

July 19, 2017

RECEIVED

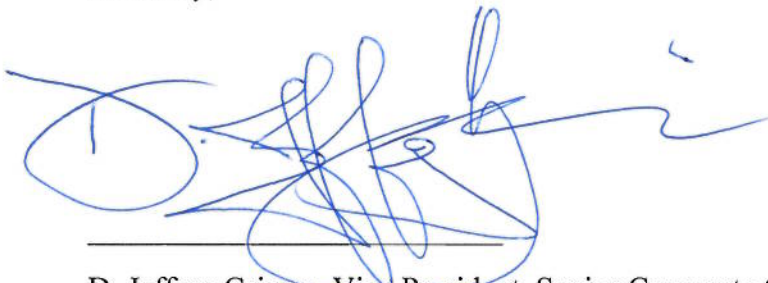
By Alameda County Environmental Health 9:38 am, Aug 04, 2017

Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: American Reprographics Company, L.L.C. (f/k/a City Blue Print)
ACEH LOP RO#151
1700 Jefferson Street Oakland, CA 94612

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website.

Sincerely,



D. Jeffery Grimes, Vice President, Senior Corporate Counsel & Corporate Secretary
Authorized Representative

Attachment: Report



Memorandum

To: Mark Detterman, ACDEH and Andrew Lojo, Terraphase

From: Steven Michelson, PG

cc: Jeffery Grimes, ARC
Donald Sobelman, Downey Brand
Jeffrey S. Lawson, Silicon Valley Law Group

Date: July 18, 2017

Subject: Response to Memorandum of Comments (Terraphase, July 11, 2017) Regarding the “Addendum to Conceptual Site Model and Work Plan (ERS, January 2013), Additional Investigation Work Plan for 581 18th Street, Oakland, California, 1700 Jefferson Street, Oakland, California” (AWR, July 7, 2017)

AWR prepared this Memorandum on behalf of ARC to respond to Terraphase’s “Memorandum of Comments”, July 11, 2017. To aid the reader, this Memorandum incorporates verbatim, and in **smaller blue font**, the key text from the Terraphase Memorandum. Our responses are indented below each comment.

On July 13, 2017, representatives from Terraphase and AWR, accompanied by Mr. Lance Lo (representing property/building owner Jefferson Court Commercial Ventures, LLC), inspected the building at 581 18th Street, Oakland to develop a floorplan of the building’s courtyard level, identify potential preferential pathways from the subslab to the interior space, evaluate the ventilation system, and adjust the sampling locations proposed in the Work Plan, based on information collected during the inspection. The responses provided herein are informed by observations and conversations during this inspection.

Responses to Terraphase’s “Memorandum of Comments”, July 11, 2017

We understand that the primary objective of the proposed work is to further evaluate the potential risks to the quality of indoor air within the apartment building. It also appears that a second objective of the proposed work is to further delineate and monitor the extent of petroleum in groundwater in the northeast direction.

Agreed.

We do not want to install groundwater monitoring wells inside the building, unless they are installed to monitor the effectiveness of a remediation system. We will allow collection of a grab groundwater sample, to accomplish the delineation objective.



Monitor wells are recommended to delineate and monitor ground water quality beneath the building. Wells are also appropriate to assess and monitor the potential presence of mobile LNAPL. Due to the presence of silt in the saturated zone, grab groundwater samples will likely have high turbidity, which would impact sample quality, which we have observed in other grab ground water samples collected from the site. Notwithstanding these limitations, AWR is prepared to modify the workplan to include temporary groundwater sampling points at the direction of ACDEH, in order to proceed with the investigation.

We are in general agreement with the number of sub-slab and soil gas samples proposed subject to: 1) confirmation that 5 of each can be placed in the building without undue disturbance to the tenants; 2) the sub-slab and soil gas samples should be co-located; and 3) the soil gas and sub-slab samples should be spaced as evenly as possible in the building. The proposed map focuses the samples on the western portion of the building which would not represent average conditions or capture all potential areas of intrusion. There is also a sample point proposed in each apartment unit. Ideally, we will find suitable areas near but not inside individual tenant's apartment units. We also recommend that you install the soil gas samples 5 feet below the building slab rather than 5 feet below the column footing depth, since the slab is likely in direct contact with the subsurface even though the column footings are deeper.

