March 11, 2016

Rana Georges
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, California 90630

Subject: Draft Confirmation Sampling Workplan – Technical Memorandum for Irvine Unified School District's Portola High School

Dear Ms. Georges:

This document presents a draft Confirmation Sampling Workplan Technical Memorandum (Tech Memo) for the Irvine Unified School District's Portola High School located in Irvine, Orange County, California (Figure 1). PlaceWorks is submitting this Tech Memo Workplan to the Department of Toxic Substances Control (DTSC), on behalf of Irvine Union High School District (District).

Based on an additional review of the data collected for the Preliminary Environmental Assessment (PEA) and Supplemental Site Investigation (SSI) the Department of Toxic Substances Control (DTSC) requested some additional soil gas samples where low concentrations of volatile organic compounds (VOCs), significantly below risk-based levels, were detected. A meeting was held at Portola High School on March 9th, 2016 with representatives of the DTSC and District to discuss the confirmation sampling.

Site Background

MCAS began operating in 1943 and closed in July 1999 in accordance with the Base Realignment and Closure (BRAC) Act. An Environmental Baseline Survey for MCAS was prepared in support of the base closure in 1995 in compliance with the provisions of the Community Environmental Response Facilitation Act (CEFRA) amends Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and was enacted to facilitate the rapid return of uncontaminated properties to local communities during the BRAC process. The proposed high school site is located in Navy Sale Parcel I and was found suitable to transfer as part of the Finding of Suitability to Transfer (FOST) #1 in July 2004.

MCAS El Toro was placed on the National Priorities List (NPL) in 1990 due to volatile organic compound (VOC) groundwater contamination at the Base boundary and in agricultural wells west of the Base. The source of the VOCs in groundwater is located over one mile to the southwest of the proposed high school site. The proposed high school site is upgradient of the plume. The EPA delisted approximately 1,900 acres of the former Base from the NPL on January 21, 2014 for unrestricted land use. Portola High School is located within the delisted area.

The District is constructing a 2,600-student school for grades 9 through 12 with a full complement of buildings and recreational amenities, including classrooms, administrative building, stadium, pool complex, performing arts center, hard courts, ball fields, etc. The high school site is located on the former Marine Corps Air Station (MCAS) El Toro in the City of Irvine. Two jet fuel pipelines had been located in the subsurface that ran in an east to west direction across the site that were decommissioned and removed. No structures had been located on the site. The site historically has been leased by the military to farmers for agricultural use. A base entrance with a guard shack bordered the site on the north.

A scoping meeting in September 2013 was held at the base for developing the sampling strategy for the Preliminary Environmental Assessment (PEA) that was attended by DTSC personnel from the schools program and from the DTSC's Office of Military Facilities who had worked on MCAS El Toro for years. Also

in attendance were consultants who had worked on base closure assessment and remediation activities. A Preliminary Environmental Assessment Report was submitted in January 2014 for 40.3 acres and was approved by the DTSC on April 4, 2014 following the revision of the PEA Report in response to DTSC comments dated March 3, 2014.

Subsequent to the approval of the PEA, the site boundaries were modified due to storm drain easements and proposed road realignments. The high school site boundaries shifted to the south and west from the project area that was approved by the DTSC. Approximately 3.53 acres of land that was not addressed in the PEA were assessed in the SSI. The SSI was approved by the DTSC in July 2014. Figure 2 is a summary of the soil and soil gas sampling locations that were tested during the PEA and SSI.

Per base closure requirements, an Unknown Hazardous Material Protocol Plan was developed in 2014 which outlined the notification requirements and steps to be taken if potentially hazardous material was encountered during construction at the school site. During the construction of an offsite storm drain in Nov 2014, petroleum impacted soil was discovered at approximately 15 feet below ground surface (bgs) that extended slightly on to the school site. The developer notified the District of the material discovered in the storm drain. The District notified the DTSC of the discovery. The stained soil was removed and based on laboratory analysis the soil was disposed of as nonhazardous soil. The nonhazardous soil had a slight discoloration and a portion that extended on to the school was missed and subsequently removed during the installation of a retaining wall. The impacted soil was removed under the oversight of the DTSC in 2015. The material did not originate from the site and appeared to have originated from the vicinity of Irvine Boulevard. Figure 3 shows the location of the impacted nonhazardous soil.

