not meet the MUN classification as groundwater as defined by the Basin Plan. Deeper groundwater at the site that presumably meets MUN classification is not impacted by solvents, suggesting that solvent concentrations in site 'MUN groundwater' are below MCLs (and therefore below the 20 times MCL for most surveyed closed sites). Information presented in the assessment tool (a review of 46 closed cases) indicates that several cases were closed with chlorinated concentrations up to 750 ug/L, which is higher than the maximum PCE concentration of 200 ug/L detected in site groundwater monitoring wells. This ACEH comment will be further addressed in our upcoming report presenting additional monitoring and assessment information.

Comment 2.f - Extent of Groundwater Plume (and ESL Discussion)

The agency letter states that based on the MUN classification of groundwater, that the extent of groundwater plume has not been determined. Based on our above well yield test, shallow site groundwater information does not meet criteria to be considered for beneficial use. However, according to the Basin Plan, remedial strategies should reflect the low probability that groundwater in this zone will be used as a public water supply in the foreseeable future, and other beneficial uses/exposure pathways exist and should be actively protected. These include domestic irrigation, industrial process supply, human health, and ecological receptors. The potential for exposure via incidental ingestion from back yard wells should be evaluated. The Basin Plan, referencing SWRCB Resolution 92-49, also requires pollution sites to demonstrate 1) that reasonably adequate source removal has occurred, 2) the plume has been reasonably defined both laterally and vertically, and 3) a long-term monitoring program is established to verify that the plume is stable and will not impact ecological receptors or human health.

Since extensive source removal and vertical plume delineation has occurred at this site, this Data Gap Workplan includes tasks designed to reasonably define the lateral plume extent, and to further evaluate the potential impact to ecological and human health. Given the fine-grain soil, the environmental screening levels (ESLs) for groundwater that are protective of vapor intrusion into indoor air is 63 µg/L for residential use and 640 µg/L for commercial use and (Table E-1, RWQCB, 2013). According to Table F-1b of the RWQCB ESLs, other applicable ESLs for this site where shallow groundwater does not meet MUN beneficial use criteria include the aquatic habitat goal ESL of 120 ug/L and the gross contamination/ceiling value ESL of 3,000 ug/L.

In summary, applicable RWQCB ESLs from Tables E-1 and Table F-1b for this site where shallow groundwater does not meet MUN beneficial use criteria are as follows:

- 63 ug/L vapor intrusion, residential ESL,
- 640 ug/L vapor intrusion, commercial ESL,
- 120 ug/L aquatic habitat goal ESL, and
- 3,000 ug/L gross contamination/ceiling value ESL.

The Data Gap Workplan includes a sensitive receptor survey within approximately 250 ft of the site in the crossgradient and downgraident directions. The plan also includes additional groundwater assessment to reasonably define the lateral plume extent with respect to the above ESLs.

Comment 2.g. - FS / CAP

Pangea concurs that, provided the additional future data does not indicate a concern, the recommended alternative is Monitored Natural Attenuation (MNA). ACEH requires robust evidence of MNA in groundwater that demonstrate a decreasing concentration trend, and planned assessment activities will initiate collection of pertinent data. ACEH also concurs this is a viable approach if supported by the planned additional data collection activities. If the post-remediation data identifies potential concerns, Pangea will prepare a CAP Implementation Plan as required by ACEH.

DATA GAP WORKPLAN

In the Technical Report, Pangea identified the following tasks to address data gaps in the site conceptual model (SCM):

1. Survey site monitoring wells to facilitate determination of the groundwater gradient and flow direction at the site, and to allow data uploading to State databases.

2. Perform additional groundwater monitoring to evaluate plume stability.

3. Perform additional subslab soil gas and indoor air monitoring to confirm the effectiveness of the completed interim remediation measures of excavation and passive subslab ventilation.

4. Conduct a survey to identify any water wells or other sensitive receptors (e.g., basements or other subgrade development) within approximately 250 ft of the site in the crossgradient and downgraident directions.

5. Short-term feasibility testing from vent piping to evaluate the potential benefit of contingent active or passive ventilation of vents installed under 1183 and 1191 Solano.

The ACEH letter also required additional plume characterization to help facilitate use of the RWQCB's regulatory guidance document *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites.* Our proposed scope of work to perform these tasks is presented below.

Task 1 - Survey Site Monitoring Wells

On December 3, 2013, site monitoring wells were surveyed by Virgil Chavez Land Surveying of Vallejo, California. Based on depth to water measurements on December 4, 2013, groundwater flow was approximately to the west as shown on Figure 8. This flow direction is consistent with the known distribution of PCE in shallow groundwater and flow direction reported for nearby sites. Future groundwater monitoring will allow evaluation of the groundwater flow direction during other seasons. If additional monitoring wells are installed during the upcoming investigation, these will also be surveyed. The survey report will be included in the upcoming report.

Task 2 - Additional Groundwater Monitoring

Initial groundwater data from site monitoring wells is shown on Figure 9. On December 4, Pangea performed additional groundwater monitoring of the four existing wells (MW-1 through MW-4). Results of this groundwater monitoring event and historical monitoring are summarized on Figure 10 and Table 2. For this second groundwater monitoring event there was significant more water present in wells MW-1 through MW-3, which resulted in somewhat higher PCE concentrations in samples from these wells. PCE concentrations were slightly lower in source area well MW-4 where soil excavation targeted saturated zone impact. PCE concentrations this event ranged from 55 ug/L (MW-2) to 340 ug/L (MW-1). TCE concentrations ranged from 1.5 ug/L (MW-2) to 50 ug/L (MW-1). No other VOCs were reported in groundwater.

Pangea also analyzed all four well samples were analyzed for full list VOCs by EPA Method 8260. The lack of BTEX and naphthalene concentrations in groundwater indicates that these compounds are not a concern for this site. The only VOCs detected in groundwater other than PCE and TCE were acetone (maximum of 610 ug/L) and methyl ethyl ketone (MEK, maximum of 230 ug/L) in source well MW-4; the detected concentrations were well below final RWQCB ESLs of 1,500 ug/L (acetone) and 7,100 ug/L (MEK). The presence of acetone and MEK in groundwater may be attributed to piping glue, painting, construction or other activities. Future analysis will be performed using by EPA Method 8010 to control cost. Our well monitoring procedures and the laboratory report will be presented in our upcoming report.

Pangea plans to conduct three additional groundwater monitoring events (February, May and August 2014) to provide four consecutive quarterly events. This will evaluate stability of the solvent plume with respect to seasonal variation over one full year.

Task 3 - Additional Subslab Soil Gas and Indoor Air Monitoring

Additional subslab soil gas monitoring was performed by Pangea on December 4, 2013 using 1-liter Summa canisters and leak check analysis. Current subslab gas data is shown on Figure 7. Current and historical results of subslab gas monitoring are summarized on Table 3. This limited data suggests that PCE concentrations remain well below the commercial ESL of 2,100 ug/m^3 for all but one sample location (SSPO-4). The maximum PCE concentration of 3,600 ug/m^3 detected in SSP)-4 this event represents a small increase from the prior maximum of 1,800 ug/m^3. Other PCE concentrations were generally similar or decreased. Trichloroethylene (TCE) concentrations observed in subslab gas are likely the result of degradation of PCE. TCE concentrations are also well below the commercial ESL of 3,000 ug/m^3. This information suggests that VOC impact is attenuating beneath 1183 Solano, stable and attenuating beneath 1187 Solano, and fluctuating beneath 1191 Solano. Pangea notes that despite the PCE concentration in subslab gas slightly above the commercial ESL of 2,100 ug/m^3, indoor air samples in the room with probe SSPO-4 were below the conservative ESL protective of indoor air for residential site use.

Based on results of recent groundwater monitoring data from well MW-3, Pangea also plans to conduct additional subslab gas sampling near the apartment building on Stannage Avenue. As shown on Figure 10, impacted groundwater is present near the apartment building. Given the prevalent shallow clayey soil, Pangea anticipates that any residual PCE in shallow groundwater does not pose a significant concern to human health. For example, the PCE concentration of 34 ug/m^3 in subslab gas from the closest probe (SS-19) to the nearby apartment building is well below the RWQCB ESL of 210 ug/m^3 for soil gas for residential site use (Probe SS-19 is also located near the plume source area/courtyard and where the highest PCE concentration [820 ug/L] was detected in grab groundwater at the site). To help confirm that impacted groundwater does not pose a significant vapor intrusion risk for these residences, Pangea plans to install a subslab gas probe within the concrete driveway immediately adjacent the apartment building (or another location deemed appropriate during our door-to-door sensitive receptor survey).

Indoor air sampling within each of the four units (1183, 1185, 1187 and 1191 Solano) and ambient air is scheduled for December 18, 2013. Our sampling procedures and the laboratory reports will be presented in our upcoming report. The upcoming report will provide conclusions and recommendations regarding the benefit of any additional subslab gas and indoor air monitoring, and will help confirm the effectiveness of the completed interim remediation measures of excavation and passive subslab ventilation.

Task 4 - Sensitive Receptor Survey

Pangea will conduct a door-to-door survey to identify any water wells or other sensitive receptors (e.g., basements or other subgrade development) within approximately 250 ft of the site in the crossgradient and downgraident directions. Based on results of receptor survey and planned grab groundwater sampling, Pangea may perform additional grab groundwater sampling or subslab gas sampling near any identified sensitive receptors. Our survey procedures and results will be presented in our upcoming report.

Task 5 - Feasibility Testing of Vent Piping

Pangea is coordinating short-term feasibility testing from vent piping to evaluate the potential benefit of contingent active or passive ventilation of vents installed under 1183 and 1191 Solano. Results of this feasibility testing will be presented in the upcoming report.

PLUME DELINEATION WORKPLAN

The ACEH letter requires additional plume characterization to help facilitate use of the RWQCB's regulatory guidance document *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites (Low-Threat Closure Tool).* Our aspects of plume delineation area are introduced above in response to agency Comment 2.f. and are described below.

Investigation Objectives

The objective of the proposed investigation is to further characterize the lateral extent of the groundwater plume and groundwater flow direction. The planned sampling and subsequent groundwater monitoring will help verify plume stability and that the plume will not impact ecological receptors or human health.

Since site shallow groundwater does not meet MUN beneficial use, it appears that the primary investigation objective is no longer to delineate the plume to 5 ug/L (the ESL for drinking water). And given the lack of surface water near the site and the very limited impact area above the aquatic habitat ESL of 120 ug/L, additional investigation (other than plume stability) appears unnecessary to protect potential aquatic receptors. With all groundwater data below the gross contamination/ceiling value of 3,000 ug/L, this ESL has already been met and is not relevant to future assessment. Therefore, the primary investigation objective is to delineate groundwater to applicable ESLs protective of vapor intrusion into indoor air, which are 63 µg/L for residential use and 640 µg/L for commercial use (Table E-1; RWQCB, 2013).

The PCE extent in shallow groundwater based on monitoring *well* data from the first two sampling events are shown on Figures 9 and 10. The PCE extent in shallow groundwater based on historic *grab* groundwater sampling is shown on Figure 11; this figure also shows the proposed grab groundwater sampling locations. The primary area to be investigated is the area adjacent the apartment building northwest of the known plume extent. The secondary area to be investigated is the downgradient and crossgradient extent of the plume, near commercial buildings and more distant residences. Given the prevalent shallow clayey soil and the existing subslab gas data closer to the known plume, Pangea anticipates that any residual PCE in shallow groundwater does not pose a significant concern to human health. For example, the PCE concentration of 34 ug/m^3 in subslab gas from the closest probe (SS-19) to the nearby apartment building is well below the RWQCB ESL of 210 ug/m^3 for soil gas for residential site use (Probe SS-19 is also located near the plume source area/courtyard and where the highest PCE concentration [820 ug/L] was detected in grab groundwater at the site). Our investigation and related data gap tasks are designed to verify this tentative conclusion that residual PCE in shallow groundwater does not pose a significant concern to human health.

Pangea's investigation scope of work involves initial grab groundwater sampling from temporary boreholes, followed by analytical data submittal to ACEH to discuss benefit or requirement for contingent step-out borings or monitoring well installation. Notwithstanding the above discussion of investigation objectives with respect to applicable ESLs, the plume delineation can be performed to provide delineation to the drinking water ESL of 5 ug/L if required by ACEH. We recommend basing the requirement for subsequent delineation after consideration of data from the upcoming initial borings.

Our proposed scope of work to accomplish the investigation objectives are detailed below. All field activities will be conducted in general accordance with the Standard Operating Procedures (SOPs) provided in Appendix D.

Delineation Task 1 – Pre-Field Activities

Prior to initiating field activities, Pangea will conduct the following tasks:

- Obtain drilling permits from Alameda County Public Works Agency and encroachment permits for the City of Albany as necessary;
- Pre-mark the boring locations with white paint and notify Underground Service Alert (USA) of the drilling and sampling activities at least 2 business days before work begins;
- Prepare a site-specific health and safety plan to educate personnel and minimize their exposure to potential hazards related to site activities; and
- Coordinate with drilling and laboratory contractors and with involved parties.

Delineation Task 2 – Grab Groundwater Sampling

For additional groundwater plume characterization, Pangea proposes to install five temporary borings for grab groundwater sampling. As shown on Figure 11, two borings are proposed west and downgradient of the site on Stannage Avenue. Another boring is southwest and downgradient of the site near the intersection of Albany Avenue and Stannage Avenue. Another boring is proposed crossgradient (to the north) in the parking lot and toward nearby residences. The final boring is proposed crossgradient (to the south) nearby commercial businesses across Solano Avenue.

If elevated contaminant concentrations are detected in grab groundwater, then contingent borings may be performed for further delineation in a dynamic manner. Contingent boring locations are shown on Figure 11. Prior to completing additional borings (or installing monitoring wells), Pangea will present and discuss analytical results with ACEH.

Pangea plans to conduct the inital five borings using hand augering equipment. A single grab groundwater sample will be collected from each sampling point using temporary PVC casing installed to first encountered groundwater. If necessary for borings or contingent wells, Pangea may use a combo rig with direct-push and hollow-stem auger capabilities. The direct-push combo sampling rig will be equipped with a hydraulic hammer and steel drive rods to advance the borings to the total depth. With hydraulic-push drilling, continuous soil collection is conducted using acetate liners and samples are typically collected at four foot intervals.

