

## Nowell, Keith, Env. Health

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**From:** Michael Harrison <mharrison@enviroassets.com>  
**Sent:** Friday, November 03, 2017 12:05 PM  
**To:** Nowell, Keith, Env. Health  
**Cc:** Roe, Dilan, Env. Health; Mehrdad Javaherian  
**Subject:** Review and comment on LRM, Supplemental Remedial Investigation Report, September 27, 2017  
**Attachments:** EA23148-17 Comment LRM Report.pdf

Dear Keith:

There were a couple of minor errors with the prior version of this letter so I'm resending it with today's data. I have uploaded the corrected version to AC's FTP site.

Attached please find a slightly revised review and comment letter regarding the LRM, *Supplemental Remedial Investigation Report* (September 27, 2017). As you will note, we strongly disagree with LRM's conclusion that the data support that the Bouzos Property is a source of PCE in the subsurface.

Sincerely,

Michael Harrison, P.E., QSD/QSP, LEED AP

Principal

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November 3, 2017

Keith Nowell, PG, CHG  
Environmental Health Services, Alameda County  
1131 Harbor Bay Parkway  
Alameda, CA 94502-6577

RE: LRM, *Supplemental Remedial Investigation Report*, September 27, 2017  
Red Hanger Kleaners (T10000000416)  
6235-6239 College Avenue, Oakland, CA 94618

Dear Mr. Nowell:

EnviroAssets has reviewed the *Supplemental Remedial Investigation Report* (“LRM Report”, LRM, September 27, 2017) for the Red Hanger Kleaners site at the Claremont College Venture, LLC owned property at 6235-6239 College Avenue in Oakland (“CCV Site”). We believe that LRM’s conclusions regarding the source of contamination at the CCV Site are internally inconsistent, ignore accepted engineering principles, and stretch professional credibility in a transparent attempt to bring additional responsible parties into the CCV Site investigation and cleanup program.

### **The Nature of the Problem & The Conceptual Site Model**

Contamination at the CCV Site is primarily perchloroethylene (“PCE”) in soil vapor, where:

- The alleyway and parking area behind the CCV Site is the center of the contamination (see attached contaminant contours from P&D 2016<sup>1</sup>);
- Concentrations of PCE in shallow soil (from 5-7 feet below ground) as high as 61,000 µg/m<sup>3</sup> have been observed;
- In deeper soil vapor samples collected around the groundwater capillary fringe, concentrations of PCE have been detected in soil vapor as high as 120,000 µg/m<sup>3</sup>;
- Elevated concentrations of PCE in shallow soil gas as high as 17,000 µg/m<sup>3</sup> have also been identified beneath the former dry cleaning machinery and sewer interconnection area inside of the CCV 6235-6239 College Avenue building at the CCV Site; and
- Concentrations clearly decrease with distance from the center of contamination.

The Conceptual Site Model for the mechanism of contaminant release from a historical dry cleaner includes surficial releases related to handling of dry cleaning solvents and shallow subsurface releases related to sanitary sewer discharges. As documented in the *Subslab Vapor Screening Workplan*<sup>2</sup> and *Screening Subslab Vapor Survey*<sup>3</sup>, during building retrofit activities conducted in 2017, the sewer lateral was replaced beneath 6251 and 6253 College Avenue (the “Bouzos Property”) and observed to be of cast iron in good condition at approximately five to six feet below grade. Therefore, the potential release depth of dry cleaning solvents at the Bouzos Property is shallower than 6-feet below grade. Several investigation activities designed to

<sup>1</sup> P&D Environmental Inc., *Site Investigation and Soil Vapor Extraction Report*, July 11, 2016

<sup>2</sup> EnviroAssets, *Subslab Vapor Screening Workplan*, May 26, 2017

<sup>3</sup> EnviroAssets, *Screening Subslab Vapor Survey*, June 3, 2017

identify a surficial or shallow subsurface release at the Bouzos Property have found NO PCE contamination including:

- Four sub-building slab vapor sampling locations collected proximate to the estimated location of the historical dry cleaning equipment and garbage can storage area, near the historical and current sewer lateral, and beneath both new and original foundation slabs;
- The LRM designed, installed, and sampled soil vapor probe at 7-feet below ground surface located with 20-feet of the former cleaning equipment area; and
- Soil samples collected by LRM at 5 and 10-feet below ground during groundwater well MW-1 installation (PCE was also not detected in a soil sample collected below the water table at 25-feet below ground by LRM).