Sub-slab vapor sampling locations:

We maintain that when assessing potential risk to indoor air within a residential unit, the optimal location of the sub-slab vapor sample is from within the residential unit, as shown in the Work Plan. AWR's position was explained to Terraphase and Mr. Lo during the building inspection. However, per the Terraphase comments, and as directed by Mr. Lo, AWR will collect sub-slab vapor samples outside the residential units, absent a contrary directive from ACDEH. If warranted by results from the sub-slab vapor samples, we recommend that samples of indoor air be collected from within the residential unit.

The attached figure depicts the alternative sub-slab sampling locations that were agreed to by Terraphase and Mr. Lo during the inspection. We request the ACDEH to decide where the sub-slab vapor samples are required to be collected: either from within the residential unit as proposed in the Work Plan, or at the alternate location proposed by Terraphase and Mr. Lo, as shown on the attached figure.

Soil vapor sampling locations:

The attached figure depicts the locations from where soil vapor samples are proposed to be collected. Although different from the locations described in the Work Plan, due to the floorplan revealed during the site inspection, AWR considers these alternative locations for the deeper soil vapor samples will be equally representative.

Terraphase requests that the soil vapor samples be collected 5 feet below the bottom of the concrete slab. Based on the lithology, this depth may result in a soil vapor sample being collected from the bottom of the silty sand zone that overlies the sandy water-bearing zone. Consequently, the concentrations in a silty sand vapor sample may not be comparable to soil vapor samples collected from beneath the courtyard in the underlying sandy zone.



Notwithstanding these limitations, AWR is prepared to modify the workplan to collect soil vapor samples from 5 feet below the base of the concrete slab and within the silty sand layer, if ACDEH approves this modification.

We are also in general agreement with the proposed plan to collect the soil gas and sub-slab vapor samples before proceeding with indoor air samples. We are unclear based on our review of the Work Plan and proposed schedule however, exactly how much time or how many subparts of Task 6 are proposed to be conducted before proceeding to indoor air sample collection if necessary. If the sub-slab samples are above ESLs it will be critical to proceed with indoor air sampling as soon as possible so that adequate measures can be implemented if necessary to mitigate indoor air risks to the tenants.

In light of the recent building inspection and the request from Terraphase and Mr. Lo to not collect sub-slab samples within the residential units, if concentrations of chemicals in sub-slab vapor samples exceed ESLs, then additional sampling and evaluation will be deemed warranted and promptly collected. We note that, typically, sub-slab vapor samples are co-located with indoor air sampling locations, which allows for better interpretation of the data representing sub-slab vapor and indoor air quality. Consequently, if indoor air samples from within the residential units are required, we would also recommend co-located sub-slab vapor samples. The additional sampling can be developed in coordination with ACDEH, Terraphase, and Mr. Lo. If sub-slab concentrations are below ESLs, then further evaluation will be performed as outlined in the Work Plan.

We therefore request that the sub-slab samples be analyzed on a rush 24hr turnaround, and that the indoor air sampling process begin rapidly if the results exceed RWQCB ESLs. We will provide additional comments on the indoor air sampling process if necessary.

The Work Plan proposes a standard laboratory 5-day turnaround, which we believe is appropriate given the circumstances. Nonetheless, we will defer to ACDEH's decision on this point.

Comments on the Work Plan Task 3: Ground Water Monitor Wells and Samples

Sample Collection-

- 1) The Work Plan states that the ground water samples will be collected using low flow sampling methods but does not elaborate on the procedures or methods. Therefore, the following comments are based on the provided AWR groundwater sampling SOP and monitor well data sheets recorded during the last round of sampling.
 - a. Low flow purge rate should be between 100 and 500 milliliters per minute and be maintained at a rate roughly equivalent to the rate of recharge in the well during both purging and sampling. Monitor well data sheets provided in the data transmittal letter do not document flow rates or volumes of water pumped during purging and sampling.

The AWR "Ground Water Monitoring and Sampling - Low-Flow Standard Operating Procedures (SOP)" includes the above flow rates. Monitor well data sheets will document flow rates and volumes removed during purging and sampling.

- b. Total draw-down of the well should not exceed 1-foot total during low flow purging and sampling (otherwise switch to 3 well volumes or purge and recharge). Depth to water and total volume purged should be recorded with each water quality measurement these fields were left blank on the data sheets during the previous round of groundwater sampling).



The monitoring wells in the courtyard at 581 18th Street are 0.75" prepacked wells, so a small diameter depth to water meter will be used while purging and sampling. Depth to water and total volume purged will be recorded on data sheets.