The soil samples will classified according to the Unified Soil Classification System (USCS) and screened for field indications of chlorinated solvents using visual and olfactory observations, and perhaps with a photo-ionization device (PID). All site investigation activities will be performed under the supervision of a California Registered Civil Professional Engineer (P.E.). Additional soil and assessment procedures are presented in our Standard Operating Procedures (Appendix D).

Pangea will analyze a grab groundwater from each boring for Volatile Organic Compounds (VOCs) by EPA Method 8260B (8010 target list). Unless otherwise directed, Pangea does not plan to analyze soil samples. If directed, soil samples will be obtained by cutting 6-inch subsections, trimming the excess soil from the ends, and capping the ends with Teflon® tape and plastic caps. Additional soil samples could be collected near the water table and at lithologic changes.

Delineation Task 3 – Monitoring Well Installation

Following the completion of the initial five borings and any necessary contingent borings, Pangea will discuss potential installation of groundwater monitoring wells with ACEH. Monitoring wells could be located near initial or contingent boring locations.

If wells are installed, Pangea will screen the wells from approximately 10 to 15 ft bgs based on the lithology of prior site borings. Wells would be constructed of 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing, 0.01-inch factory-slotted PVC screen and #2-12 sand, with a bentonite seal and grout to the surface. The wells would be protected by a traffic-rated well vault.

The monitoring wells would be developed at least 72 hours after installation has been completed. The wells would be intermittently surged with a surge block, and groundwater would be evacuated using a bailer, hand pump, peristaltic pump or submersible pump until the well dewaters repeatedly or groundwater is visibly clear and/or has a low turbidity. During purging, measurements of temperature, pH, conductivity, and turbidity would be recorded on monitoring well development forms. At least 48 hours following development, three casing volumes (if sufficient water) would be purged from the well and groundwater samples will be collected from the new wells. Groundwater samples will be analyzed by for VOCs by EPA Method 8260B (8010 target list). Further details of well installation, development and sampling procedures are presented in Pangea's Standard Operating Procedures (Appendix C).

Delineation Task 4 – Investigation Derived Waste

Soil cuttings and other investigation-derived waste will be stored onsite in appropriate containers pending laboratory analytical results. Upon receipt of the analytical reports, the waste will be transported to an appropriate disposal/recycling facility.

Delineation Task 5 – Report Preparation

Upon completion of field activities, Pangea will prepare a site investigation report. The report will discuss field activities and analytical results, and will provide recommendations for further action. If the investigation and post-remediation data identifies potential concerns, the investigation data may be incorporated into a CAP Implementation Plan.

REFERENCES

Pangea Environmental Services, 2013, (Pangea, 2013), *Site Investigation and Interim Remediation Report and Corrective Action Plan,* October 28.

Regional Water Quality Control Board, 1999, (RWQCB, 1999), *East Bay Plain Beneficial Use Evaluation Report, Alameda and Contra Costa Counties, CA,* June 1999

Regional Water Quality Control Board, 2009, (RWQCB, 2009) *Draft – Final Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites*, July 31

San Francisco Regional Water Quality Control Board, 2013, (RWQCB, 2013) *Environmental Screening Levels*, November 2007, Revised May 2013

ATTACHMENTS

Figure 1 – Vicinity Map
Figure 2 – Site Map
Figure 3 – Former Dry Cleaner Equipment Map
Figure 4 – Sampling Location Map
Figure 5 – Final Interim Excavation Extent and Depth
Figure 6 – Subslab Passive Ventilation System and Post-Excavation Site Map
Figure 7 – Subslab Gas Data, December 4, 2013
Figure 8 – Groundwater Elevation Map, December 4, 2013
Figure 9 – PCE in Shallow Groundwater Monitoring Wells, First Event (2013)
Figure 10 – PCE in Shallow Groundwater Monitoring Wells, December 4, 2013
Figure 11 – Proposed Grab Groundwater Sampling Locations and Historic Grab Data

Table 1 – Soil Analytical Data
Table 2 – Groundwater Analytical Data
Table 3 – Subslab and Soil Gas Analytical Data

Appendix A – Regulatory Letter
Appendix B – PID Readings
Appendix C – Well Yield Field Data
Appendix D – Standard Operating Procedures

Solano Group
1187 Solano Avenue
Albany, California

PANGEA

Vicinity Map

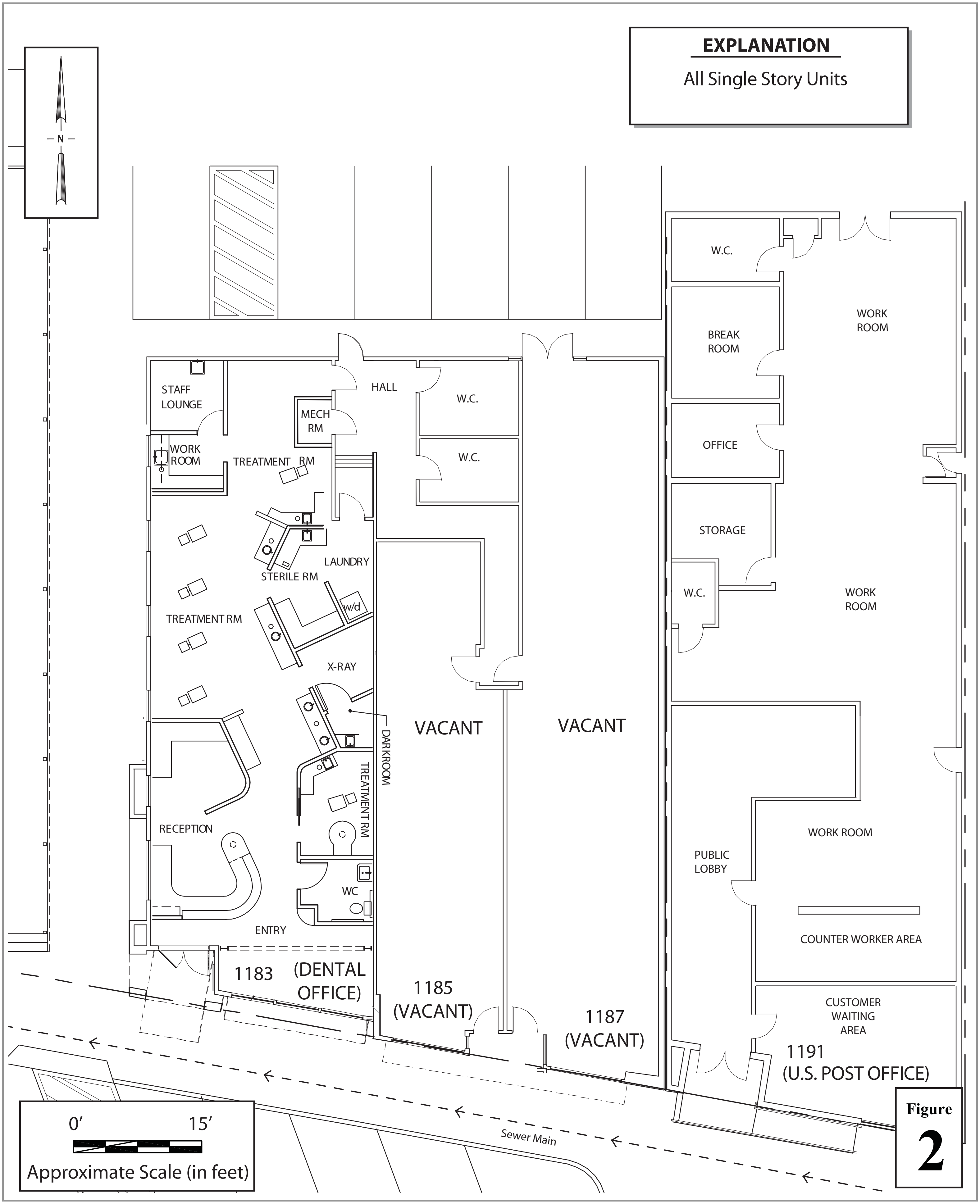


Figure 2

Site Map

Solano Group
1187 Solano Avenue
Albany, California

PANGEA

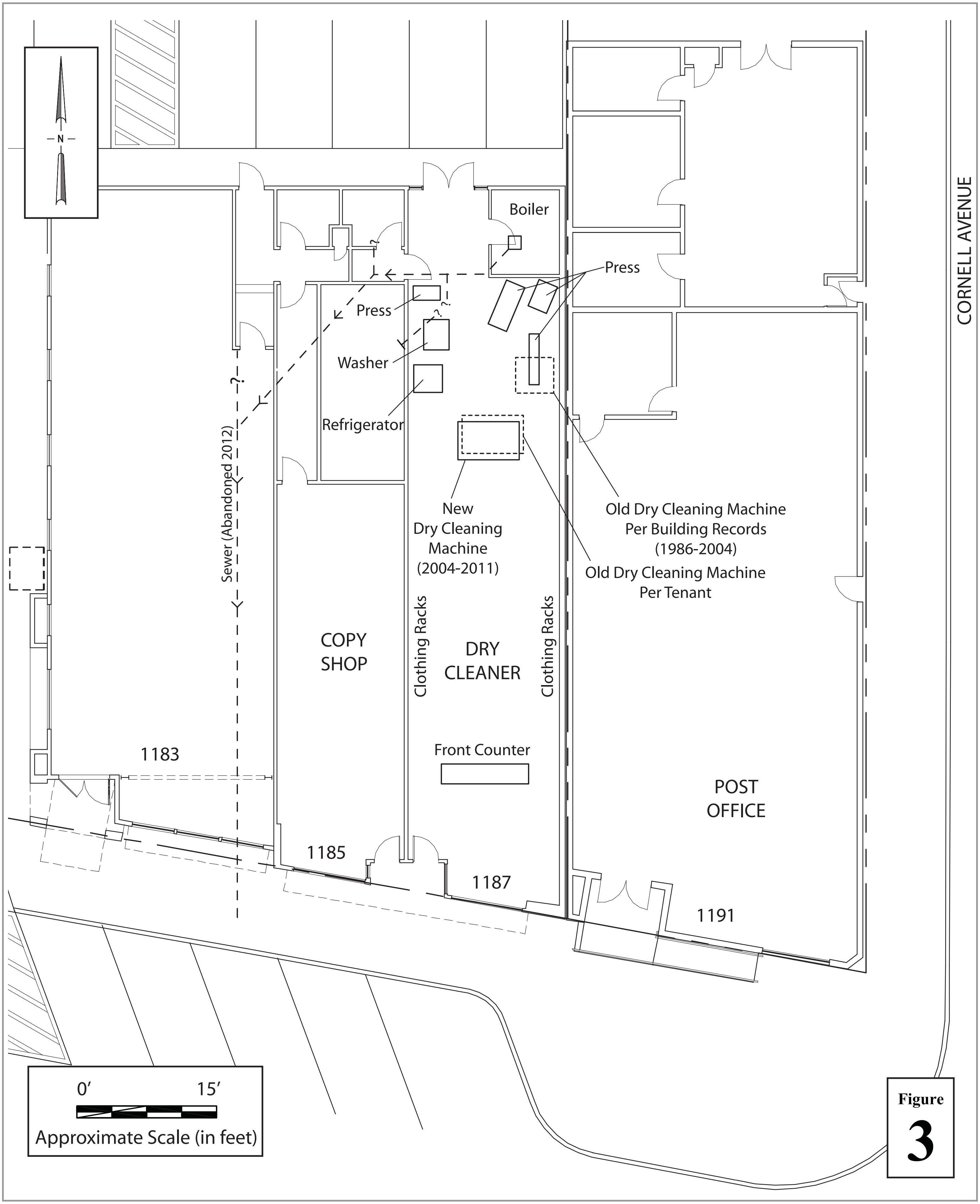
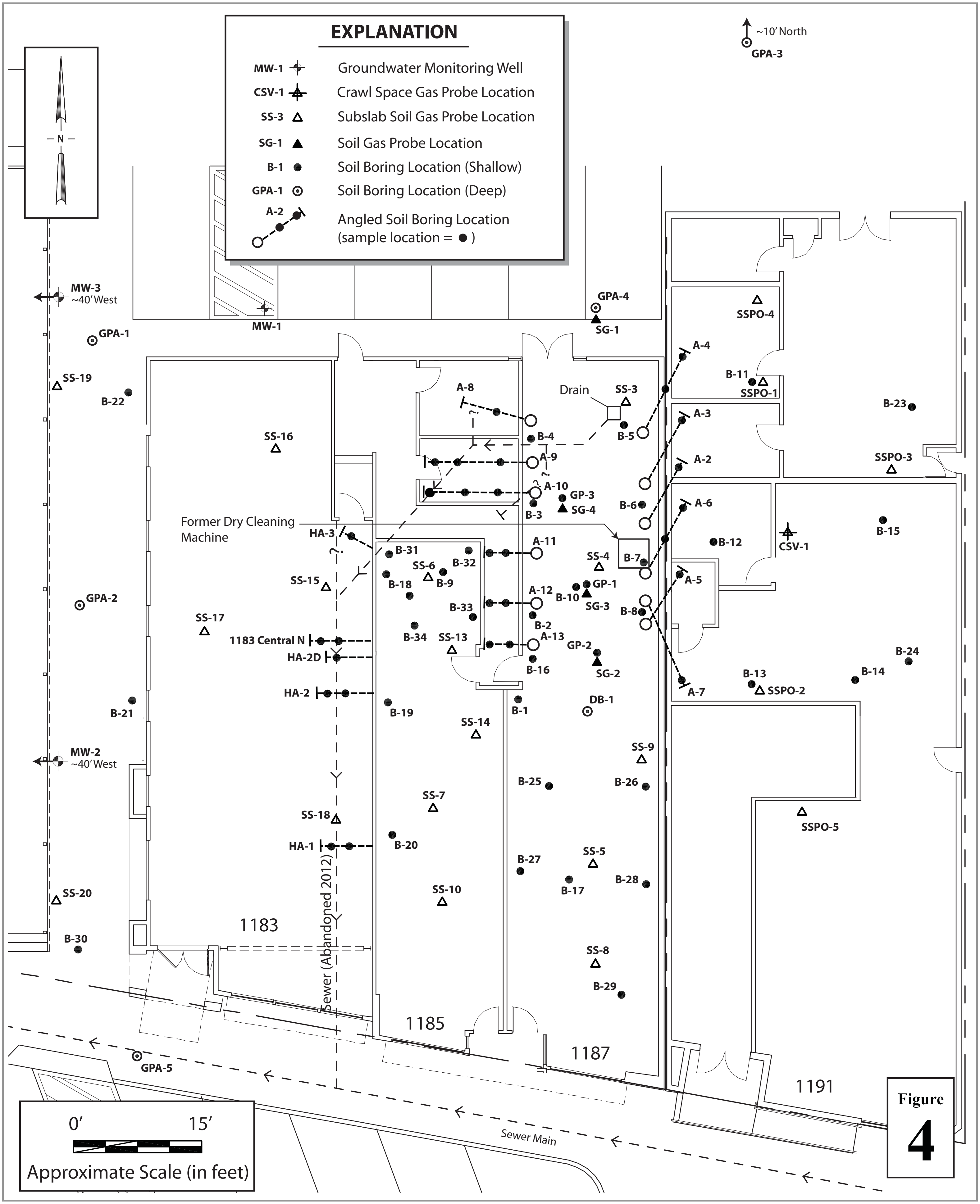