Investigation History

The PEA for the 40.3 acres that were approved in April 2014 investigated the following recognized environmental conditions (RECs):

- Stockpiles were seen in aerial photographs located on the northern portion of the site.
- Two fuel pipelines and a valve box were located on the proposed school site. The fuel lines were grouted in place and were removed in November 2013.
- A groundwater plume from historic base operations was identified as having been located within approximately a 0.14 mile radius of the proposed school site.
- The original base landfill, IRP 3 southern boundary is located to the north across the former Desert Storm Drive.

During the PEA the following sampling occurred to assess the above listed RECs:

- Soil and soil gas sampling activities were conducted at the site on December 10, 11, 12, and 13, 2013. A total of 35 soil gas samples were collected and analyzed for VOCs by 8260B from 16 locations. Forty-five soil gas samples were collected and analyzed for methane by ASTM D1946 and 38 soil gas samples were analyzed for hydrogen sulfide from 16 locations.
- From 51 sampling locations, 104 soil samples plus duplicates were collected.
- Thirteen composite soil samples plus one discrete soil sample were analyzed for organochlorine pesticides by EPA Method 8081A.
- Six discrete soil samples were analyzed for CAM 17 Metals by EPA Method 6010B/7471A.
- Ten discrete soil samples were analyzed for arsenic and lead by EPA Method 6010B.
- Seven soil samples were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 8015B.

- Six soil samples were analyzed for polyaromatic hydrocarbons (PAHs) by EPA Method 8270SIM.
- Four soil samples were analyzed for polychlorinated biphenyls by EPA Method 8082A.
- Four samples were analyzed for dioxins and furans by EPA Method 8290.

The sampling results found low concentrations of benzene, bromodichloromethane, chloroform, ethylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and xylenes in one to four of the 35 soil gas samples analyses for VOCs. Four organochlorine pesticides were found in very low concentrations. The human health risk assessment concluded that the concentrations within the 40.3 acre proposed school site do not pose a risk to human health or the environment under an unrestricted residential land use scenario.

The DTSC concurred that neither a release of hazardous material nor the presence of a naturally occurring hazardous material which would pose a threat to public health or the environment under unrestricted land use was indicated at the site.

Subsequent to the approval of the PEA, the site boundaries were modified due to storm drain easements and proposed road realignments. Approximately 3.53 acres of land that was not addressed in the PEA .

- Sixteen sampling locations were advanced in the perimeter area with borings extending from 3 to 15 feet below ground surface (bgs).
- Twenty-two soil gas samples were collected from eleven locations.
- Eighteen soil samples (12 discrete and 6 composites) were analyzed for organochlorine pesticides by EPA Method 8081A.
- Twelve soil samples were analyzed for VOCs by EPA Method 8260.
- Fifteen discrete soil samples were analyzed for CAM 17 Metals by EPA Method 6010B/7471A.
- Twelve soil samples were analyzed for TPH by EPA Method 8015B.
- Twelve soil samples were analyzed for PAHs by EPA Method 8270SIM.
- Twelve soil samples were analyzed for PCBs by EPA Method 8082A.

The results reported low concentrations of VOCs in the soil gas samples. The detected concentrations were less than the applicable screening levels for residential land use. The leak check compound 1,1-diflouroethane was not detected above the threshold established by DTSC. Low concentrations of petroleum hydrocarbons in two soil samples were reported. Two composite soil samples had low concentrations of DDE and DDT ranging from 0.015 to 0.022 mg/kg, compared to the EPA Region 9 regional screening level (RSL) of 1.6 and 1.9 mg/kg for residential land use. Chlordane was detected in one sample at a concentration of 0.0062 mg/kg, below the EPA Region 9 RSL of 1.8 mg/kg for residential land use. The detected concentrations of CAM 17 metals were consistent with naturally occurring background concentrations. Arsenic was not detected above the laboratory reporting limit of 5 mg/kg.