Furthermore, concentrations identified in soil vapor collected near the groundwater capillary fringe (17-feet below ground) and first encountered groundwater are extremely low: at 3.9  $\mu\text{g}/\text{m}^3$  and 1.2  $\mu\text{g}/\text{L}$ , respectively. LRM has ignored these data, both recent and dating to 2015, and standard industry practice that clearly demonstrate that PCE was not released surficially or shallowly at the Bouzos Property and identify a source of contamination at and emanating from the former dry cleaning area, building service area behind the building, and sanitary sewer lateral for the CCV Site, in order to paradoxically conclude that “discharges to drains and sewer lines from historical dry cleaning operations at 6235-6239 College Ave.” are a “likely” source of contamination at the CCV Site.

### **PCE Vapor Concentrations Fit Known Vapor Plume Behavior**

LRM correctly observes that “PCE occurs primarily in soil vapor, with limited residual impacts occurring in groundwater and sporadic detections in soils near the groundwater potentiometric surface”. It is scientific fact regarding PCE vapor plume behavior that when “the vapor source is in the vadose zone, the vapors migrate radially in all directions from the source (i.e., upward toward the atmosphere, laterally outward, and downward toward the water table, which may eventually lead to groundwater contamination)”<sup>4</sup>. Furthermore, “the farthest the gas will sink is to the [groundwater] capillary fringe, over which it will then also spread out laterally”<sup>5</sup>. In fact, the pattern of soil vapor observed at the CCV Site, where concentrations of PCE are observed decreasing radially from an elevated source area and are highest near the groundwater capillary fringe – and not at a more shallow depth - at their farthest extent is wholly in keeping with the established behavior of a PCE vapor plume or “mound”. LRM ignores both this established understanding of vapor behavior and the confirmatory data demonstrating that PCE vapor was not identified in the shallow subsurface at the Bouzos Property to conclude that the “presence of PCE in deep soil vapor and groundwater at low levels within the limited sampling area at the 6251-6255 property” is a reason to conclude that the Bouzos Property is a source. In contrast to this position, the absence of shallow PCE and the low occurrence of PCE near the groundwater capillary fringe is exactly the expected impact of a downgradient vapor source located at the CCV Site.

<sup>4</sup> USEPA, *Conceptual Model Scenarios for the Vapor Intrusion Pathway*, February 2012

<sup>5</sup> Schuille, Friedrich, *Dense Chlorinated Solvents in Porous and Fractured Media*, 1988

### **A Hot Spot Exists at the CCV Site**

LRM states that there is an ‘absence of distinct “hot spots” in all subsurface media’ despite the detection of PCE in soil vapor at 120,000 µg/m<sup>3</sup> near the groundwater capillary fringe, which is over 30,000 times higher than the concentration it detected on the Bouzos Property. Contrary to its statement, the alleyway and parking area behind 6235-6239 College Avenue is clearly a hot spot and center of the vapor plume emanating from the CCV Site. This area is also where the sewer lateral from the CCV property’s dry cleaning operation runs with five identified “pipe joint separations”<sup>6</sup> and an overall “high damaged”<sup>7</sup> condition. Further, nowhere in the LRM Report does it address whether these identified breaches in the sewer lateral, a lateral believed to receive ongoing discharges from the CCV Site treatment system, have been repaired.