Figure
3

Solano Group
1187 Solano Avenue
Albany, California

PANGEA

Former Dry Cleaner
Equipment Map



Solano Group
1187 Solano Avenue
Albany, California

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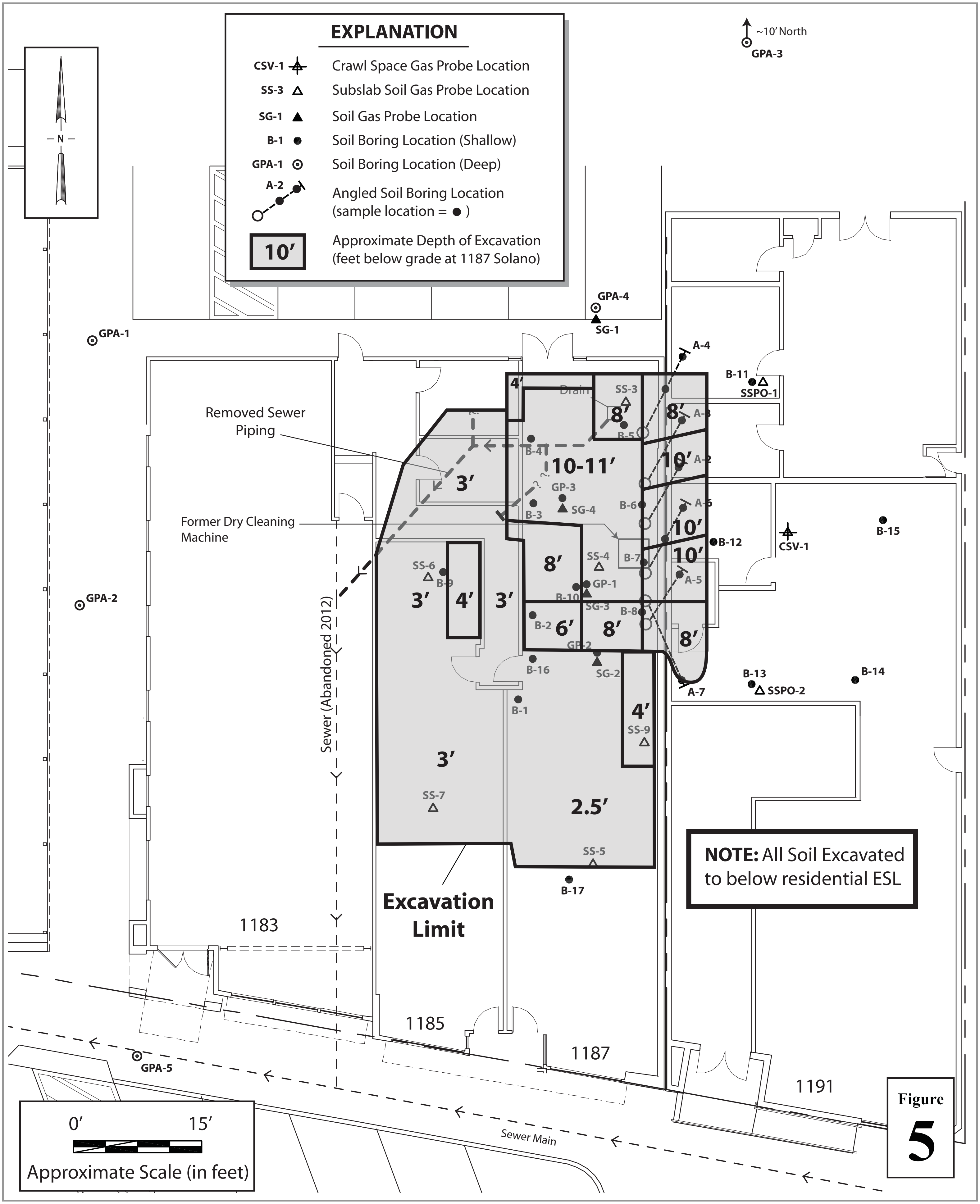
Sampling Location Map



Solano Group
1187 Solano Avenue
Albany, California

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Final Interim Excavation Extent and Depth

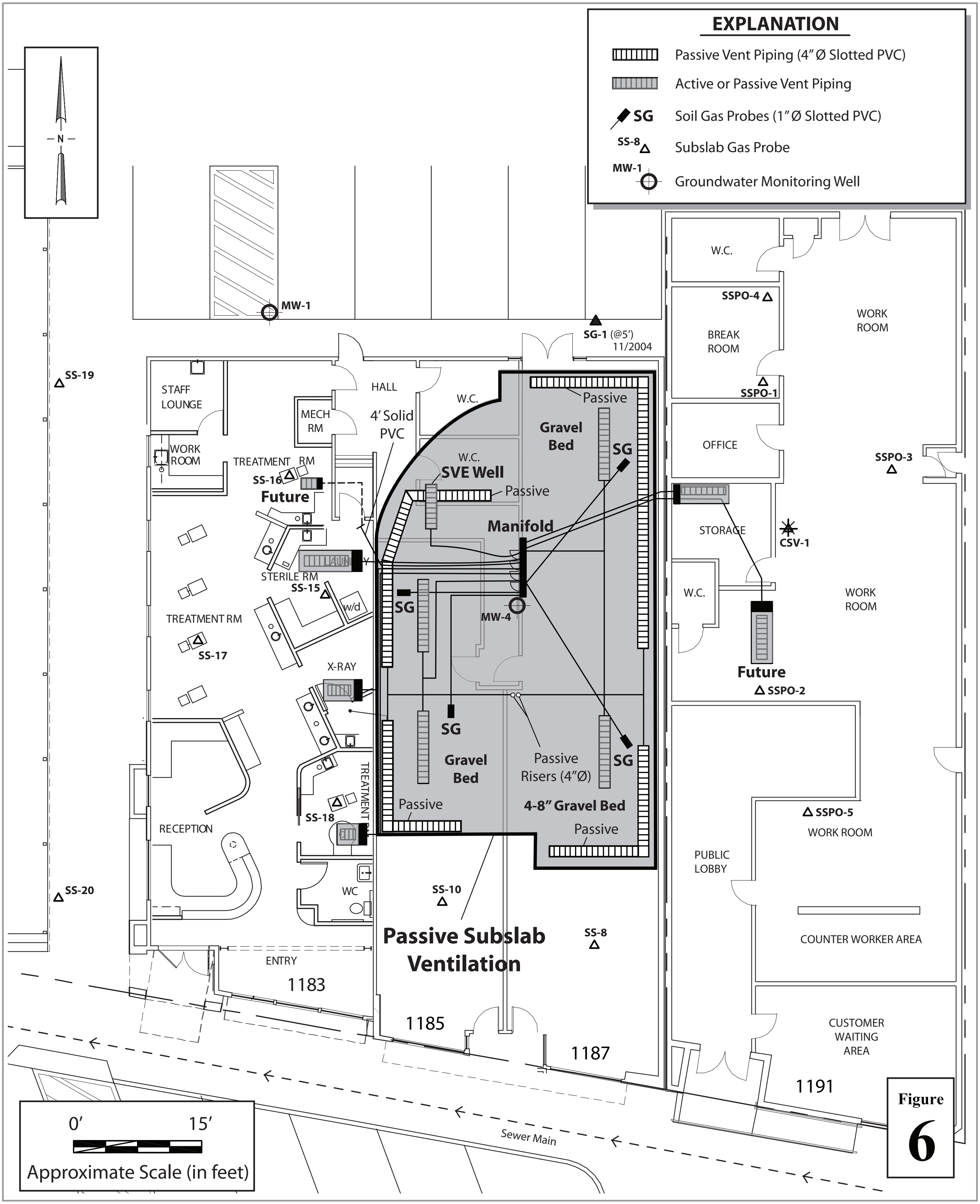

Figure 6

Solano Group
1187 Solano Avenue
Albany, California

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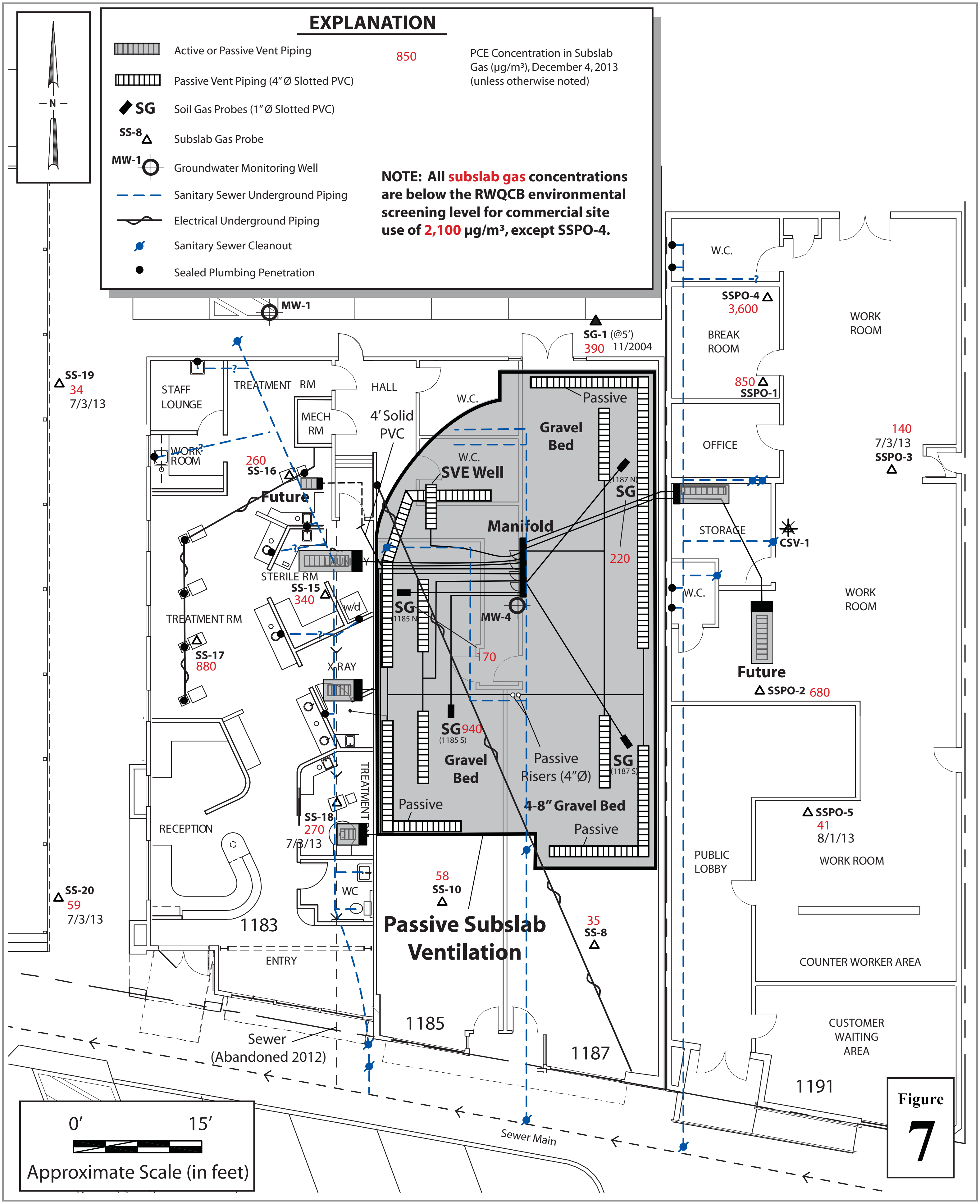
Subslab Passive Ventilation System & Post Excavation Site Map



Solano Group
1187 Solano Avenue
Albany, California

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Subslab Gas Data
December 4, 2013