The soil, soil gas, and ambient air samples exhibited no elevated detections based on a comparison to applicable residential screening levels. No further environmental investigations were recommended and the SSI was approved by the DTSC.

SAMPLING PROGRAM

The proposed field sampling investigation will consist of a soil and soil gas sampling program. The following sections describe the sampling strategy, investigative methods and procedures, sample analyses program, sample handling, decontamination procedures, and management of investigative derived wastes. A Professional Geologist will be on site to oversee field activities and sampling. The sampling locations were selected based on utility clearance and proximity to buildings and areas that the DTSC felt would provide additional site coverage.

Utility Clearance

Prior to commencement of field activities the locations of all proposed subsurface sampling locations will be clearly marked and USA will be notified at least 48 hours prior to performing subsurface activities to mark the location of any nearby utility lines. USA will contact all utility owners of record within the site vicinity and notify them of our intention to conduct subsurface investigations in proximity to buried utility lines. All utility owners of record, or their designated agents, will be expected to clearly mark the position of their utilities on the ground surface throughout the area designated for investigation.

In addition, the District is verifying utilities in the proposed sampling locations.

Soil Gas Sampling

Soil gas samples will be collected from the high school site at eight locations to confirm the low concentrations of VOCs reported in some of the soil gas samples. Figure 4 shows the proposed soil gas sample locations. Sample location SG-28, SG-29 and SG-30 are proposed in the playfields. Sample locations SG-31, SG-32 and SG-33 are proposed near the classroom buildings in areas where VOCs have not been detected but to confirm no VOCs in the area to assess the potential for vapor intrusion into the classroom buildings. SG-34 and SG-35 are proposed near sample location SG-24 where low concentrations of VOCS significantly below health based screening levels were reported in the SSI.

The proposed sampling program is included in Table 1. A Professional Geologist will be on-site to observe field activities.

Soil gas samples will be collected and analyzed for volatile organic compounds by a mobile laboratory using EPA Method 8260B. Soil gas sampling will follow the *Advisory - Active Soil Gas investigations* (DTSC and RWQCB 2015). Sixteen soil gas probes will be installed at approximately 5 feet bgs and 15 feet bgs at the eight locations and analyzed by an onsite mobile laboratory for VOCs by EPA Method 8260B. One continuous core will be collected and logged by a Professional Geologist.

Probes will be installed using standard Geoprobe™ rods. After the rod is driven to the desired depth using a direct push installation rig, the rod will be retracted. The implant that will be attached to the ¼-inch outer diameter sample line and lowered into the boring. Use of the implant, attached to relatively small diameter tubing, allows for the soil gas to be sampled with a minimum volume of line purging. A sand pack will be poured into the boring, followed by one foot of dry granular bentonite and hydrated bentonite slurry and the probe will be allowed to equilibrate for a minimum of two hours prior to sampling.

Prior to sampling, a shut-in test will be conducted to check for leaks in the above-ground sampling system. Soil gas samples will be collected in glass, gas-tight syringes equipped with Teflon® plungers. A sampling rate of approximately 200 mL/min. will be maintained and based on the purge test that was performed for the PEA, a target of three purge volumes will be employed. Samples will be analyzed within one-half-hour of collection. The mobile laboratory will use a tracer gas as outlined in the Active Soil Gas Investigations

Advisory. The soil gas probes will be left in the ground and abandoned following receipt of the laboratory report.

Soil Sampling

Soil samples will be collected following protocols described in the following guidance: DTSC's P*reliminary Endangerment Assessment Guidance Manual.* Sixteen soil samples plus one duplicate will be collected from eight locations at two depths (5' and 15' bgs) for analysis of total petroleum hydrocarbons (TPH) by EPA Method 8015B. The proposed soil samples are listed on Table 1. Field screening of the soil at 5', 10' and 15' feet bgs will be conducted using a photoionization detector (PID). If a PID reading is greater than 1 part per million (ppm) then a soil matrix sample will be collected at the corresponding depth using EPA Method 5035 and submitted to the laboratory for VOC analysis by EPA Method 8260B.