These data collected on the CCV Site are in marked contrast to non-detections in shallow Bouzos Property samples. Furthermore, the areas with elevated concentrations at the CCV Site fit the Conceptual Site Model release scenarios, including: beneath the dry cleaning areas within the CCV building; behind the building where dry cleaners historically have handled virgin and waste solvent, and proximate to a damaged sewer lateral assumed to have received discharges from the dry cleaning operations. PCE concentrations in these areas are elevated enough to demand mitigation by sub-slab depressurization systems and soil vapor extraction.

### **Property Depictions and Property Line Survey**

In its June 23, 2017, comments on LRM’s June 19, 2017, *Supplemental Remedial Investigation Workplan* (“LRM Workplan”), EnviroAssets observed that the Figure 1 provided in the LRM Workplan depicts a sanitary sewer line running from the south side of 309 63rd Street north beneath 6251 College Avenue and out to College Avenue. We noted that this lateral was not encountered during construction at 6251 College Avenue which included excavation and replacement of its sewer lateral and recommended that this lateral should be surveyed and verified. The LRM Workplan also stated that the January 2017 survey that is presented as attachment 1, was “undertaken in January 2017 to confirm property lines, the location of the clay portion of the sanitary lateral extending from 6239 College Avenue to 63rd Street, and building locations in the site area”. However, attachment 1 does not address the accuracy of depicted property boundaries, which is convention for a survey performed for that purpose, and we note a portion of the border of the attached survey drawing has been removed. Therefore, we have significant doubts that the survey was commissioned to confirm property lines and should be relied upon for such.

No survey of any kind was included in the LRM Report: monitoring well location and measuring point elevation, utility location, or otherwise. Rather, LRM continues to depict a sewer line running from south side of 309 63rd Street north beneath 6251 College Avenue and out to College Avenue. The omission is notable as it was our understanding that the property boundary and utility survey had already been completed and was to be included within the report.

<sup>6</sup> P&D Environmental Inc., *Site Investigation and Soil Vapor Extraction Report*, July 11, 2016

<sup>7</sup> LRM, *Interim Remedial Action Progress Report*, December 12, 2016


## Conclusion

Multiple lines of evidence demonstrate that PCE was released from dry cleaning operations at the CCV Site at 6235-6239 College Avenue and not from the Bouzos Property at 6251-6255 College Avenue, including:

- Elevated concentrations of PCE in soil vapor exist on the CCV Site at locations that fit the Conceptual Site Model release scenarios for historical dry cleaners including: beneath the dry cleaning machinery area, behind the facility where virgin and waste solvents are typically handled, and along the damaged sewer lateral for the dry cleaning operations;
- PCE was not detected in shallow samples collected upgradient of the CCV Site at the Bouzos Property where shallow release scenarios consistent with the Conceptual Site Model dictated that sampling be conducted; and
- The pattern of PCE vapor contamination emanating from the CCV Site is predictable and fits well established behavior – emanating from a source area over 30,000 times more impacted than the capillary fringe at its upgradient boundary on the Bouzos Property.

Despite these data, LRM has defied accepted engineering principles to conclude that the absence of shallow contamination and de-minimus detections at the groundwater capillary fringe on the Bouzos Property make it a “likely” source of contamination at the CCV Site. Consequently, we are left to opine that this conclusion is a transparent and technically unsupported attempt to bring additional responsible parties into the CCV Site investigation and cleanup program rather than a professional opinion that has a basis in fact or experience or accepted engineering principles.