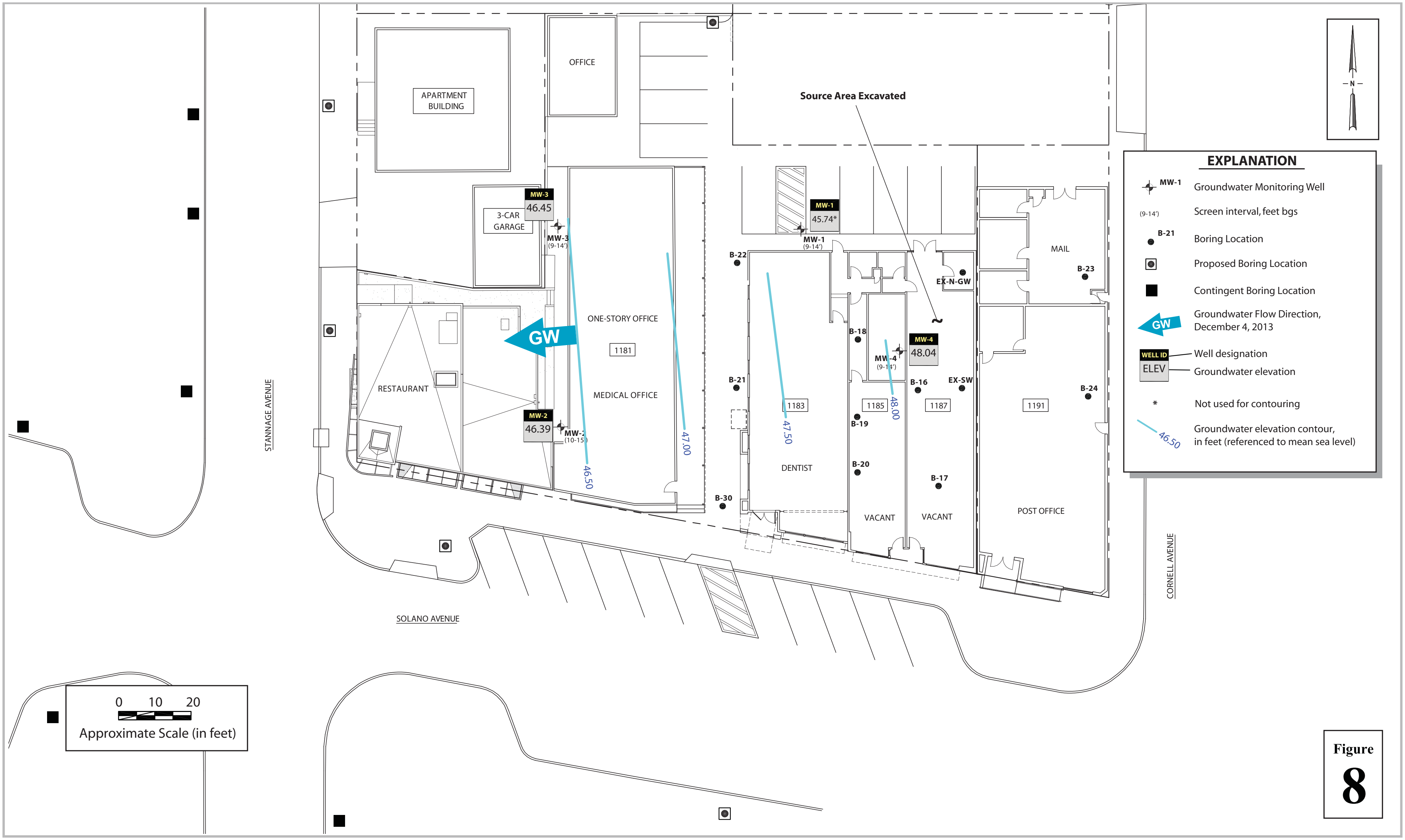

Figure 8

Solano Group
1187 Solano Avenue
Albany, California

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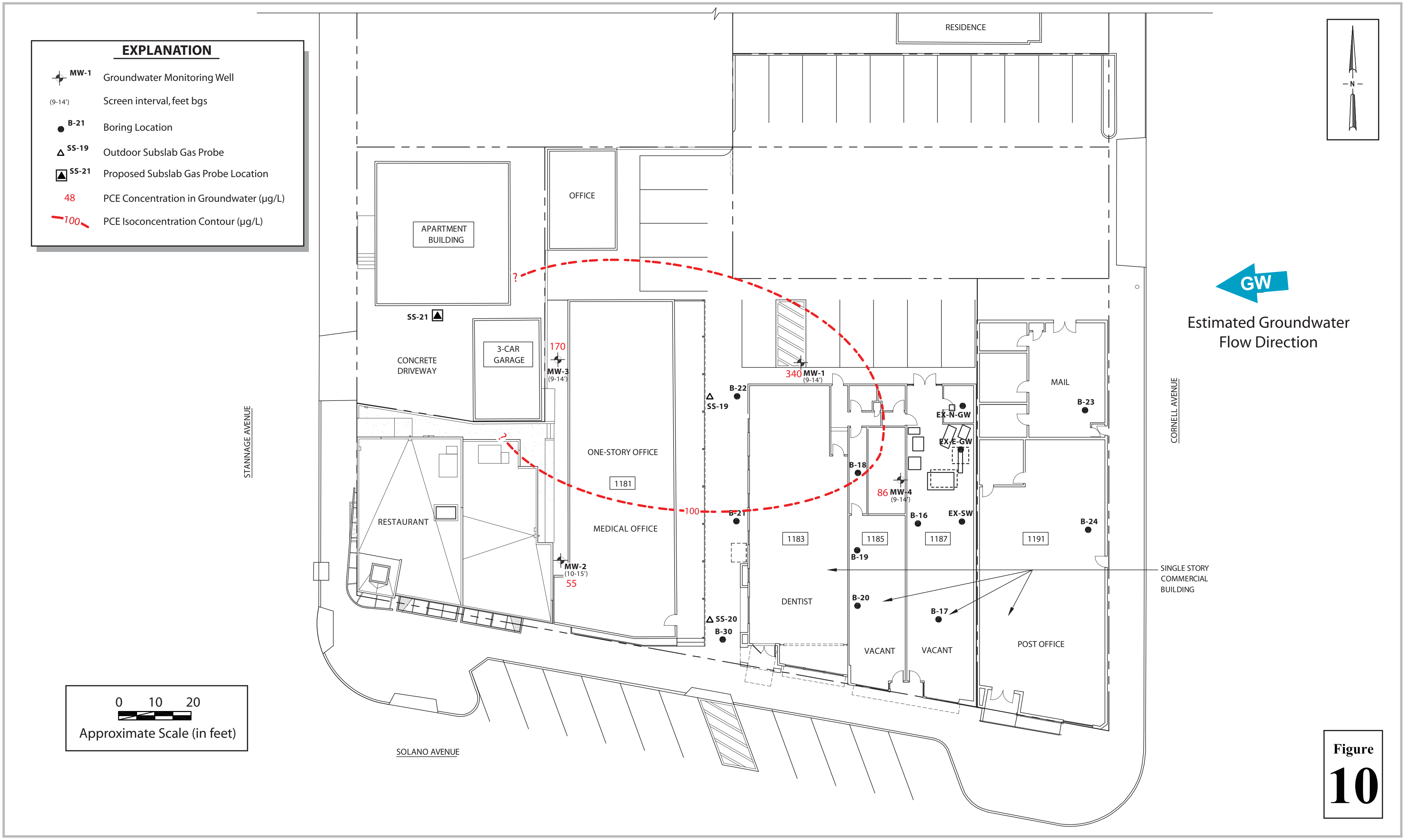
Groundwater Elevation Map
December 4, 2013

Solano Group
1187 Solano Avenue
Albany, California

PANGEA

PCE in Shallow Groundwater Monitoring Wells First Event (2013)



Solano Group
1187 Solano Avenue
Albany, California

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PCE in Shallow Groundwater Monitoring Wells (December 4, 2013) and Proposed Subslab Gas Probe Location

Figure 11

Solano Group
1187 Solano Avenue
Albany, California

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Proposed Grab Groundwater Sampling Locations & Historic Grab Data

Table 1. Soil Analytical Data - 1187 Solano Ave, Albany, California

			PCE	TCE	cis-1,2-DCE	BTEX	Other VOCs	Comments
Residential ESL shallow soil **dw** (<3 m bgs) Final ESL:			**0.55**	**0.46**	0.19		Varies	
Residential ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			0.55	1.7	18		Varies	
Res'l ESL shallow soil **dw&non-dw** (<3 m bgs) Direct Exp ESL:			0.55	1.7	160		Varies	
Commercial ESL shallow soil **dw** (<3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Residential ESL deep soil **dw** (>3 m bgs) Final ESL:			0.55	0.46	0.19		Varies	
Residential ESL deep soil **non-dw** (>3 m bgs) Final ESL:			**0.55**	**1.7**	18		Varies	
Commercial ESL deep soil **dw** (>3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL deep soil **non-dw** (>3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Commercial ESL soil **dw & non-dw** (>3 m bgs) Direct Exp. ESL:			2.6	8.3	2,000		Varies	
Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	←		mg/Kg		→	
2004 and 2005 Borings								
GP-1-5'	11/2/2004	5.0	**1.10**	0.0059	ND	---	ND	**Overexcavated**
GP-1-10'	11/2/2004	10.0	0.0091	ND	ND	---	ND	**Overexcavated**
GP-1-15'	11/2/2004	15.0	0.0084	ND	ND	---	ND	
GP-2-5'	11/2/2004	5.0	0.190	0.0022	ND	---	ND	
GP-2-10'	11/2/2004	10.0	0.026	ND	ND	---	ND	
GP-2-15'	11/2/2004	15.0	ND	ND	ND	---	ND	
GP-2-20'	11/2/2004	20.0	ND	ND	ND	---	ND	
GP-3-5'	11/2/2004	5.0	0.470	ND	ND	---	ND	**Overexcavated**
GP-3-10'	11/2/2004	10.0	**0.690**	ND	ND	---	ND	**Overexcavated**
GP-3-15'	11/2/2004	15.0	ND	ND	ND	---	ND	
GP-3-20'	11/2/2004	20.0	ND	ND	ND	---	ND	
GPA-1-10'	4/20/2005	10.0	0.0071	ND	ND	---	ND	
GPA-1-20'	4/20/2005	20.0	ND	ND	ND	---	ND	
GPA-1-30'	4/20/2005	30.0	ND	ND	ND	---	ND	
GPA-2-10'	4/20/2005	10.0	0.0066	ND	ND	---	ND	
GPA-2-20'	4/20/2005	20.0	ND	ND	ND	---	ND	
GPA-2-30'	4/20/2005	30.0	ND	ND	ND	---	ND	
GPA-3-10'	4/20/2005	10.0	ND	ND	ND	---	ND	
GPA-3-20'	4/20/2005	20.0	ND	ND	ND	---	ND	
GPA-3-30'	4/20/2005	30.0	ND	ND	ND	---	ND	
GPA-4-10'	4/20/2005	10.0	0.310	ND	ND	---	ND	
GPA-4-20'	4/20/2005	20.0	ND	ND	ND	---	ND	
GPA-4-30'	4/20/2005	30.0	ND	ND	ND	---	ND	
GPA-5-10'	4/20/2005	10.0	0.012	ND	ND	---	ND	
GPA-5-20'	4/20/2005	20.0	ND	ND	ND	---	ND	
GPA-5-30'	4/20/2005	30.0	ND	ND	ND	---	ND	
January 2013 Borings								
B-1-3.5	1/10/2013	3.5-4.0	0.011	<0.005	<0.005	---	ND	
B-1-5.5	1/10/2013	5.0-5.5	0.034	0.0051	<0.005	---	ND	
B-2-4*	1/10/2013	3.5-4.0	0.12	0.046	0.022	---	ND	**Overexcavated**
B-2-5.5*	1/10/2013	5.0-5.5	0.19	0.025	0.010	---	ND	**Overexcavated**
B-3-3.5*	1/10/2013	3.0-3.5	0.53	<0.025	<0.025	---	ND	**Overexcavated**
B-3-5.5*	1/10/2013	5.0-5.5	0.32	<0.020	<0.020	---	ND	**Overexcavated**

Table 1. Soil Analytical Data - 1187 Solano Ave, Albany, California

			PCE	TCE	cis-1,2-DCE	BTEX	Other VOCs	Comments
Residential ESL shallow soil **dw** (<3 m bgs) Final ESL:			**0.55**	**0.46**	0.19		Varies	
Residential ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			0.55	1.7	18		Varies	
Res'l ESL shallow soil **dw&non-dw** (<3 m bgs) Direct Exp ESL:			0.55	1.7	160		Varies	
Commercial ESL shallow soil **dw** (<3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Residential ESL deep soil **dw** (>3 m bgs) Final ESL:			0.55	0.46	0.19		Varies	
Residential ESL deep soil **non-dw** (>3 m bgs) Final ESL:			**0.55**	**1.7**	18		Varies	
Commercial ESL deep soil **dw** (>3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL deep soil **non-dw** (>3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Commercial ESL soil **dw & non-dw** (>3 m bgs) Direct Exp. ESL:			2.6	8.3	2,000		Varies	
Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	←		mg/Kg	→		
B-4-3.5*	1/10/2013	3.0-3.5	0.32	<0.020	<0.020	---	ND	**Overexcavated**
B-4-5.5*	1/10/2013	5.0-5.5	0.11	<0.005	<0.005	---	ND	**Overexcavated**
B-5-3.5*	1/10/2013	3.0-3.5	**0.78**	<0.050	<0.050	---	ND	**Overexcavated**
B-5-5.5*	1/10/2013	5.0-5.5	0.42	<0.033	<0.033	---	ND	**Overexcavated**
B-6-3.5*	1/10/2013	3.0-3.5	**0.91**	<0.10	<0.10	---	ND	**Overexcavated**
B-6-5.5*	1/10/2013	5.0-5.5	0.39	<0.025	<0.025	---	ND	**Overexcavated**
B-6-7.5*	1/10/2013	7.0-7.5	**1.5**	<0.20	<0.20	---	ND	**Overexcavated**
B-6-12*	1/18/2013	11.5-12.0	0.0062	<0.005	<0.005	---	ND	
B-7-3.5*	1/10/2013	3.0-3.5	**5.0**	<0.20	<0.20	---	ND	**Overexcavated**
B-7-5.5*	1/10/2013	5.0-5.5	**1.6**	<0.10	<0.10	---	ND	**Overexcavated**
B-7-7.5*	1/10/2013	7.0-7.5	**0.72**	<0.10	<0.10	---	ND	**Overexcavated**
B-7-12	1/18/2013	11.5-12.0	0.0061	<0.005	<0.005	---	ND	
B-8-3.5*	1/10/2013	3.0-3.5	**1.6**	<0.10	<0.10	---	ND	**Overexcavated**
B-8-5.5*	1/10/2013	5.0-5.5	0.40	<0.025	<0.025	---	ND	**Overexcavated**
B-9-3	1/10/2013	2.5-3.0	0.086	<0.005	<0.005	---	ND	1185 Solano
B-10-6*	1/10/2013	5.5-6.0	0.39	<0.033	<0.033	---	ND	**Overexcavated**
B-11-8	1/18/2013	$7.5\text{-}8.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-11-12	1/18/2013	$11.5\text{-}12.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-12-4	1/18/2013	$3.5\text{-}4.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-12-8	1/18/2013	$7.5\text{-}8.0^{+}$	0.011	<0.005	<0.005	---	ND	1191 Solano
B-12-12	1/18/2013	$11.5\text{-}12.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-13-8	1/18/2013	$7.5\text{-}8.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-13-12	1/18/2013	$11.5\text{-}12.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-14-8	1/18/2013	$7.5\text{-}8.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
B-15-8	1/18/2013	$7.5\text{-}8.0^{+}$	<0.005	<0.005	<0.005	---	ND	1191 Solano
February 2013 Borings (Angled Under Wall onto 1191 Solano property)								
A-2-11*	2/1/2013	7.0	**1.5**	<0.10	<0.10	---	ND	**Overexcavated**
A-3-11*	2/1/2013	7.0	**0.66**	<0.20	<0.20	---	ND	**Overexcavated**
A-4-6*	2/1/2013	4.0	0.032	0.013	<0.005	---	ND	**Overexcavated**
A-4-9*	2/8/2013	5.5	0.011	0.005	<0.005	---	ND	