Soil sampling will be conducted using a truck-mounted direct push drill rig (Geoprobe™) or similar direct-push device in the same borings that the soil gas probes will be installed. The Geoprobe ™ rig advances lined sample core barrels sleeves to desired depths using a hydraulic ram or pneumatic hammer system. The inside diameter of the core barrel will be 1.5 to 2.0 inches.

The sample barrel will be retrieved and the sample interval will be observed, logged and preserved. Observation pertaining to the soil type soil will be described. Soil samples will be preserved by placing Teflon ™ sheeting and polyethylene caps leaving no headspace, and wrapping the samples with Parafilm ™ tape or placing them in sealable plastic bags. Each sample will be labeled with the sample number, sample depth, and the date and time sampled. Samples will immediately be placed in an ice-filled cooler and listed on a Chain-of-custody (COC) form. The soil type and any observation pertaining to potential soil contamination and soil source will be recorded.

Figure 4 shows the proposed sampling locations. Soil samples will be collected from the same borings as the soil gas samples and are labeled SG-28 through SG-35.

Quality Assurance/Quality Control (QA/QC)

Field duplicate samples will be collected and analyzed to evaluate sampling and analytical precision. Field duplicates for soil gas will be collected at a frequency of one per day. Field duplicates for soil samples will be collected at a rate of approximately 10% of the samples collected. The duplicate samples will be analyzed for all laboratory analyses requested for the primary samples collected.

The standard Quality Assurance Project Plan (QAPP) previously submitted and approved by DTSC for this project will be followed and included in the report. The Health and Safety Plan (HASP) that was used for the PEA will be utilized for the sampling.

Post-Field Work Activities

A Confirmation Sampling Report will be submitted to the DTSC in approximately two weeks following the completion of the field work. The Confirmation Sampling Report will be prepared following the procedures outlined in the PEA Guidance Manual. The appendices in the Confirmation Sampling Report will include the standard Quality Assurance Project Plan, the Health and Safety Plan, and laboratory data.

If you have any questions or comments, or if additional information is required regarding this Tech Memo, please contact the undersigned at (909) 989-4449.

Sincerely,

PLACEWORKS

Denise Clendening, Ph.D.
Associate Principal

Michael Watson, PG 8177
Project Geologist

Enclosures:

References

Table 1 – Confirmation Sampling
Figure 1 – Site Location
Figure 2 – PEA and SSI Sampling Locations
Figure 3 – Location of Storm Drain Easement
Figure 4 – Proposed Sampling Locations

TABLE 1
CONFIRMATION SAMPLING
Portola High School
1001 Cadence
Irvine, California

Sample Number	Depth (feet bgs)	Soil Gas EPA 8260 VOCs	Soil EPA 8015 TPH
SG-28	5'	D	D
	15'	D	D
SG-29	5'	D	D
	15'	D	D
SG-30	5'	D	D
	15'	D	D
SG-31	5'	D	D
	15'	D	D
SG-32	5'	D	D
	15'	D	D
SG-33	5'	D	D
	15'	D	D
SG-34	5'	D	D
	15'	D	D
SG-35	5'	D	D
	15'	D	D
SG-35 DUP	5'	D	D
TOTAL		**16 D PS, 1 D DUP**	**16 D PS, 1 D DUP**

Notes:
D = Discrete Sample
DUP = duplicate; PS = primary samples;
One continuous core will be logged by a Professional Geologist.