Regarding acceptable drawdown, "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures" (USEPA, Puls and Barcelona, 1996), "Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers" (USEPA, 2002), "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples From Monitoring Wells" (USEPA, 2010), and the AWR SOP all state that drawdown should be kept to a minimal level, no more than approximately 0.33 ft. If the water draws-down to the top of the well screen then purging should stop and the well should be allowed to recover so as not to dewater the well screen and allow aeration of ground water as it enters the well casing. Attempts should be made to avoid purging the well dry, due to potential aeration of volatiles. However, if the well is screened across the water table in a low permeability zone, the well may be purged dry.

In the end, the goal is a representative sample of ground water as indicated by the stabilization of water quality parameters and the water level. If the water level can be maintained at a stable level above the screened interval then a drawdown level exceeding 0.33ft is acceptable.

- c. The "3 well volume method" may be used if a well cannot maintain a minimum recharge rate of 100 milliliters per minute. Sampling may proceed following the continuous purge of 3 well volumes.

To date, the sandy water bearing zone at this site has consistently yielded ground water at a rate adequate for low flow sampling. We will seek to avoid purging the well dry, so as not to collect a sample of ground water that has aerated due to cascading down the well screen.

- d. The "purge and recharge method" may be used only after attempts to collect samples using the low flow and 3 well volume methods have been made. If a well is purged dry during the previous two methods then sampling should proceed immediately once the well archives 80% recharge but no later than 24 hours after being purged dry.

If the purge and recharge methodology is used, then ground water samples will be collected within 24 hours of purging the well dry.

- 2) Concentrations of TPHg and benzene detected in courtyard groundwater samples suggest the presence of separate phase NAPL. Historical reports also document the presence of free-phase LNAPL as far away as MW-5. Monitoring wells should therefore be gauged for separate phase product prior to each sampling event.

A depth to oil-water interface meter will be used during the next sampling event.

Comments on the Work Plan Task 4: Soil Vapor Wells and Samples from the Bottom of the Vadose Zone

Installation-

- 1) The Work Plan proposes soil vapor wells within the building as well as alternate locations in the courtyard should the primary locations be inaccessible. Existing soil vapor well SV4 is proposed to be sampled as an alternative if the SV21 location is inaccessible. SV4 is not shown on the figure or demonstrated to be existing in previously collected data. SS4 is shown on the figure in the courtyard adjacent to the residences and in



recent data however, a sub-slab vapor well should not be used as an alternative to a deeper soil vapor well.

SV4 was misstated in the Work Plan and SS4 would not be used as an alternative. Our response to ACDEH's Conditional Work Plan Approval includes a figure showing revised proposed sampling locations, and the figure attached to this Memorandum depicts alternative sub-slab and soil vapor sampling locations.

- 2) The height of the sand pack and dry bentonite barrier are not specified in the Work Plan. A 1-foot sand pack and a 1 foot of dry bentonite barrier should be constructed for consistency with the 2015 DTSC Advisory. The height of the sand pack in the SV wells is indicated to be greater than 2 feet in Table 3 of the recently submitted data transmittal letter. Does this include the sand pack and the dry bentonite?

The 2015 DTSC Advisory recommends "at least six inches of sand above and below the probe tip" and "at least six inches of dry granular bentonite on top of each sand pack", not maximums of 1 foot; the DTSC figure shows 1-foot intervals for both as a typical design. The screened intervals listed in Table 3 of the recently submitted data transmittal includes both sand pack and dry bentonite.

- 3) A neat cement-bentonite slurry is specified to be used as the seal from the top of the dry bentonite barrier to the surface. If the neat cement-bentonite slurry seal is to be hydrated above-ground then a tremie pipe should be used when pouring the seal to prevent bridging in the bore-hole.

The soil vapor wells will be installed approximately 5 feet below the bottom of the concrete slab, or about 6 feet below finished floor. Given a minimum of 2 feet for both sand pack and transition seal plus about a 6-inch deep well box, the length of the neat cement-bentonite grout is at most 3.5 feet. Liquid neat cement slurry is unlikely to bridge and placing 3.5 feet of grout through a tremie pipe is considered unnecessary. We currently plan to simply pour the grout into place.

Sample Collection-

- 1) The Work Plan specifies that soil vapor samples will be collected in accordance with the 2015 DTSC Advisory at least 48 hours after the completion of each soil vapor well.
 - a. If a summa canister is used to purge the well prior to sampling then the purged volume should be calculated based on the observed canister vacuum where a 6-liter summa canister starts at 30 inches of mercury so each 5 inches of mercury corresponds to 1 liter of volume. The flow rate is going to vary based on the flow controller (set by the laboratory) and the vacuum of the canister, so timing is not a good way to measure purged volume. A low flow air pump such as a Gilian GilAir® Plus (or similar) with a digital display of the purged volume could provide a more precise purging method.