Table 1. Soil Analytical Data - 1187 Solano Ave, Albany, California

			PCE	TCE	cis-1,2-DCE	BTEX	Other VOCs	Comments
Residential ESL shallow soil **dw** (<3 m bgs) Final ESL:			**0.55**	**0.46**	0.19		Varies	
Residential ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			0.55	1.7	18		Varies	
Res'l ESL shallow soil **dw&non-dw** (<3 m bgs) Direct Exp ESL:			0.55	1.7	160		Varies	
Commercial ESL shallow soil **dw** (<3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Residential ESL deep soil **dw** (>3 m bgs) Final ESL:			0.55	0.46	0.19		Varies	
Residential ESL deep soil **non-dw** (>3 m bgs) Final ESL:			**0.55**	**1.7**	18		Varies	
Commercial ESL deep soil **dw** (>3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL deep soil **non-dw** (>3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Commercial ESL soil **dw & non-dw** (>3 m bgs) Direct Exp. ESL:			2.6	8.3	2,000		Varies	
Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	←		mg/Kg		→	
A-5-13*	2/1/2013	8.5	**1.3**	<0.05	<0.05	---	ND	**Overexcavated**
A-6-6*	2/1/2013	4.0	**3.9**	<0.2	<0.2	---	ND	**Overexcavated**
A-6-10*	2/1/2013	5.5	**7.9**	<0.5	<0.5	---	ND	**Overexcavated**
A-7-9*	2/8/2013	5.5	0.23	<0.010	<0.010	---	ND	**Overexcavated**
February and March 2013 Excavation Boundary								
EX-SE-5	2/15/2013	5.0	0.012	<0.005	<0.005	---	ND	
EX-SE2-6	2/18/2013	6.0	<0.005	<0.005	<0.005	---	ND	
EX-E-7	2/18/2013	7.0	0.055	<0.005	<0.005	---	ND	
EX-N-8	2/22/2013	8.0	<0.005	<0.005	<0.005	---	ND	
EX-F1-11	3/5/2013	11.0	0.083	<0.005	<0.005	---	ND	
EX-F2-7	3/5/2013	7.0	0.025	<0.005	<0.005	---	ND	
SW-1-4	3/5/2013	4.0	0.021	<0.005	<0.005	---	ND	
EX-F3-6	3/6/2013	6.0	**0.57**	<0.005	<0.005	---	ND	**Overexcavated**
EX-F3-8	3/12/2013	8.0	0.36	<0.005	<0.005	---	ND	
EX-F4-6	3/6/2013	6.0	0.20	<0.005	<0.005	---	ND	
EX-F5-9	3/7/2013	9.0	0.0077	<0.005	<0.005	---	ND	
EX-F6-12	3/7/2013	12.0	0.0066	<0.005	<0.005	---	ND	
EX-F7-4	3/8/2013	4.0	0.15	<0.005	<0.005	---	ND	
SW-2-4	3/11/2013	4.0	0.16	<0.005	<0.005	---	ND	
SW-3-4	3/11/2013	4.0	0.10	<0.005	<0.005	---	ND	
EX-F8-11	3/13/2013	11.0	0.059	<0.005	<0.005	---	ND	
EX-F9-11	3/14/2013	11.0	0.026	<0.005	<0.005	---	ND	
SW-4-5	3/14/2013	5.0	0.016	<0.005	<0.005	---	ND	
SW-5-2	3/14/2013	2.0	0.12	<0.005	<0.005	---	ND	
SW-6-2	3/14/2013	2.0	0.12	<0.005	<0.005	---	ND	
SW-7-5	3/14/2013	5.0	0.047	<0.005	<0.005	---	ND	
SW-8-1	3/16/2013	1.0	0.12	<0.005	<0.005	---	ND	
SW-9-1	3/16/2013	1.0	0.096	<0.005	<0.005	---	ND	
Sewer-1-1	3/16/2013	1.0	0.34	<0.005	<0.005	---	ND	
Sewer-2-1	3/16/2013	1.0	0.34	<0.005	<0.005	---	ND	

Table 1. Soil Analytical Data - 1187 Solano Ave, Albany, California

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Res'l ESL shallow soil **dw&non-dw** (<3 m bgs) Direct Exp ESL:			0.55	1.7	160		Varies	
Commercial ESL shallow soil **dw** (<3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Residential ESL deep soil **dw** (>3 m bgs) Final ESL:			0.55	0.46	0.19		Varies	
Residential ESL deep soil **non-dw** (>3 m bgs) Final ESL:			**0.55**	**1.7**	18		Varies	
Commercial ESL deep soil **dw** (>3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL deep soil **non-dw** (>3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Commercial ESL soil **dw & non-dw** (>3 m bgs) Direct Exp. ESL:			2.6	8.3	2,000		Varies	
Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	←		mg/Kg	→		
March and April Borings 2013								
B-19-2	3/20/2013	1.5-2.0	<0.005	<0.005	<0.005	---	ND	**Overexcavated**
B-19-5	3/20/2013	4.5-5.0	0.013	<0.005	<0.005	---	ND	
B-20-2	3/20/2013	1.5-2.0	0.013	<0.005	<0.005	---	ND	**Overexcavated**
B-20-5	3/20/2013	4.5-5.0	0.0085	<0.005	<0.005	---	ND	
B-21-5	4/25/2013	4.5-5.0	<0.005	<0.005	<0.005	---	ND	
B-22-5	4/25/2013	4.5-5.0	<0.005	<0.005	<0.005	---	ND	
B-23-4.5	4/25/2013	4.0-4.5	<0.005	<0.005	<0.005	---	ND	
B-23-8.5	4/25/2013	8.0-8.5	<0.005	<0.005	<0.005	---	ND	
B-24-4.5	4/25/2013	4.0-4.5	<0.005	<0.005	<0.005	---	ND	
B-25-2.5	4/25/2013	2.0-2.5	0.0071	<0.005	<0.005	---	ND	
B-25-5	4/25/2013	4.5-5.0	0.0066	<0.005	<0.005	---	ND	
B-26-2.5	4/25/2013	2.0-2.5	0.018	<0.005	<0.005	---	ND	
B-26-5	4/25/2013	4.5-5.0	0.0050	<0.005	<0.005	---	ND	
B-27-3	4/25/2013	2.5-3.0	<0.005	<0.005	<0.005	---	ND	
B-27-5	4/25/2013	4.5-5.0	<0.005	<0.005	<0.005	---	ND	
B-28-2.5	4/25/2013	2.0-2.5	<0.005	<0.005	<0.005	---	ND	
B-28-5	4/25/2013	4.5-5.0	<0.005	<0.005	<0.005	---	ND	
B-29-2.5	4/25/2013	2.0-2.5	<0.005	<0.005	<0.005	---	ND	
B-29-5	4/25/2013	4.5-5.0	<0.005	<0.005	<0.005	---	ND	
B-30-5	4/25/2013	4.5-5.0	<0.005	<0.005	<0.005	---	ND	
May 2013 Boring (Angled Under Bathroom at 1185 Solano)								
A-8-5	5/24/2013	2.0	0.0093	<0.005	<0.005	---	ND	
July 2013 Vertical Boring (1185 Solano)								
B-31-1	7/2/2013	1.0-1.5	<0.005	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-31-3	7/2/2013	3.0-3.5	<0.005	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-31-5	7/2/2013	4.5-5.0	<0.005	<0.005	<0.005	<0.005	ND	
B-32-1	7/2/2013	1.0-1.5	0.084	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-32-3	7/2/2013	3.0-3.5	<0.005	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-32-5	7/2/2013	4.5-5.0	<0.005	<0.005	<0.005	<0.005	ND	
B-33-1	7/2/2013	1.0-1.5	**0.70**	0.16	<0.050	<0.05	ND	**Overexcavated**
B-33-3	7/2/2013	3.0-3.5	<0.005	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-34-1	7/2/2013	1.0-1.5	0.011	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-34-3	7/2/2013	3.0-3.5	<0.005	<0.005	<0.005	<0.005	ND	**Overexcavated**
B-34-5	7/2/2013	4.5-5.0	<0.005	<0.005	<0.005	<0.005	ND	
July 2013 Boring (Angled Under Wall onto 1185 Solano)								
A-9-3	7/2/2013	1.5	0.041	<0.005	<0.005	<0.005	ND	**Overexcavated**
A-9-9	7/2/2013	3.0	<0.005	<0.005	<0.005	<0.005	ND	**Overexcavated**
A-9-12	7/2/2013	4.5	<0.005	<0.005	<0.005	<0.005	ND	
A-10-3	7/2/2013	1.0	0.045	<0.005	<0.005	<0.005	ND	**Overexcavated**
A-10-6.5	7/2/2013	2.0	0.0079	<0.005	<0.005	<0.005	ND	**Overexcavated**

Pangea

Table 1. Soil Analytical Data - 1187 Solano Ave, Albany, California

			PCE	TCE	cis-1,2-DCE	BTEX	Other VOCs	Comments
Residential ESL shallow soil **dw** (<3 m bgs) Final ESL:			**0.55**	**0.46**	0.19		Varies	
Residential ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			0.55	1.7	18		Varies	
Res'l ESL shallow soil **dw&non-dw** (<3 m bgs) Direct Exp ESL:			0.55	1.7	160		Varies	
Commercial ESL shallow soil **dw** (<3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Residential ESL deep soil **dw** (>3 m bgs) Final ESL:			0.55	0.46	0.19		Varies	
Residential ESL deep soil **non-dw** (>3 m bgs) Final ESL:			**0.55**	**1.7**	18		Varies	
Commercial ESL deep soil **dw** (>3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL deep soil **non-dw** (>3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Commercial ESL soil **dw & non-dw** (>3 m bgs) Direct Exp. ESL:			2.6	8.3	2,000		Varies	
Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	←		mg/Kg		→	
A-10-12	7/2/2013	3.0	<0.005	<0.005	<0.005	---	ND	**Overexcavated**
A-11-3	7/2/2013	2.0	<0.005	<0.005	<0.005	---	ND	**Overexcavated**
A-11-8	7/3/2013	5.5	<0.005	<0.005	<0.005	---	ND	
A-12-5	7/3/2013	2.5	<0.005	<0.005	<0.005	---	ND	**Overexcavated**
A-12-8	7/3/2013	4.0	<0.005	<0.005	<0.005	---	ND	
A-13-3	7/3/2013	1.5	<0.005	<0.005	<0.005	---	ND	**Overexcavated**
A-13-8	7/3/2013	4.0	<0.005	<0.005	<0.005	---	ND	
August and September 2013 Excavation Boundary								
F-1-2	8/7/2013	2.0	0.0075	<0.005	<0.005	---	ND	
F-2-2.5	8/7/2013	2.5	0.014	<0.005	<0.005	---	ND	
SW-N1-2	8/15/2013	2.0	0.016	<0.005	<0.005	---	ND	
SW-N2-1	8/15/2013	1.0	0.017	<0.005	<0.005	---	ND	
SW-W-1	8/15/2013	1.0	0.015	<0.005	<0.005	---	ND	
F-3-3	8/15/2013	3.0	<0.005	<0.005	<0.005	---	ND	
F-4-3	8/15/2013	3.0	<0.005	<0.005	<0.005	---	ND	
F-5-2.5	8/19/2013	2.5	<0.005	<0.005	<0.005	---	ND	
SW-W2-1	8/21/2013	1.0	<0.005	<0.005	<0.005	---	ND	
F-5-3	8/21/2013	3.0	0.015	<0.005	<0.005	---	ND	
F-6-3	8/21/2013	3.0	0.036	<0.005	<0.005	---	ND	
F-7-2.5	8/29/2013	2.5	<0.005	<0.005	<0.005	---	ND	
F-8-4	8/29/2013	4.0	<0.005	<0.005	<0.005	---	ND	
SW-SW-2.5	8/29/2013	2.5	<0.005	<0.005	<0.005	---	ND	
SW-W-2.5	8/29/2013	2.5	<0.005	<0.005	<0.005	---	ND	
SW-NW-2.5	8/29/2013	2.5	<0.005	<0.005	<0.005	---	ND	
F-9-3	9/5/2013	3.0	<0.005	<0.005	<0.005	<0.005	ND	
F-10-3	9/5/2013	3.0	0.023	<0.005	<0.005	<0.005	ND	
F-11-2	9/5/2013	2.0	<0.005	<0.005	<0.005	<0.005	ND	
F-12-2.5	9/5/2013	2.5	<0.005	<0.005	<0.005	<0.005	ND	
F-13-2.5	9/5/2013	2.5	<0.005	<0.005	<0.005	<0.005	ND	
F-14-2.5	9/5/2013	2.5	<0.005	<0.005	<0.005	<0.005	ND	
F-15-2.5	9/5/2013	2.5	<0.005	<0.005	<0.005	<0.005	ND	
SW-S1-3	9/5/2013	3.0	<0.005	<0.005	<0.005	<0.005	ND	
SW-S2-3	9/5/2013	3.0	<0.005	<0.005	<0.005	<0.005	ND	
SW-E-4	9/5/2013	4.0	0.31	<0.020	<0.020	<0.005	ND	
August and September 2013 Borings								
HA-1-3	8/29/2013	3.0	<0.005	<0.005	<0.005	---	ND	
HA-1-5	8/29/2013	5.0	<0.005	<0.005	<0.005	---	ND	
HA-2-3	8/29/2013	3.0	<0.005	<0.005	<0.005	---	ND	
HA-2-5	8/29/2013	5.0	<0.005	<0.005	<0.005	---	ND	

Table 1. Soil Analytical Data - 1187 Solano Ave, Albany, California

			PCE	TCE	cis-1,2-DCE	BTEX	Other VOCs	Comments
Residential ESL shallow soil **dw** (<3 m bgs) Final ESL:			**0.55**	**0.46**	0.19		Varies	
Residential ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			0.55	1.7	18		Varies	
Res'l ESL shallow soil **dw&non-dw** (<3 m bgs) Direct Exp ESL:			0.55	1.7	160		Varies	
Commercial ESL shallow soil **dw** (<3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL shallow soil **non-dw** (<3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Residential ESL deep soil **dw** (>3 m bgs) Final ESL:			0.55	0.46	0.19		Varies	
Residential ESL deep soil **non-dw** (>3 m bgs) Final ESL:			**0.55**	**1.7**	18		Varies	
Commercial ESL deep soil **dw** (>3 m bgs) Final ESL:			0.7	0.46	0.19		Varies	
Commercial ESL deep soil **non-dw** (>3 m bgs) Final ESL:			2.6	8.3	18		Varies	
Commercial ESL soil **dw & non-dw** (>3 m bgs) Direct Exp. ESL:			2.6	8.3	2,000		Varies	
Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	←		mg/Kg		→	
HA-3-NW-3	8/29/2013	3.0	<0.005	<0.005	<0.005	---	ND	
SS-1183-1	8/29/2013	1.0	<0.005	<0.005	<0.005	---	ND	
HA-2D-1ss	8/30/2013	1.0	<0.005	<0.005	<0.005	---	ND	
1183 North-2	9/2/2013	2.0	<0.005	<0.005	<0.005	---	ND	
1183 Cental N-4	9/2/2013	4.0	<0.005	<0.005	<0.005	---	ND	
1183 Cental N-6	9/2/2013	6.0	<0.005	<0.005	<0.005	---	ND	

Explanation:

mg/Kg = milligrams per Kilogram

ft bgs = Depth below ground surface (bgs) in feet.