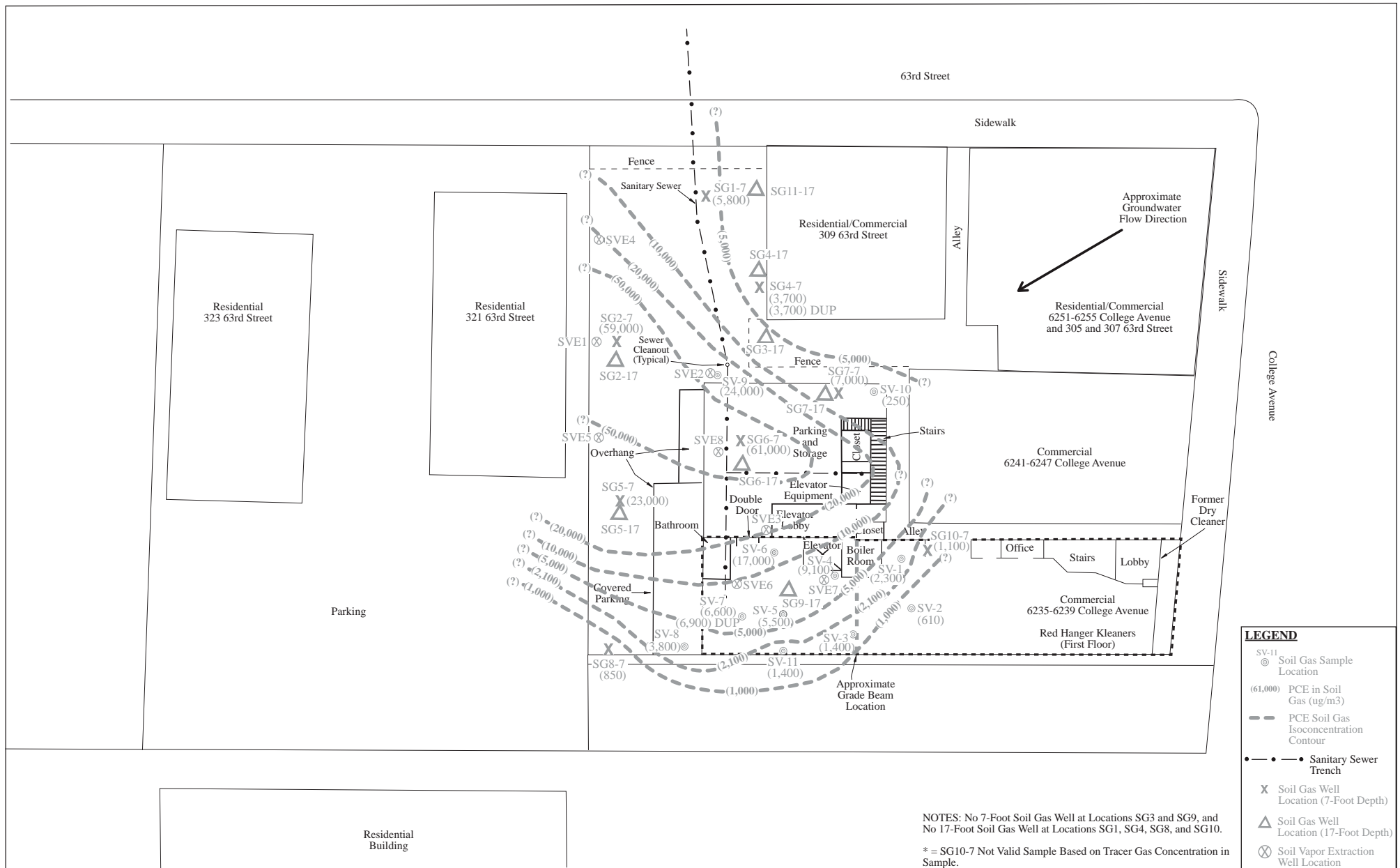
Sincerely,



Michael Harrison, P.E.  
Principal Engineer



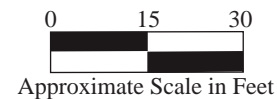
Attach.