Figure 1 - Site Location

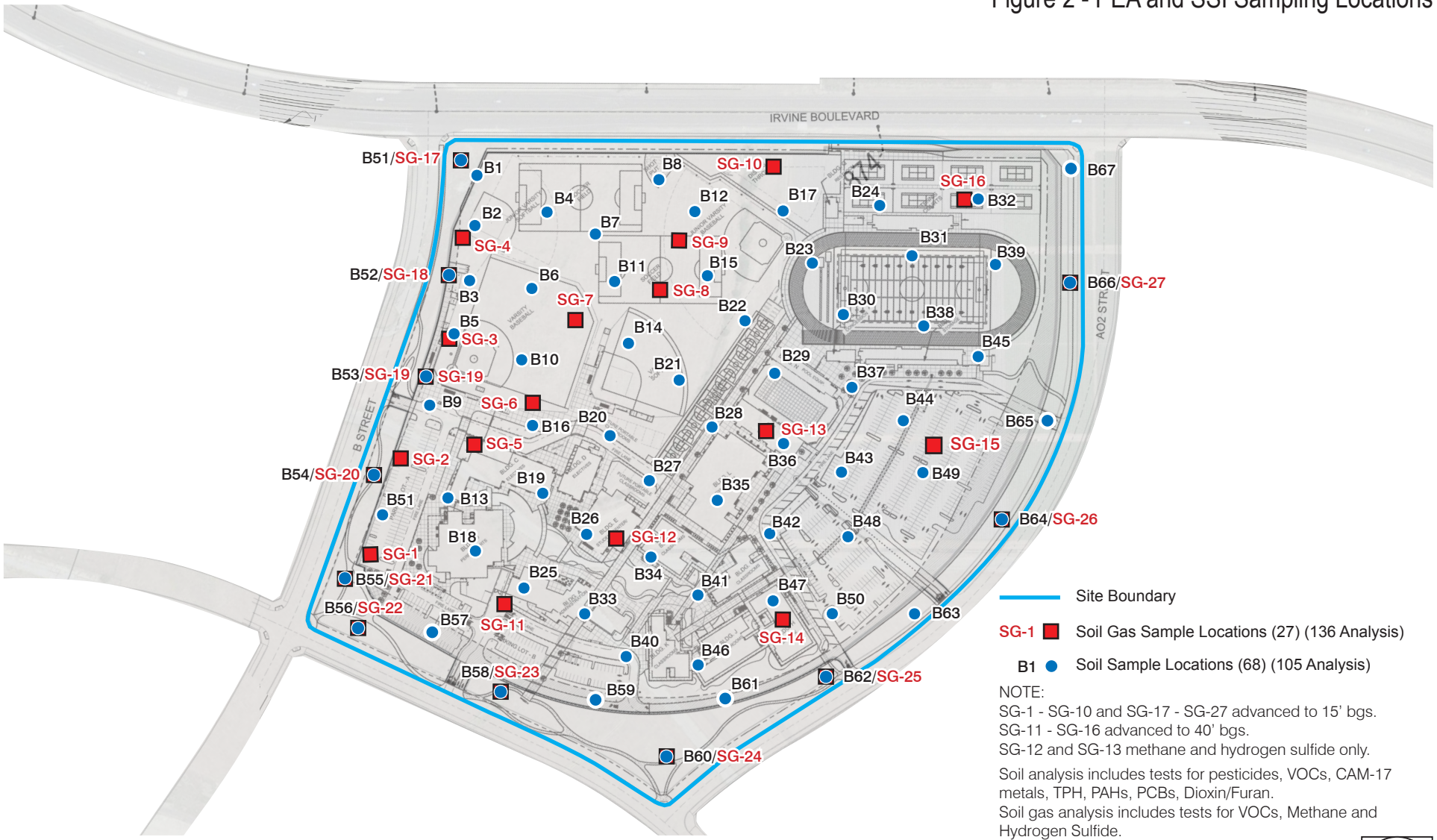
Existing PA 30 and PA 51 Boundary

Portola High School Boundary

0 6,000
Scale (Feet)