< n = Chemical not present at a concentration in excess of detection limit shown.

* = Sample location overexcavated.

* = Slab elevation is about 2.5 ft higher in Post Office building than adjacent units at 1185 and 1187 Solano.

-- = Not analyzed or not available.

ESL = Environmental Screening Level for Shallow/Deep Soil with Residential and Commercial/Industrial Land Use, Groundwater is/is not a current or potential source of drinking water. (Table A/Table B/Table C/Table D/Table K-1/Table K-2).

ESL established by the SFBRWQCB, Interim Final - November 2007 and amended in May 2013.

non-dw = groundwater is not a current or potential source of drinking water.

dw = groundwater is a current or potential source of drinking water.

Other VOCs = Volatile Organic Compounds besides PCE, TCE and cis-1,2-DCA by EPA Method 8260 (Report list Method 8010).

BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260.

TCE = Trichloroethane by EPA Method 8010.

PCE = Tetrachloroethene by EPA Method 8010.

cis-1,2-DCE = cis-1,2 - Dichloroethene

Bold concentrations exceed **residential** ESL where groundwater *is* a current or potential source of drinking water.

ND = Not Detected above laboratory reporting limits.

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Table 2. Groundwater Analytical Data - 1187 Solano Ave, Albany, California

					PCE	TCE	cis-1,2-DCE	BTEX	Other VOCs	Comments
Final ESL for groundwater, **dw**:					5.0	5.0	6.0	Varies	Varies	
Final ESL for groundwater, **non-dw**:					63	130	590	Varies	Varies	
Residential ESL GW to Indoor Air:					63	130	---	--	--	
Commercial ESL GW to Indoor Air (fine - coarse):					**640**	**1,300**	--	--	--	
Boring/ Sample ID *TOC*	Date Sampled	Sample Depth (ft bgs)	Depth to Water (ft bgs)	GWE (ft)	←		µg/L		→	
2004 and 2005 Borings										
GPA-1	4/20/2005	---	---	---	ND (<1.0?)	ND	ND	---	ND	
GPA-2	4/20/2005	---	---	---	ND (<1.0?)	ND	ND	---	ND	
GPA-3	4/20/2005	---	---	---	ND (<1.0?)	ND	ND	---	ND	
GPA-4	4/20/2005	---	---	---	ND (<1.0?)	ND	ND	---	ND	
GPA-5	4/21/2005	---	---	---	ND (<1.0)	ND	ND	---	ND	
Pangea Assessment 2013										
EX-SE	2/18/2013	9.0	9.0	---	93	<2.5	<2.5	---	ND	
EX-N-GW	2/25/2013	9.0	9.0	---	8.3	1.4	0.71	---	ND	
EX-E-GW	2/25/2013	9.0	9.0	---	**750**	<25	<25	---	ND	
B-16	3/8/2013	8.5	8.5	---	520	<0.5	<0.5	---	ND	
B-17	3/8/2013	9.0	9.0	---	25	<0.5	<0.5	---	ND	
B-18	3/20/2013	9.0	9.0	---	620	<50	<50	---	ND	
B-19	3/20/2013	9.0	9.0	---	440	<50	<50	---	ND	
B-20	3/20/2013	9.4	9.4	---	190	7.0	<0.5	---	ND	
DB-1	3/20/2013	30-40	32.0	---	<0.5	<0.5	<0.5	---	ND	
B-21	4/25/2013	10.0	10.0	---	85	<2.5	<2.5	---	ND	
B-22	4/25/2013	10.0	10.0	---	**820**	<50	<50	---	ND	
B-23	4/25/2013	12.0	12.0	---	<0.5	<0.5	<0.5	---	ND	
B-24	4/25/2013	12.0	12.0	---	<0.5	<0.5	<0.5	---	ND	
B-30	4/25/2013	10.0	10.0	---	290	<10	<10	---	ND	
Monitoring Wells										
MW-1	6/10/2013	9-14	13.6	---	200	42	<10	---	ND	Little water
56.54	12/4/2013	9-14	10.8	45.74	340	50	<10	<10	ND	
MW-2	5/22/2013	10-15	14.0	---	48	<1.2	<1.2	---	<1.2	Little water
55.89	12/4/2013	10-15	9.5	46.39	55	1.5	<1.0	<1.0	ND	
MW-3	5/24/2013	9-14	12.9	---	92	2.9	<2.5	---	<2.5	Little water
55.85	12/4/2013	9-14	9.4	46.45	170	6.3	<5.0	<5.0	ND	
MW-4	9/27/2013	9-14*	12 (est)	---	110	<5.0	<5.0	<5.0	a	a=Acetone (610), MEK (230)
59.59	12/4/2013	9-14*	11.55	48.04	86	1.9	<1.7	<1.7	b	b=Acetone (54), MEK (110)

Explanation:

µg/L = Micrograms per Liter

ft bgs = Depth below ground surface (bgs) in feet.

TOC = Top of casing elevation. Wells surveyed using NAVD 88 datum.

GWE = Groundwater elevation

* = Due to angle of well, listed depth to water value is 0.4 ft less than measured depth to water to yield estimated vertical depth to water at well location.

< n = Chemical not present at a concentration in excess of detection limit shown.

-- = Not analyzed or not available.

ESL = Environmental Screening Level for Groundwater, groundwater is a current or potential source of drinking water. (Table F-1a).

ESL = Environmental Screening Level for groundwater, groundwater is not a current or potential source of drinking water. (Table F-1b).

ESL = Environmental Screening Level for groundwater to indoor air for residential/commercial land use. (Table E-1).

ESL established by the SFBRWQCB, Interim Final - November 2007 and amended in May 2013.

non-dw = groundwater is not a current or potential source of drinking water.

dw = groundwater is a current or potential source of drinking water.

Other VOCs = Volatile Organic Compounds besides PCE, TCE and cis-1,2-DCA by EPA Method 8010 or 8260.

TCE = Trichloroethane by EPA Method 8010 or 8260.

PCE = Tetrachloroethene by EPA Method 8010 or 8260.

cis-1,2-DCE = cis-1,2 - Dichloroethene by EPA Method 8010 or 8260.

BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260.

Bold concentrations exceed ESL protective of indoor air (commercial).

ND = Not Detected above laboratory reporting limits.

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Table 3. Subslab and Soil Gas Analytical Data - 1185 - 1191 Solano Avenue, Albany, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Benzene	TEX	Other VOCs	Helium	Notes
			ug/m^3							%	
SUBSLAB DEPRESSURIZATION SYSTEM											
INF	4/8/13	0.5	**5,000**	510	<250	<250	---	---	<250	---	Day 3 (1st). 1185N+S&PO
INF	4/10/13	0.5	**4,400**	290	<250	<250	---	---	<250	---	Day 5 (1st). 1185N+S&PO
INF	5/2/13	0.5	1,900	<250	<250	<250	---	---	<250	---	Day 4 (2nd). 1185N+S&PO
INF-PO	4/10/13	0.5	700	<250	<250	<250	---	---	<250	---	Day 1 - PO Only Test
INF-PO	4/15/13	0.5	370	<250	<250	<250	---	---	<250	---	Day 5 - PO Only Test
INF-V-1185N	5/13/13	0.5	1,300	<250	<250	<250	---	---	<250	---	Short Test 1185N Only
SUBSLAB GAS (Immediately Under Concrete Slab)											
1183 Solano Avenue											
SS-15	07/02/13	0.5	340	<250	<250	<250	<500	<500	<250	---	
	12/04/13	0.5	340	870	<2.0	<2.0	8.4	(a)	(a)	---	
SS-16	07/02/13	0.5	<250	<250	<250	<250	<500	<500	<250	---	
	08/01/13	0.5	1,400	<11	<8.1	<8.1	<6.5	<27*	(Q)	---	
	10/11/13	0.5	<250	<250	<250	<250	<250	<250	ND	---	
	12/04/13	0.5	260	660	<2.0	<2.0	7.8	(b)	(b)	---	130 ethanol
SS-17	07/03/13	0.5	670	<11	<8.1	<8.1	<6.5	<27*	(L)	---	
	10/11/13	0.5	1,200	<250	<250	<250	<250	<250	ND	---	
	12/04/13	0.5	880	690	<2.0	<2.0	6.4	(c)	(c)	---	
SS-18	07/03/13	0.5	270	<11	<8.1	<8.1	<6.5	<27*	(M)	---	
1185 Solano Avenue											
SS-6	01/17/13	0.5	**120,000**	**9,100**	270	71	7.2	(A)	(A)	---	Before excavation and venting
	04/25/13	0.5	**40,000**	**10,000**	<250	<250	---	---	<250		7 days after vent test end
	05/17/13	0.5	**19,000**	**3,800**	<250	<250	---	---	<250		Short test
	07/02/13	0.5	**18,000**	**3,100**	<250	<250	<500	<500	<250		
SS-7	01/17/13	0.5	**54,000**	1,600	22	29	<6.5	<27*	(B)	0.086	Before excavation and venting
	04/25/13	0.5	2,000	<250	<250	<250	---	---	<250	---	7 days after vent test end
	07/02/13	0.5	680	<250	<250	<250	<500	<500	<250	---	
SS-10	04/25/13	0.5	<250	<250	<250	<250	---	---	<250	---	7 days after vent test end
	07/03/13	0.5	110	<11	<8.1	<8.1	<6.5	<27*	(J)	---	
	12/04/13	0.5	58	1100	<2.0	<2.0	7.8	(Z)	(Z)	---	
SS-11	07/02/13	0.5	1,500	<250	<250	<250	<500	<500	<250	---	
SS-12	07/02/13	0.5	**120,000**	**15,000**	<2,500	<2,500	<5,000	<5,000	<2,500	---	
SS-13	07/02/13	0.5	**22,000**	**18,000**	3,500	<500	<1,000	<1,000	<500	---	
SS-14	07/02/13	0.5	**6,300**	310	<250	<250	<500	<500	<250	---	
1185 Hall	07/02/13	0.5	**14,000**	740	<250	<250	<500	<500	<250	---	
1185 Bath	07/02/13	0.5	**2,700**	<250	<250	<250	<500	<500	<250	---	
SG-1185N	10/10/13	1.5	940	<250	<250	<250	<500	<500	ND	---	Within Passive Subslab Vent Area
	12/04/13	1.5	170	530	2.4	<2.0	9.8	(V)	(V)		

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Table 3. Subslab and Soil Gas Analytical Data - 1185 - 1191 Solano Avenue, Albany, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Benzene	TEX	Other VOCs	Helium	Notes
			ug/m^3							%	
1187 Solano Avenue											
SS-3	01/17/13	0.5	**27,000**	2,600	590	92	<6.5	<27*	(C)	0.041	North - Before excavation
SS-4	01/17/13	0.5	**770,000**	**60,000**	2,200	1,000	28	(D)	(D)	---	At Former Machine - Before exc.
SS-5	01/17/13	0.5	**190,000**	**6,300**	81	56	<6.5	<27*	ND	---	South - Before excavation
SS-8	07/03/13	0.5	56	<11	<8.1	<8.1	<6.5	<27*	(K)	0.21	7 days after vent test end
	12/04/13	0.5	35	620	<2.0	<2.0	14	(Y)	(Y)	--	
SS-9	04/25/13	0.5	<250	<250	<250	<250	---	---	<250	---	Unrepresentative. Probe clogged.
	08/01/13	1.5	**4,800**	75	<8.1	<8.1	<6.5	<27*	ND	---	After cleared probe. Overexcavated.
SG-1187N	10/10/13	1.5	290	<250	<250	<250	<500	<500	ND	---	Within Passive Subslab Vent Area
	12/04/13	1.5	220	310	2.4	<2.0	4.8	(X)	(X)	---	
SG-1187S	12/04/13	1.5	940	530	<2.0	<2.0	5.5	(W)	(W)		
1191 Solano Avenue											
SS-PO-1	01/17/13	0.5	1,100	110	18	90	<6.5	<27*	(E)	---	Before excavation and venting
	04/25/13	0.5	860	<250	<250	<250	---	---	<250	---	7 days after vent test end
	07/02/13	0.5	730	<250	<250	<250	<500	<500	<250	---	
	12/04/13	0.5	850	620	<2.0	<2.0	11	(d)	(d)	---	
SS-PO-2	01/17/13	0.5	760	35	<8.1	28	<6.5	<27*	(F)	---	Before excavation and venting
	04/25/13	0.5	<250	<250	<250	<250	---	---	<250	---	7 days after vent test end
	07/03/13	0.5	450	<11	<8.1	<8.1	<6.5	<27*	(N)	---	
	12/04/13	0.5	680	760	<2.0	<2.0	11	(e)	(e)	---	
SS-PO-3	07/03/13	0.5	140	<11	<8.1	<8.1	<6.5	<27*	(O)	---	
SS-PO-4	07/03/13	0.5	1,800	<11	<8.1	<8.1	<6.5	<27*	(P)	---	
	12/04/13	0.5	**3,600**	500	<2.0	<2.0	7.2	(f)	(f)	---	
SS-PO-5	08/01/13	0.5	41	<11	<8.1	<8.1	<6.5	<27*	ND	---	
CSV-1	01/17/13	0.2	<14	<11	<8.1	<8.1	<6.5	19 (G)	(G)	---	Crawl Space
Courtyard West of 1191 Solano Avenue											
SS-19	07/03/13	0.5	34	<11	<8.1	<8.1	<6.5	15 (I)	(I)	---	Courtyard
SS-20	07/03/13	0.5	59	<11	<8.1	<8.1	<6.5	<27*	(H)	---	Courtyard
Residential ESL for subslab gas:			210	300	---	31,000	42	Varies	Varies	NA	
Commercial ESL for subslab gas:			**2,100**	**3,000**	---	**260,000**	**420**	Varies	Varies	NA	
10X Residential ESL for subslab gas:			**2,100**	**3,000**	---	**310,000**	**420**	Varies	Varies	NA	
Residential CHHSL for subslab gas:			8.24	24	730	1,460	1.68	Varies	Varies	NA	
Commercial CHHSL for subslab gas:			13.86	40.8	1,020	2,040	2.82	Varies	Varies	NA	
Residential CHHSL for indoor air:			0.412	1.22	36.5	73	0.084	Varies	Varies	NA	
Commercial CHHSL for indoor air:			0.693	2.04	51.1	102	0.141	Varies	Varies	NA	