The purge volume is based on changes in the canister vacuum via the pressure gauge, and not on the duration of purging. The time is recorded on field sampling data sheets in order to calculate the flow rate, not to calculate the volume removed.

- b. There are no sampling procedures described in the workplan for sorbent tube sampling (TO-17 analysis). Please provide SOP for collection of these samples.

The sampling procedures for sorbent tube sampling (e.g. TO-17 analysis) are described on page 9 of AWR's "Soil Vapor Well Installation and Sampling Standard Operating Procedures (SOP)".



- c. A MGD-2002 helium detector (or similar) should be used to continuously monitor and maintain the helium concentration inside the shroud during sample collection at a minimum of 20%. This will allow for a more accurate leak percentage calculation if helium is detected in a sample.

AWR's "Soil Vapor Well Installation and Sampling Standard Operating Procedures (SOP)" describes the use of a helium analyzer and recording helium concentrations in the field.

- 2) After reviewing the AWR soil gas field worksheets from the last sampling event, the following additional information should be provided on the worksheets going forward.

- a. Worksheets do not show calculations for required purge volumes. Purge volumes should be calculated to include the vapor probe tip, tubing, 30% available sand porosity in the well sand pack, and an assumed 50% porosity for the dry bentonite seal zone.

AWR calculates the purge volume, which includes the components listed on page 7 of AWR's "Soil Vapor Well Installation and Sampling Standard Operating Procedures (SOP)". This information will be recorded on the field sampling data sheets.

- b. Less than three well volumes were purged from most of the soil vapor wells as indicated by the case volumes and purge volumes. A minimum of three well volumes should be purged from each soil vapor well prior to sampling per the 2015 DTSC Advisory.

AWR will purge at least three well volumes prior to collecting a vapor sample.

- c. The sub-slab points are documented as being purged with a hand pump but do not indicate the volume purged. A syringe fitted with a three-way valve would allow for accurate measurements of smaller purge volumes.

AWR follows this procedure, which is also described in the SOP. This information will be recorded in the field on the field sampling data sheets.

- d. Helium shroud measurements (% Helium) should be documented every 1-2 minutes during sampling along with the corresponding time of measurement and remaining canister vacuum. Additional helium should be added to the shroud incrementally to maintain the desired concentration.

AWR measured helium concentration under the shroud every one to two minutes, and maintained the helium concentration. This same information will be recorded in the field on the field sampling data sheets.

- e. For the sorbent tube field worksheets, there is no documentation of helium being used as a leak detection compound. Worksheets should include helium percentage inside the shroud during sorbent tube sampling.

The collection of the sorbent tube sample will be performed under the shroud filled with helium. The helium analyzer will be placed in-line and downstream of the sorbent tube. Measurements of the helium percentage under the shroud and in the sampling line will be recorded in the field on the field sampling data sheets.



Comments on the Work Plan Task 4: Task 5 Sub-Slab Vapor Samples:

Installation-

- 1) According to the figure a SS4 sub-slab vapor point has already been installed in the courtyard, the location IDs inside the apartment building should be adjusted accordingly (SS5, SS6, SS7, SS8 and SS9)

AWR uses a unique identification for each sampling location.

- 2) For the sub-slab wells, no installation procedures have been specified in the Work Plan nor has an AWR SOP been provided. Installation should be conducted in accordance to the Cox-Colvin SOP for VaporPin™ installation and extraction.

The procedures followed when installing the VaporPins in the courtyard conformed with the Cox-Colvin SOP. This same procedure will be followed for future VaporPins.

- 3) The Work Plan specifies that sub-slab samples will be collected no sooner than 20 minutes after installation of the VaporPin™ however, at least 2 hours of time should elapse following the installation of a sub-slab VaporPin™ to allow the subsurface to equilibrate per the 2015 DTSC Advisory before collecting sub-slab samples.