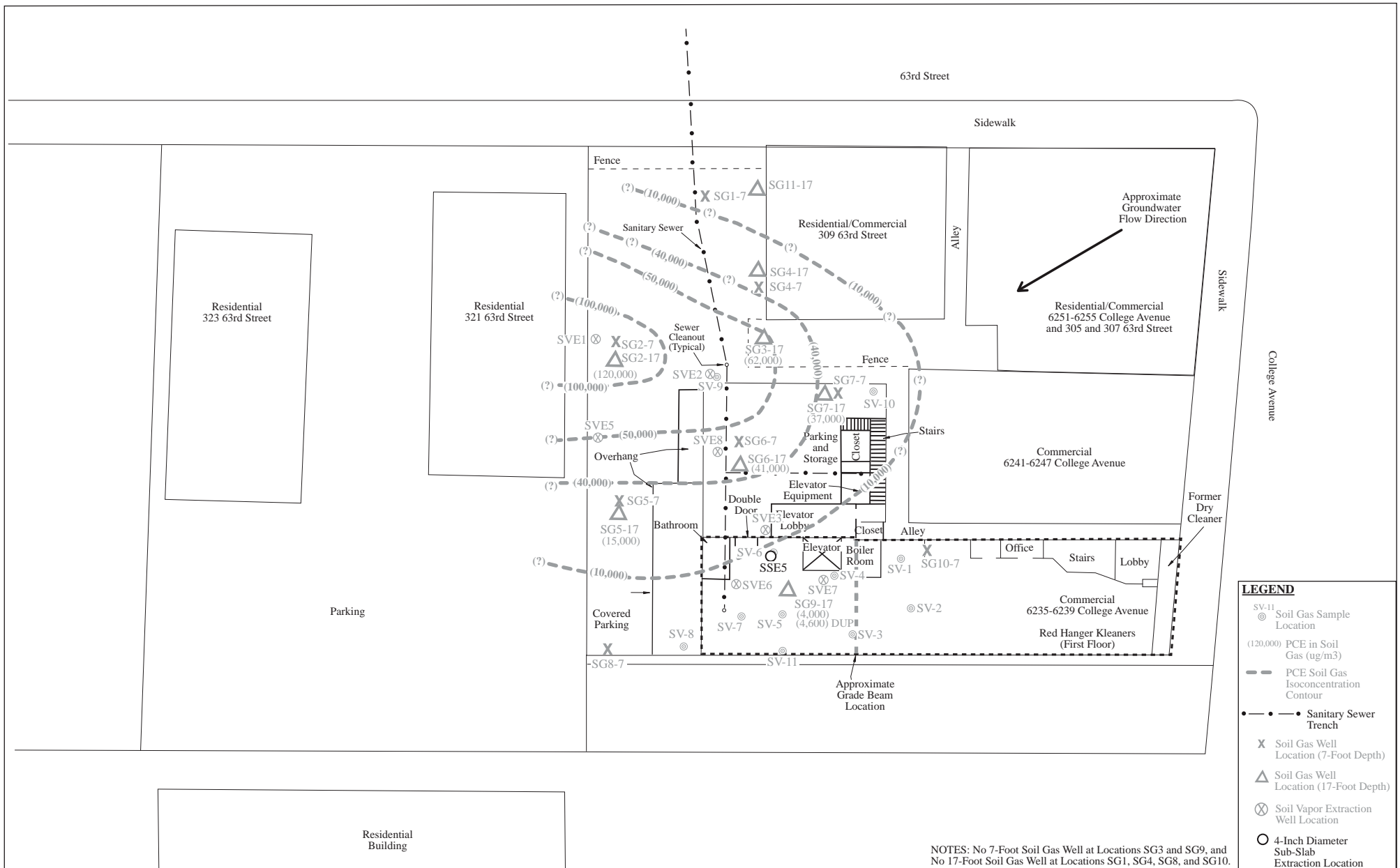
**Figure 7**  
**Site Plan Showing PCE Concentrations in Shallow Soil Gas**  
**Red Hanger Kleaners**  
**6239 College Avenue**  
**Oakland, California**

Base Map from:  
 Gordon Building, July 30, 2007, Alameda  
 County Assessor's Map, Revised June 15, 1989,  
 and Google Earth, 2015

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**Figure 8**  
 Site Plan Showing PCE Concentrations in Deep Soil Gas  
 Red Hanger Kleaners  
 6239 College Avenue  
 Oakland, California

Base Map from:  
 Gordon Building, July 30, 2007, Alameda  
 County Assessor's Map, Revised June 15, 1989,  
 and Google Earth, 2015

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