SOIL GAS (About 5 feet deep into site soil)

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Benzene	TEX	Other VOCs	Helium	Notes
1187 Solano Avenue											
SG-1	11/02/04	5.0	390	ND	ND	ND	<100	(R)	misc	---	Outside
SG-2	11/02/04	5.0	**90,000**	**10,000**	100	390	<100	(S)	misc	---	
SG-3	11/02/04	5.0	**100,000**	**7,900**	ND	ND	<100	(T)	misc	---	
SG-4	11/02/04	5.0	**170,000**	**5,500**	ND	ND	<100	(U)	misc	---	
Residential CHHSL for shallow soil gas:			180	528	15,900	31,900	36		Varies	NA	
Commercial CHHSL for shallow soil gas:			600	1,770	44,400	88,700	120		Varies	NA	
Residential ESL for shallow soil gas:			210	300	---	31,000	42		Varies	NA	
Commercial ESL for shallow soil gas:			**2,100**	**3,000**	---	**260,000**	**420**		Varies	NA	
10x Residential ESL shallow soil gas:			**2,100**	**3,000**	---	**310,000**	**420**		Varies	NA	

Table 3. Subslab and Soil Gas Analytical Data - 1185 - 1191 Solano Avenue, Albany, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Benzene	TEX	Other VOCs	Helium	Notes
			ug/m³							%	

Abbreviations:

Tetrachloroethene, Trichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, and Helium analyzed by Method TO-15 or EPA Method 8260 (sometimes 8010 report list).

Benzene by Method TO-15 or EPA Method 8260.

TEX = Toluene, ethylbenzene, and xylenes by Method TO-15 or EPA Method 8260.

Other VOCs = Volatile Organic Compounds except for Tetrachloroethene, Trichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene and Helium analyzed by Method TO-15 or EPA Method 8260 (sometimes only 8010 list).

ug/m^3 = Micrograms per cubic meter of air.

ft bgs = Depth interval below ground surface (bgs) in feet.

NA= not applicable

ND = not detected above laboratory reporting limits.

< n = Chemical not present at a concentration in excess of detection limit shown.

CHHSL = California Human Health Screening Levels for Soil Gas below buildings constructed without engineered fill below sub-slab gravel with Commercial/Industrial Land Use Updated 9/23/2010. http://oehha.ca.gov/risk/chhsltable.html. Commercial CHHSL assumes 24 hr exposure, versus 8 hr exposure for commercial ESL.

CHHSL (subslab) = California Human Health Screening Levels for sublsab gas has an attenuation factor of 0.05 of indoor air screening levels per CalEPA/DTSC Vapor Intrusion Guidance Document, October 2011 (p 21).

ESL = Environmental Screening Level for Shallow Soil Gas for Evaluation of Potential Vapor Intrusion (Table E-2). Established by the SFBRWQCB, Interim Final - November 2007 (Revised May 2013).

Tetrachloroethene also referred to as Perchloroethene, PCE or Perc.

Bold concentrations exceed **commercial** CHHSL.

*TEX detection limits for TO-15 = toluene 8.8 ug/m^3, ethylbenzene 8.8 ug/m^3, and xylenes 27 ug/m^3. Highest detection limit shown above.

Note A: 7.2 ug/m^3 **benzene** and 13 ug/m^3 chloroform

Note B: 7.2 ug/m^3 tetrahydrofuran and 32 ug/m^3 ethyl acetate

Note C: 23 ug/m^3 chloroform

Note D: 28 ug/m^3 **benzene**, 80 ug/m^3 chloroform, and 49 ug/m^3 1,1-dichloroethene

Note E: 8.1 ug/m^3 tetrahydrofuran and 9.1 ug/m^3 vinyl chloride

Note F: 210 ug/m^3 ethanol and 14 ug/m^3 tetrahydrofuran

Note G: 290 ug/m^3 4-methyl-2-pentanone and 19 ug/m^3 **toluene** (possibley associated with building materials).

Note H: 310 ug/m^3 acetone and 71 ug/m^3 tetraydrofuran

Note I: 250 ug/m^3 acetone, 51 ug/m^3 isopropyl alcohol, 21 ug/m^3 styrene, 15 ug/m^3 **toluene,** 7.1 ug/m^3 carbon disulfide, and 8.9 ug/m^3 4-methyl-2-pentanone

Note J: 390 ug/m^3 acetone, 13 ug/m^3 styrene, and 38 ug/m^3 tetrahydrofuran

Note K: 320 ug/m^3 acetone and 61 ug/m^3 tetrahydrofuran

Note L: 240 ug/m^3 acetone and 39 ug/m^3 tetrahydrofuran

Note M: 200 ug/m^3 acetone, 9.0 ug/m^3 carbon disulfide, and 22 ug/m^3 tetrahydrofuran

Note N: 200 ug/m^3 acetone, 20 ug/m^3 carbon disulfide, and 29 ug/m^3 tetrahydrofuran

Note O: 180 ug/m^3 acetone and 32 ug/m^3 tetrahydrofuran

Note P: 210 ug/m^3 acetone, 51 ug/m^3 ethyl acetate, and 35 ug/m^3 tetrahydrofuran

Note Q: 350 µg/m^3 ethly acetate and 26,000 µg/m^3 ethanol

Note R: 650 µg/m^3 **toluene,** 170 µg/m^3 **ethylbenzene,** and 980 µg/m^3 **xylenes**

Note S: 500 µg/m^3 **toluene,** 120 µg/m^3 **ethylbenzene,** and 650 µg/m^3 **xylenes**

Note T: 1,400 µg/m^3 **toluene** and 1,400 µg/m^3 **xylenes**

Note U: 1,600 µg/m^3 **toluene** and 1,600 µg/m^3 **xylenes**

Note V: 46 **ethylbenzene**, 3.7 **toluene**, 230 **xylenes**, 220 acetone, 300 2-butanone, 2,200 tetrahydrofuran (glue?), 12 chloroform, 210 ethanol (see report for additional)

Note W: 57 **ethylbenzene**, 5.5 **toluene**, 300 **xylenes**, 190 acetone, 310 2-butanone, 2,200 tetrahydrofuran (glue?), 18 chloroform, 470 ethanol (see report for additional)

Note X: 62 **ethylbenzene**, 3.7 **toluene**, 350 **xylenes**, 160 acetone, 160 2-butanone, 2,200 tetrahydrofuran (glue?),7.1 chloroform (see report for additional)

Note Y: 4.0 **toluene**, 11 **xylenes**, 120 acetone, 160 2-butanone, 36 tetrahydrofuran (glue?) (see report for additional)

Note Z: 3.5 **ethylbenzene**, 6.6 **toluene**, 17 **xylenes**, 77 acetone (see report for additional)

Note a: 13 **ethylbenzene**, 6.0 **toluene**, 93 **xylenes**, 62 acetone, 3.5 carbon disulfide, 52 tetrahydrofuran (glue?) (see report for additional)

Note b: 6.5 **ethylbenzene**, 4.3 **toluene**, 48 **xylenes**, 8.7 carbon disulfide, 24 tetrahydrofuran (glue?), 130 ethanol (see report for additional)

Note c: 8.2 **ethylbenzene**, 4.2 **toluene**, 60 **xylenes**, 2.6 carbon disulfide, 18 tetrahydrofuran (glue?) (see report for additional)

Note d: 4.7 **ethylbenzene**, 4.1 **toluene**, 33 **xylenes**(see report for additional)

Note e: 5.3 **ethylbenzene**, 4.8 **toluene**, 37 **xylenes,** 94 acetone, 11 carbon disulfide, 9.2 tetrahydrofuran (glue?) (see report for additional)

Note f: 3.5 **ethylbenzene**, 3.7 **toluene**, 23 **xylenes,** 260 acetone, 2.5 carbon disulfide, 6.0 tetrahydrofuran (glue?) (see report for additional)

APPENDIX A

Regulatory Letter

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

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

November 18, 2013

Mr. Anthony Kershaw
Solano Group
P.O. Box 9206
Berkeley, CA 94709
(sent via electronic mail to tkershaw@kershawinvestments.com)

Subject: Data Gap Work Plan Request; SCP Case RO0002857 and Geotracker Global ID T06019756124, Albany 1-Hour Cleaners, 1187 Solano Avenue, Albany, CA 94706

Dear Mr. Kershaw:

Alameda County Environmental Health (ACEH) staff has reviewed the case file including the *Site Investigation and Interim Remediation Report and Corrective Action Plan,* dated October 25, 2013. The document was prepared on your behalf by Pangea Environmental Services, Inc (Pangea). Thank you for submitting the report.

The referenced report documents subsurface investigation work since early 2013, interim remedial actions, subsequent actions based on the initial results, pilot tests of the passive and active subslab venting system installed at the site, and monitoring of groundwater, subslab vapor, indoor air, and outside ambient air for chlorinated solvents, in particular tetrachlorethene (PCE). The report concluded that all soil has been removed to below residential soil ESLs, that all subslab and indoor air vapor samples have been remediated to commercial ESL vapor values, and that groundwater has been remediated to groundwater ESLs that are protective of commercial indoor air health risks.

The report also contains a tabular Site Conceptual Model (SCM) that identified five data gaps, and proposed filling those data gaps in order to seek closure using the RWQCBs *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites* (dated July 31, 2009). The five data gaps included verifying that the direction of groundwater flow (by surveying site wells) is consistent with site vicinity environmental investigations that have been initially relied on for that information, to continue to monitor and sample groundwater to verify contaminant trends beneath the site, to continue to collect seasonal subslab and indoor air vapor samples in order to confirm the effectiveness of remedial actions to date and to establish seasonal contaminant vapor trends at the site, to conduct a sensitive receptor survey (inclusive of vicinity water supply wells, basements, sumps, sensitive populations, etc.), and to conduct short-term contingent feasibility testing from subslab vent piping to evaluate the benefit of the operation of active or passive venting at the site as a contingency if corrective actions are determined to be needed based on additional data collection.

The report also contains a brief Feasibility Study and Corrective Action Plan should additional actions be warranted, and proposed using San Francisco Regional Water Quality Control Boards (RWQCBs) Environmental Screening Levels (ESLs; contained in the *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater,* dated May 23, 2013), as corrective action goals.

Based on ACEH staff review of the case file, we request that you address the following technical comments and send us the reports described below.

TECHNICAL COMMENTS

1. **Request for Data Gap Work Plan** – ACEH is in general agreement with the data gaps as identified in the referenced report, and consequently requests a Data Gap Work Plan by the date identified below.

2. **Technical Comments on Report and Request for Additional Information** – The timely submittal of the referenced report is greatly appreciated and was substantially comprehensive; however, several technical comments and a request for additional information appears appropriate to further document the work undertaken, and to elucidate aspects of the work. These include:

   a. **Interim Remedial Action Indoor Air Monitoring** – The report indicates that a photo-ionization detector (PID) and personnel monitoring devices were used to monitor for conditions protective of remedial action workers during site operations. Data from these tasks were not included in the referenced report and appear appropriate in order to complete the site record. Consequently, ACEH requests that copies of these documents be submitted by the date identified below.

   b. **Increasing PCE Vapor Trend at 1187 Solano Avenue** – The last sampling event (August 1, 2013) of SS-9 yielded a sharply increased concentration in subslab PCE vapor concentrations to above commercial ESLs at this address. Please address this concern in actions to be taken in the requested Data Gap Work Plan.

   c. **Health Risk Levels** – The report states that a 10 in a million risk level was accepted by ACEH for previously conducted work (*Soil Gas Investigation and Health Risk Assessment*, Avalon Environmental Consultants, June 8, 2006). Please be aware that Federal regulation (40 CFR 300.430) is not intended to imply that any risk within the risk range of 1E-4 to 1E-6 is acceptable. A risk of 1E-6 is considered to be the point of departure for making site specific risk decisions that utilize current data sets, a multiplicity of data, and multiple lines of evidence. Clear justification must be provided for risk management decisions which result in residual risk levels greater than 1E-6.

   d. **Current Groundwater Classification** - Please be aware that all groundwater in the East Bay Plain Groundwater Basin that underlies Albany is classified as 'MUN' (potentially suitable for municipal or domestic water supply). According to the RWQCB *Water Quality Control Plan (Basin Plan)*, dated January 18, 2007, for the San Francisco Bay Basin, "the term 'groundwater' includes all subsurface waters, whether or not these waters meet the classic definition of an aquifer or occur within identified groundwater basins.' The Basin Plan also states that 'all groundwaters are considered suitable, or potentially suitable, for municipal or domestic water supply (MUN)." Therefore, the groundwater beneath the subject site is considered beneficial for these uses unless shown to be non-beneficial using criteria presented in the Basin Plan.