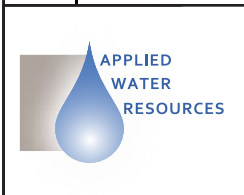
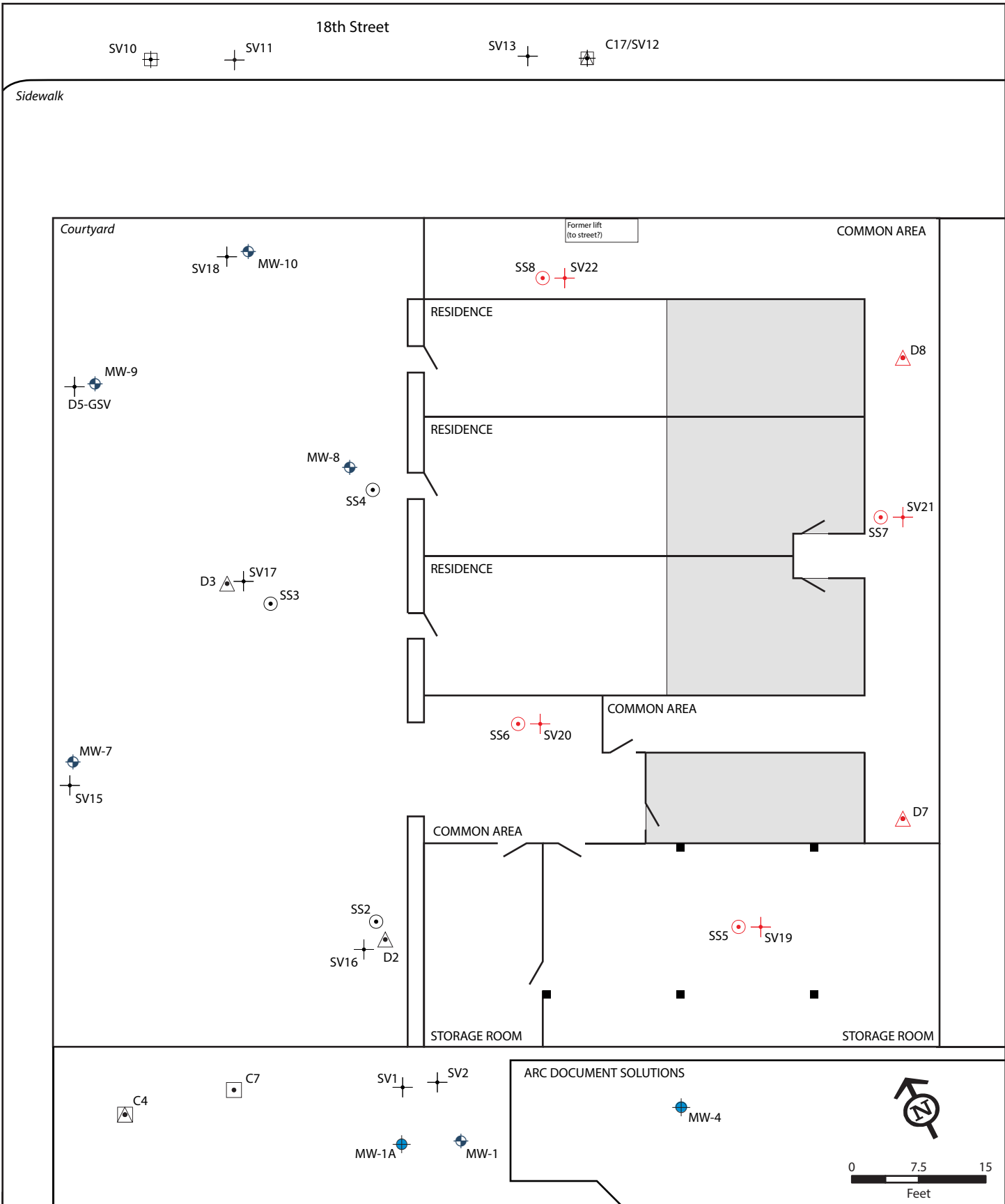
Sub-slab samples will be collected at least 2 hours following installation.

Sample Collection-

Comments for the collection of sub-slab vapor samples are the same comments for soil vapor wells.

Our responses to comments regarding the collection of sub-slab vapor samples are the same responses for soil vapor wells, where applicable.





Alternative Sampling Locations
 07/17/2017
 581 18th St, Oakland, CA

- | | | |
|----------------------------------|-------------------------|-------------------|
| Proposed Grab Ground Water | Elevated Flooring | Monitor Well |
| Proposed Soil Vapor Well | Subslab Soil Vapor Well | Extraction Well |
| Proposed Subslab Soil Vapor Well | Soil Vapor Well | Grab Ground Water |
| | | Grab Soil |