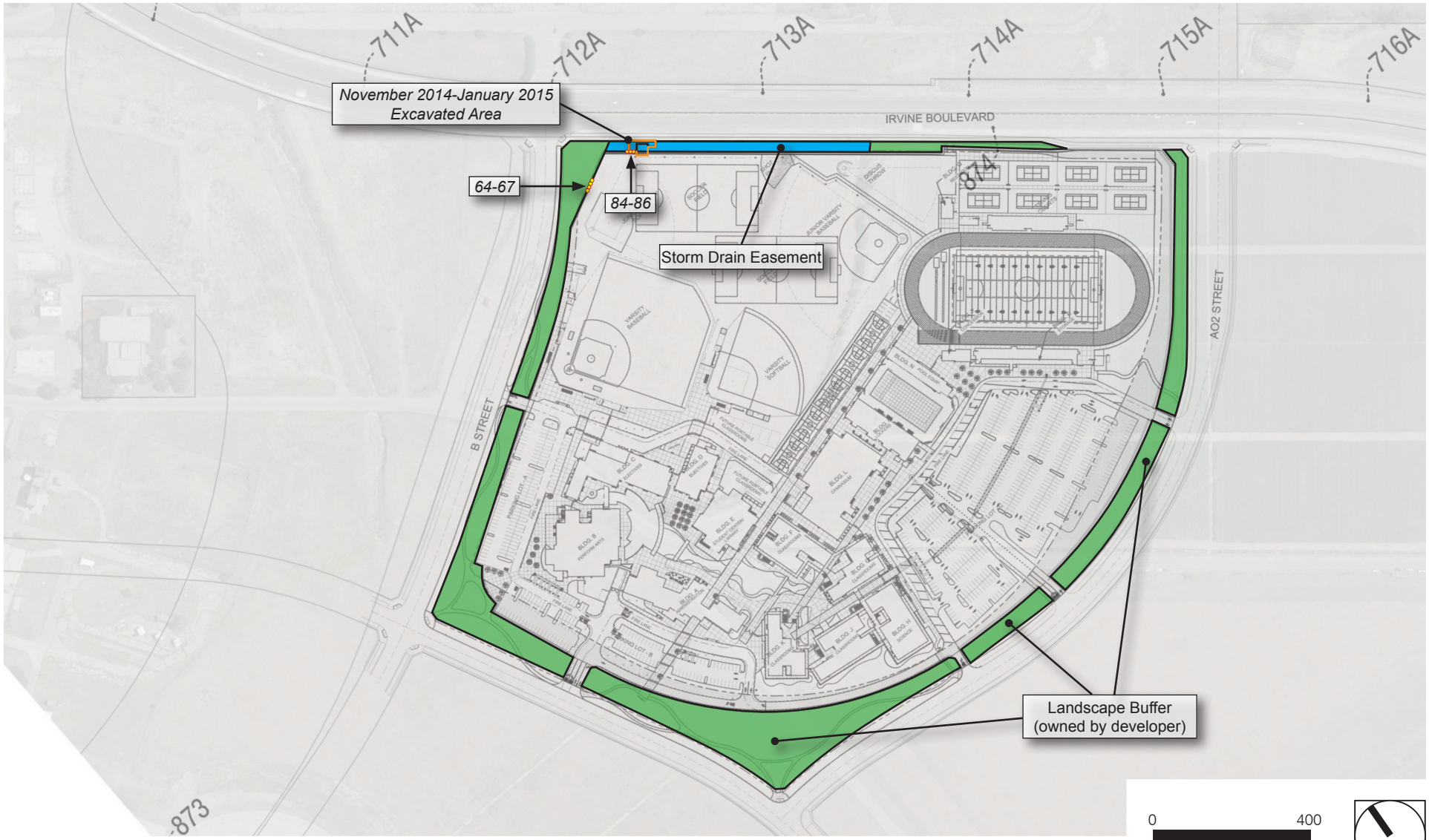
Source: ESRI, 2014

Figure 2 - PEA and SSI Sampling Locations



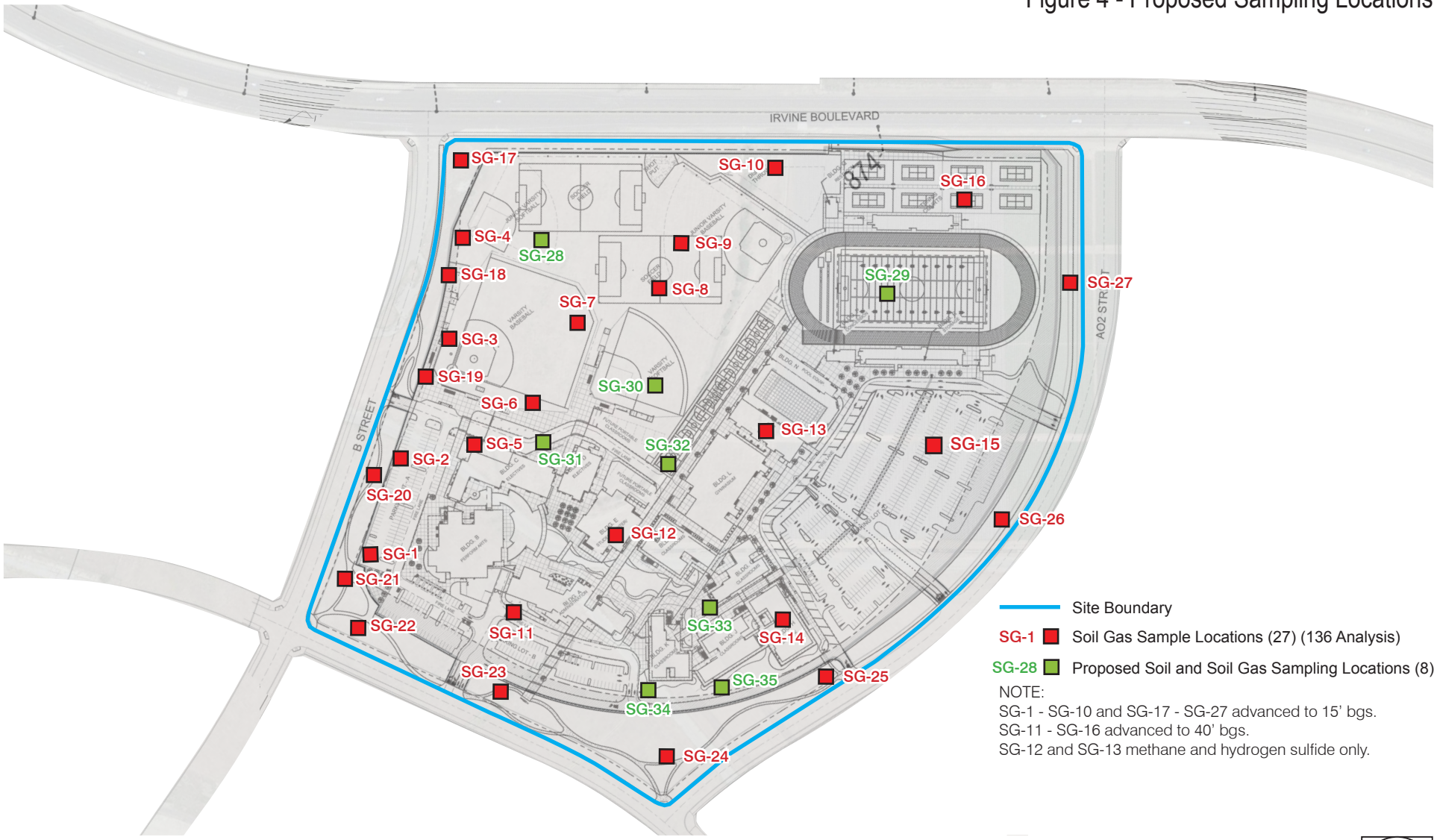
Base Map Source: Hunsaker Associates, 2014, ENGEO, 2014.

Figure 3 - Location of Storm Drain Easement



Source: Hunsaker Associates, 2014

Figure 4 - Proposed Sampling Locations



Base Map Source: Hunsaker Associates, 2014, ENGEO, 2014.