      Please note that the proposed "Zone B Berkeley / Albany Groundwater Management Zone" contained in the June 1999 *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report* that was referenced in the report was not adopted in the 2007 Basin Plan. Please adjust future evaluations to reflect these classifications; however, please also be aware that case closure does not require cleanup to MUN cleanup goals, rather that those goals can be met within an identified reasonable timeframe. This is approach is consistent with the RWQCBs *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites*.

   e. **RWQCBs *Assessment Tool for Closure of Low-Threat Chlorinated Solvent Sites*** – ACEH is in general agreement that this assessment tool may be useful at the subject site. In order to clarify use of this tool, please be aware that this document seeks robust, site specific evidence for natural attenuation at chlorinated solvent sites should natural attenuation be proposed for a site. Additionally, please be aware that a survey of closed solvent sites in 2007 (prior to issuing the RWQCB guidance tool) found that most sites were closed with solvent concentrations less than 20 times the Maximum Contaminant Level (MCL). At present the PCE concentration in groundwater at this site is approximately 40 times the MCL.

Please be aware that this information is offered in order to provoke thoughtful insight relevant to the subject site, and the classification of groundwater as defined by the Basin Plan.

f. **Extent of Groundwater Plume** – Based on the MUN classification of groundwater beneath the site, the extent of the groundwater plume has not been determined. Please address this data gap in the requested Data Gap Work Plan.

g. **FS / CAP** – Provided the proposed additional data to be collected does not indicate a concern, the recommended alternative presented in the FS / CAP has been presumed to be Monitored Natural Attenuation (MNA). This alternative involves no active remediation and assumes that residual contaminants in soil and groundwater will attenuate naturally. Please note, as discussed in Technical Comment 2e, this alternative requires robust evidence of MNA in groundwater that demonstrate a decreasing contaminant concentration trend.

ACEH concurs that this is a viable approach if supported by the proposed additional data collection activities. If the additional (post-interim remediation) monitoring identifies potential concerns, Pangea recommends implementation of one or more of the following alternatives:

- Passive ventilation of subslab gas
- Additional monitoring of groundwater, subslab gas and indoor air
- Excavation of additional shallow soil
- Expansion of the passive ventilation system
- Installation of an extraction blower to provide active ventilation, and
- Installation of a vapor intrusion barrier

ACEH generally concurs that the proposed alternatives are appropriate for providing short-term mitigation of vapor intrusion to indoor air and are protective of human health and the environment. Please note however, that ACEH considers the proposed vapor mitigation measures to be short-term measures used in conjunction with the identified source removal measure, if necessary.

3. **Public Participation** – Public participation is a requirement for corrective action plans, including MNA, and the case closure process. In order to notify potentially affected members of the public of the CAP, ACEH requests that you generate a draft Fact Sheet for ACEH review. This is anticipated to help document to future tenants ACEH concurrence with proposed actions. Please submit the draft Fact Sheet by the date identified below.

4. **CAP Implementation Plan** - Please note as discussed in Technical Comment 2g above, a CAP Implementation Plan must be submitted if alternative measures are required in addition to MNA. If these additional measures are required based on the proposed data collection, ACEH requests the submittal of a CAP Implementation Plan providing details of each of the proposed measures by the due date specified below.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **January 17, 2014** – Data Gap Work Plan
  File to be named: RO2857_WP_R_yyyy-mm-dd

- **January 17, 2014** – Draft Fact Sheet
  File to be named: RO2857_CORRES_L_yyyy-mm-dd

- **February 28, 2014** – CAP Implementation Plan
  File to be named: RO2857_CAP_R_yyyy-mm-dd

- **60 Days After Data Gap Work Plan Approval** – Soil, Soil Vapor, and Groundwater Investigation
  File to be named: RO2857_SWI_R_yyyy-mm-dd

Should you have any questions, please contact me at (510) 567--6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Digitally signed by Mark Detterman
DN: cn=Mark Detterman, o, ou, email=mark.detterman@acgov.org, c=US
Date: 2013.11.18 11:29:58 -08'00'

Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: Bob Clark-Riddell, Pangea Environmental Services, Inc, 1710 Franklin Street, Suite 200, Oakland, CA 94612 (sent via electronic mail to briddell@pangeaenv.com)

Dilan Roe (sent via electronic mail to dilan.roe@acgov.org)
Mark Detterman (sent via electronic mail to mark.detterman@acgov.org)
Electronic File, GeoTracker

APPENDIX B

PID Readings

Appendix B - PID Readings

Date	PID Readings (ppm)			
	1183 Solano	1185 Solano	1187 Solano	1191 Solano
1/31/13	---	---	0.0 to 1.0	---
2/21/13	---	---	0.6 to 4.5	---
2/22/13	---	---	1.2 to 45.7	---
2/25/13	---	---	1.4 to 2.2	---
2/28/13	---	---	0.2 to 4.0	---
3/14/13	---	---	Up to 100	---
3/20/13	---	---	---	0.0-0.2
3/21/13	---	---	---	0.0 counter 0.1 back room 0.3 excavation room
4/25/13	---	---	---	0.0 all areas
8/6/13	---	0.1	---	---
8/8/13	---	0.1	---	---
8/27/13	0.0 outside 0.2 lobby* 0.3 bathroom* 0.9 patient chair* 0.4 storage* 0.3 rear chair room*	0.0	0.0	0.0 all areas
8/28/13	0.0 outside 0.5 lobby* 0.5 chair (@SS-18)*	0.0	0.0	0.0 all areas

* Highest PID readings found at patient work area where VOC products are used. Suspect PID readings at 1183 Solano represent VOC use by dentist office.

APPENDIX C

Well Yield Field Data

Pangea
ENVIRONMENTAL SERVICES, INC.

MONITORING FIELD DATA SHEET

Well ID: MW-1

Project.Task #: **1435.002**	Project Name: **Solano Group**
Address: **1187 Solano Avenue, Albany**	
Date: 12/4/13	Weather: SUNNY / COLD
Well Diameter: 0.75"	Volume/ft. 1" = 0.04; 3" = 0.37; 6" = 1.47; 2" = 0.16; 4" = 0.65; radius^2 * 0.163
Total Depth (TD): 13.8'	Depth to Product:
Depth to Water (DTW): 10.8'	Product Thickness:
Water Column Height: 3'	1 Casing Volume: 0.07 (270 ML) gallons
Reference Point: NTOC	3 Casing Volumes: 0.2 (810 ML) gallons
Purging Device: DISPOSABLE BAILER (MINI)	
Sampling Device: DISPOSABLE BAILER (MINI)	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(~~gal~~) (ML)	DTW
0802		DTW BEFORE PURGING						10.8'
0943		COMMENCE PURGING						
0947	14.8	7.40	1302			222	300	
0952	15.9	7.21	1376			181	550	
0954		WELL DEWATERED AT 600 ML						
1040		DTW BEFORE PURGING AGAIN						12.95'
1045		COMMENCE PURGING						
1047		WELL DEWATERED AT 50 ML						

Comments: GRAB SAMPLE PRIOR TO PURGE 1 CASING VOLUME DUE TO HISTORY OF DEWATERING.
* TOTAL PURGE VOLUME WAS 650 ML IN ONE HOUR

Sample ID: MW-1	Sample Time: 0945
Laboratory: McCampbell Analytical	Sample Date: 12/4/13
Containers/Preservative: 3 VOA w/ HCL	
Analyzed for: ~~TPHg, BTEX, MTBE - 8015Cm / 8021B~~ VOCs 8010	
Sampler Name: TINA DE LA FUENTE	Signature: [signature]

Pangea
ENVIRONMENTAL SERVICES, INC.

MONITORING FIELD DATA SHEET

Well ID: MW-2

Project.Task #: **1435.002**	Project Name: **Solano Group**
Address: **1187 Solano Avenue, Albany**	
Date: ~~1436~~ 12/4/13	Weather: SUNNY / COLD
Well Diameter: 0.75"	Volume/ft. 1" = 0.04; 3" = 0.37; 6" = 1.47; 2" = 0.16; 4" = 0.65; radius^2 * 0.163
Total Depth (TD): 14.75'	Depth to Product:
Depth to Water (DTW): 9.5'	Product Thickness:
Water Column Height: 5.25'	1 Casing Volume: .12 (500 ML) gallons
Reference Point: NTOC	3 Casing Volumes: .4 (1,500 ML) gallons
Purging Device: DISPOSABLE BAILER (MINI)	
Sampling Device: DISPOSABLE BAILER (MINI)	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol ~~(gal)~~ (ML)	DTW
0758		DTW BEFORE PURGING						10.8'
0848		COMMENCE PURGING						
0857	13.4	7.5	1234			253	500	
0903	16.1	7.51	1268			246	1,000	
0906		WELL DEWATERED AT 1,100 ML						
1000		DTW BEFORE PURGING AGAIN						13.4'
1003		COMMENCE PURGING						
1006		WELL DEWATERED AT ~150 ML						

Comments: GRAB SAMPLE PRIOR TO PURGE 1 CASING VOLUME DUE TO HISTORY OF DEWATERING.
* TOTAL PURGE VOLUME WAS 1,250 ML IN ONE HOUR AND TWENTY MINUTES

Sample ID: MW-2	Sample Time: 0850
Laboratory: McCampbell Analytical	Sample Date: 12/4/13
Containers/Preservative: 3 VOA w/ HCL	
Analyzed for: ~~TPHg, BTEX, MTBE - 8015Cm / 8021B~~ VOCs 8010	
Sampler Name: TINA DE LA FUENTE	Signature:

Pangea
ENVIRONMENTAL SERVICES, INC.

MONITORING FIELD DATA SHEET

Well ID: MW-3

Project.Task #: **1435.002**	Project Name: **Solano Group**
Address: **1187 Solano Avenue, Albany**	
Date: 12/4/13	Weather: SUNNY / COLD
Well Diameter: 0.75"	Volume/ft. 1" = 0.04, 3" = 0.37, 6" = 1.47, 2" = 0.16, 4" = 0.65, radius^2 * 0.163
Total Depth (TD): 13.75'	Depth to Product:
Depth to Water (DTW): 9.4'	Product Thickness:
Water Column Height: 4.35'	1 Casing Volume: .1 (380 ML) gallons
Reference Point: NTOC	___3_ Casing Volumes: .3 (1,140 ML) gallons
Purging Device: DISPOSABLE BAILER (MINI)	
Sampling Device: DISPOSABLE BAILER (MINI)	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(~~gal~~) (ML)	DTW
0800		DTW BEFORE PURGING						9.4'
0915		COMMENCE PURGING						
0919	15.6	7.34	1240			222	400	
0922	16.2	7.23	1224			210	780	
0924		WELL DEWATERED AT 1,000 ML						
1014		DTW BEFORE PURGING AGAIN						11.85
1033		COMMENCE PURGING						
1035		WELL DEWATERED AT 100 ML						

Comments: GRAB SAMPLE DURING FIRST CASING VOLUME DUE TO HISTORY OF DEWATERING
* TOTAL PURGE VOLUME WAS 1,100 ML IN ONE HOUR AND TWENTY MINUTES

Sample ID: MW-3	Sample Time: 0920
Laboratory: McCampbell Analytical	Sample Date: 12/4/13
Containers/Preservative: 3 VOA w/ HCL	
Analyzed for: ~~TPHg, BTEX, MTBE - 8015Cm / 8021B~~ VOCs 8010	
Sampler Name: TINA DE LA FUENTE	Signature:

Pangea
ENVIRONMENTAL SERVICES, INC.

MONITORING FIELD DATA SHEET

Well ID: MW-4

Project.Task #: **1435.002**	Project Name: **Solano Group**
Address: **1187 Solano Avenue, Albany**	
Date: 12/4/13	Weather: SUNNY / COLD
Well Diameter: 1"	Volume/ft. 1" = 0.04, 3" = 0.37, 6" = 1.47, 2" = 0.16, 4" = 0.65, radius^2 * 0.163
Total Depth (TD): 17.3'	Depth to Product:
Depth to Water (DTW): 11.95'	Product Thickness:
Water Column Height: 5.35'	1 Casing Volume: .2 (800 ML) gallons
Reference Point: NTOC	3 Casing Volumes: .6 (2,280 ML) gallons
Purging Device: DEDICATED TUBING AND CHECK VALVE	
Sampling Device: DEDICATED TUBING AND CHECK VALVE (ML)	

Time	Temp ©	pH	Cond (µs)	NTU	DO(mg/L)	ORP (mV)	Vol(~~gal~~)	DTW
1100		DTW BEFORE PURGING						11.95'
1107		COMMENCE PURGING						
1112	14.6	7.84	1052			136	800	
1117		WELL DEWATERED AT 1,200 ML						
1419								12.00'

Comments:

Sample ID: MW-4	Sample Time: 1435
Laboratory: McCampbell Analytical	Sample Date: 12/4/13
Containers/Preservative: 3 VOA w/ HCL	
Analyzed for: VOCs 8010	
Sampler Name: TINA DE LA FUENTE	Signature: [signature]

APPENDIX D

Standard Operating Procedures

STANDARD FIELD PROCEDURES FOR HAND-AUGER SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings using a hand-auger. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

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

Soil Classification/Logging

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

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

Soil Boring and Sampling

Hand-auger borings are typically drilled using a hand-held bucket auger to remove soil to the desired sampling depth. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the augered hole. The vertical location of each soil sample is determined using a tape measure. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Augering and sampling equipment is steam-cleaned or washed prior to drilling, between samples and between borings to prevent cross-contamination with alconox/liquinox or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

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

Field Screening

One of the remaining tubes is partially emptied into a re-sealable plastic bag. The bag of soil is placed in the sun to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the bag headspace, extracting the vapor through a slit in the bag. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are collected from screened PVC casing installed in the hole or from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in re-sealable plastic bags, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

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

Grouting

The borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

This document describes Pangea Environmental Services' standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I, II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. Wells may be surged prior to installation of the well seal to ensure that there are no voids in the sand pack. Development occurs 48 to 72 hours after seal installation to ensure that the Portland cement has set up correctly. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 72 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.